

EFFECTS OF THE SEXUALIZATION OF FEMALE CHARACTERS IN VIDEO
GAMES ON GENDER STEREOTYPING, BODY ESTEEM, SELF-
OBJECTIFICATION, SELF-ESTEEM, AND SELF-EFFICACY

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ABSTRACT

Content analyses indicate that women and girls are gender-stereotyped and negatively portrayed in video games, yet, to date, no research has examined the effects of exposure to these images on consumers. The purpose of the present study was to investigate the influence of sexualized (stereotypical) and non-sexualized (counter-stereotypical) portrayals of female characters in video games on players' self-esteem, gender stereotyping, body esteem, self-objectification, and self-efficacy. Social cognitive theory and presence are utilized to explicate the processes through which individuals are affected by video game play. According to social cognitive theory, the portrayals of women and girls in video games would be expected to influence social perceptions about gender and self-concept in both male and female users. Integrating presence into this theoretical framework aids in explaining the effects of exposure to this uniquely interactive medium. The findings from this study suggest that short-term exposure to a sexualized female video game character predicts lower self-efficacy and negative attitudes toward women in terms of their physical capabilities for female players. Additionally, level of presence experienced by male game players predicted body-related outcomes, such that a higher level of presence was related to greater body satisfaction and lower self-objectification in men. Presence had no significant effect on the relationship between sex, type of character played, and the outcome variables. The results of this study are of consequence not only to media effects researchers but also to parents, legislators, and video game programmers.

INTRODUCTION

Over the past three decades, the video game market has developed into a \$10 billion a year industry in the U.S. (CNNmoney.com, 2006). As the popularity of video games has increased, the profile of the gamer has shifted, reflecting the wider variety of consumers that play video games today. The image that comes to mind when picturing a video gamer should no longer be an adolescent, or even teenage, boy, because females and adults are playing games in greater numbers. An industry survey indicates that approximately 40% of all game players in the U.S. are female (ESA, 2005), and 80% of girls (grades 4-12) report playing video games in their homes (Walsh et al., 2005). Studies suggest that video gaming is an equally popular hobby amongst both boys and girls (Colwell, Grady, & Rhaiti, 1995). Further, the average age of video game players is 29 years old (ESA, 2005), demonstrating that gaming is no longer just a childhood pastime.

With the growing popularity of gaming, parents and advocacy groups have raised concerns about the potentially harmful effects of playing video games. Although this has led to significant research on the influence of violent video games on subsequent aggression (see Gentile & Anderson, 2003; Sherry, 2001), the effects of exposure to many other features of content have largely been ignored. This is particularly concerning when considering the stereotypical manner in which females are commonly portrayed in these games. In particular, female characters are typically depicted in a sexualized manner. This mediated image of women is not uncommon as it is pervasive in U.S. media culture, yet knowledge about the effects of exposure to such images is still somewhat

limited. Traditional media effects literature that has examined this issue suggests that the image of the sexualized woman may negatively influence a woman's perception of herself and people's perceptions of women, in general.

Media effects theories and empirical research support the idea that individuals can and do learn about gender roles as well as gender-related attitudes and beliefs from mass media offerings including: television and advertising (see Davidson et al., 1979; Herrett-Skjellum & Allen, 1996; McGhee & Freuh, 1980; Morgan, 1987; Signorielli, 1989) and magazines (see Carpenter, 1998; Hatoum & Belle, 2004; Morrison et al., 2004). Taken together, this research indicates that media use has a measurable influence on gender roles and gender-based cognitions. More specifically, media effects research has established that exposure to media can affect individuals' gender-based stereotypes, self-esteem, and attitudes. This demonstrates the importance of studying the potential effects of exposure to both stereotypical and counter-stereotypical images of women in the media, due to the media's cultural contribution to individuals' gender-related knowledge.

As such, the present study examines the influence of exposure to sexualized and non-sexualized portrayals of women in video games on individuals' self-esteem, self-efficacy, self-objectification (and objectification of women), body esteem, and gender role beliefs. Based on the assumptions of social cognitive theory (Bandura, 1986), exposure to sexualized women and girls in video games would be expected to negatively influence social perceptions about gender, as well as affect the self-concept of male and female users. Moreover, counterstereotypical (i.e. not highly sexualized) images of females in video games would be expected to positively influence gender-related

attitudes and feelings of self, particularly for female players. Additionally, the distinctive features of video game play, including high levels of interactivity and players' experience of presence with a game, would be predicted to increase the potential for learning based on the social cognitive model. Thus, this study's integration of the concept presence into the social cognitive theory framework provides valuable insights into understanding the unique effects of this new media entertainment. To test these effects, an experiment was conducted varying the level of sexualization of female video game characters. The study compared gender-based outcomes resulting from playing a highly sexualized female character, a less sexualized female character, and no video game play. The findings from this study are of consequence not only to media effects researchers but also to parents, legislators, and video game programmers alike.

MEDIA EFFECTS RESEARCH

Learning from Traditional Media

Media research examining the effects of exposure to traditional media, such as television and magazines, on gender-related outcomes indicates that individuals may learn about gender norms and expectations from exposure to media offerings. More specifically, studies demonstrate that media portrayals of women influence individuals' body esteem and eating disordered behaviors (e.g., Harrison, 2000a, 2001), beliefs about traditional gender roles (e.g., Diekmann & Murnen, 2004), self-objectification (e.g., Calogero et al., 2005; Stevens-Aubrey, 2006), and sexual stereotyping (e.g., MacKay & Covell, 1997; Ward & Friedman, 2006). Generally speaking, this research demonstrates that media play a role in the development of stereotypic beliefs about women and negative attitudes toward one's own body (particularly for females).

Body Image

In terms of the media's role in affecting female body image, much research has examined the effects of exposure to the thin (or curvaceously thin) female body ideal so prevalent in mainstream U.S. media. The importance of this research resides in the central role of body image to many women's identities. Developmental research suggests that for women, in particular, the image of the body often becomes very important to their identity (Ussher, 1989). In other words, research suggests that the appearance and functionality/competence of the female body becomes an important component of a female's personal identity, wherein she may look to her body as being central to her self-worth. Moreover, research indicates media become a significant source of information

about the normative standards of appearance of the female body and contribute to women's feelings about their bodies. The images of the female form portrayed by the media are used as a source of comparison, through which women and girls look to determine their own worth and men and boys may use to form expectations of females. The awareness of one's own body in comparison to media images of the female body begins to be a source of self-concept struggle for females beginning during the adolescent period, and this struggle is thought to continue throughout life (Ussher, 1989).

In particular, it is the media's focus on the sexualized female body that has garnered much attention from media scholars. It is argued that "The significant messages contained in the media... [send] the message that her body is her passport to happiness: it is through her body that she entices a man, which should be her main objective" (Ussher, 1989, p.38). In other words, the sexualized portrayals of females in the media are thought to communicate messages about gender roles and body standards to women (and men). Empirical research has demonstrated that exposure to such idealized media images of females typically lowers girls' and women's satisfaction with their own bodies.

Such effects have been found for both children and adults. An experimental study by Murnen, et al. (2003) demonstrated that young girls briefly exposed to idealized images of the female body, and able to understand that these images are deemed desirable, had more negative feelings about their own bodies (i.e. lower body esteem). This study suggests that media imagery of the female body may have negative effects on body esteem beginning even at a young age. In terms of adults, Schooler, et al. (2004) provide evidence that a relationship exists between television exposure and body esteem

in White women. Specifically, they studied the relationship between consumption of mainstream television and body image in Black and White women. Survey findings revealed that exposure to mainstream television predicted lower body esteem in White women, suggesting that negative effects on body esteem continue into adulthood. Notably, this study indicates that these effects may be moderated by the race of the viewer and the race of the media model depicted. However, other studies demonstrate that these effects occur regardless of race. When examining the influence of viewing prime-time television on women's body esteem, Bissell and Zhou's (2004) survey study found that exposure was negatively related to body esteem and positively related to disordered eating behaviors, and this was consistent for women of all races.

Other research findings confirm the influence of idealized images of the female body on girls' and women's disordered eating behaviors. Harrison (2000a) conducted a survey design study measuring exposure to images of idealized media models. This study demonstrated that exposure to some idealized media images predicted bulimia, anorexia, and body dissatisfaction in middle and high school female students. Harrison's (2000b) survey-based study of grade-school children produced similar results, and additionally revealed that boys were influenced by body images (of males) and reported some symptoms of disordered eating behaviors. She furthered this research by examining the role of text, as well as images, in affecting disordered eating behaviors (Harrison, et al., 2006). This study experimentally exposed participants to idealized media images of female bodies and media text (e.g. text concerning dieting, exercising, and the body's appearance) supportive of the thin-ideal for 15 minutes. The images and text excerpts

were displayed on a large screen for participants to view. Some participants were exposed to a combination of images and text, while others were only exposed to either images or text. Some evidence was found to suggest that exposure to both media text and images promoting the female thin ideal resulted in disordered eating behaviors, such as reports of eating less in front of other people, indicating that brief exposure to such images may affect eating behaviors (at least in the short term).

Last, evidence has emerged to support the idea that media images may have an effect on self-objectification. Self-objectification refers to the tendency for one to place great importance on the appearance of one's body (as opposed to the competence of one's body) (Noll & Frederickson, 1998). Individuals who self-objectify view their bodies from a third person perspective, rather than viewing their bodies in terms of its functions for the self. Aubrey's (2006a) survey-based study examining the relationship between media exposure and self-objectification in male and female college students indicates media exposure predicts self-objectification in both men and women. Specifically, those who reported being exposed to greater amounts of "sexually objectifying television" were more likely to self-objectify. Aubrey (2006b) stated, in a related study, that this influence on women was more likely to occur when women reported low global self-esteem.

In sum, media effects research on traditional media suggest that exposure to idealized images of the female body is associated with lower body esteem, increased disordered eating behavior, and self-objectification. This is evidenced by both experimental and survey data, conducted in the short term (i.e., brief exposure to idealized media images) and the long term (i.e., measurement of exposure to idealized

media images over longer periods of time). Additionally, the effect sizes available from these studies suggest that the size of the observed effects is small, albeit consistent across studies. This indicates that, typical of media effects research, in general, the measurable effect of exposure to sexualized images of females in the media is small, making it more difficult to detect. Thus, it would be expected that greater statistical power is needed to detect such effects.

Self-Concept

Beyond directly affecting how one feels about one's body, exposure to idealized images of the female body in the media has been shown to negatively affect girls' and women's general feelings of self worth. Specifically, exposure to idealized images of the female body not only affects body image but affects self-esteem and self-efficacy. There are two common explanations for these effects. First, the internalization of the communicated standards of the female body in the media has been linked to lower self-esteem in women (Clay et al., 2005). Women who accept the media images as being representative of the ideal female, and come to view the ideal female body in such terms congruent with these images/messages are more likely to suffer from lower self-esteem and self-efficacy. Second, it is suggested that these effects on self-esteem and self-efficacy may occur due to social comparison with media models (Bessenoff, 2006). Comparing one's own body to the (generally unattainable/unrealistic) body images of females in the media may leave girls and women with lower self-esteem and self-efficacy. Evidence of this relationship between gender portrayals in the media and

individuals' self-concept has been found for exposure to television, Internet, and magazine images of women.

Bessenoff's (2006) experiment with college-age women revealed that women exposed to thin-ideal advertisements reported lower self-esteem than those who were exposed to neutral advertisements. Hawkins, et al. (2004) similarly experimentally demonstrated that short-term exposure to the thin-ideal images resulted in lower self-esteem in women. Moreover, the same effects have been found in younger populations. Clay, et al.'s (2005) experiment-design study examined the influence of media images of the idealized female body and found that media exposure was related to lower self-esteem in adolescent girls. Taken together, this body of research demonstrates that exposure to idealized images of females in the media may have negative effects on women's and girls' self-concept.

Such effects have been found to occur not only in traditional media but via the Internet, as well. Bardone-Cone and Cass (2006) found self-esteem decreased in women after they were exposed to a pro-anorexia website, which idealized and encouraged the adoption of the thin-ideal body. They also found that brief exposure to the thin-ideal during the experiment resulted in lower appearance efficacy for women, demonstrating that exposure was related to lower self-efficacy, at least in terms of managing one's appearance. This research is unique in that it demonstrates that exposure to such images of women online has similar effects to viewing like images in magazines, and on television.

Although surfing the Internet is fundamentally different from video gaming, there are some commonalities between the two (new) media behaviors. First, both require a greater level of active participation to view the content in comparison to media like television and film. The unique characteristics of video games, in particular, will be discussed in the next section. Second, both utilize the computer as a medium. Individuals may use the computer to surf Internet content and play video games for the PC or Mac. Thus, basic computer knowledge is useful to both activities. However, video games involve an aspect of play and character identification that Internet exploration typically does not. Therefore, exposure to idealized images of females on the Internet may have different effects in comparison to exposure to video games. The greater degree of involvement with the media models in video games, in comparison to media models on a website, may serve to heighten the effects of exposure to gender portrayals on the self-concept. This idea will be further examined in the discussion of theoretical support for this study.

Given what is known about the effects of (traditional and new) media images of the female body on self-esteem and self-efficacy in women and girls, it is observed that the effect sizes reported in these studies range from small to medium. Where effect size information is available in these published studies, it is evident that media have a measurable, albeit sometimes small observable effect on female self-esteem and self-efficacy. This suggests that the media do play an important role in the development of one's feelings of self, however media alone clearly do not typically determine a girl's or woman's feelings of self-worth. Many factors, such as past experiences, personality

traits, and interpersonal interactions likely contribute largely to one's self-esteem and self-efficacy. Thus, to isolate and identify the influence of the media in this process may sometimes be difficult and likely requires a good deal of statistical power to observe such effects.

Gender Stereotyping

The last major area of media research addressing the effects of images of women in the media on consumers focuses on gender stereotyping. A gender stereotype is generally defined as "a set of beliefs about what it means to be female or male. Gender stereotypes include information about physical appearance, attitudes and interests, psychological traits, social relations, and occupations" (Golombok & Fivush, 1994, p. 17). The media serve as one source of learning gender-related attitudes and beliefs regarding gender roles, and research suggests that exposure to mainstream media (largely characterized by stereotypical gender portrayals) is linked to gender stereotyping.

For instance, Morgan (1980) conducted a longitudinal survey study examining the influence of television consumption on adolescents' gender stereotyping. Results indicated that television exposure was positively related to traditional gender stereotyping in adolescents. Zuckerman, et al.'s (1980) survey research found similar results for girls, indicating that a correlation exists between television consumption and gender stereotyping. Of particular interest to the present study are the effects of exposure to sexual and body-related stereotypes of females in the media. Ward and Friedman (2006) experimentally examined the effects of exposure to such content and found that adolescents who were exposed to portrayals of women as sex objects (for a period of 12

minutes) were more likely to report stereotypical gender role beliefs and to condone such treatment of women. Thus, the media's propensity to emphasize women's sexuality and to treat women as sex objects may have real world effects on individuals' judgments about women. This suggests that exposure to the sexualized images of women in video games may not only have negative effects on women's body image but may also result in gender stereotyping of women, in general, by both men and women.

However, not all portrayals of women in the media are stereotypical in nature. Although not as frequent, media sometimes portray women in roles that do not conform to traditional gender role stereotypes. Moreover, some research suggests that exposure to these *counter-stereotypical* portrayals may decrease negative gender attitudes and beliefs in consumers (Aubrey & Harrison, 2004; Eisenstock, 1984). In other words, exposure to positive, non-traditional gender portrayals may be linked to less traditional gender role attitudes and beliefs in individuals. Thus, there is potential for strong, non-sexualized/less sexualized (i.e. counter-stereotypical) female video game characters to have a positive effect on individuals' attitudes toward women.

This research concerning both the effects of exposure to gender stereotypes and counter-stereotypes in media report small to medium effect sizes. Similar to the other areas of research discussed above, the examination of the effects of gender stereotyping on consumers likely requires considerable statistical power, given that the media's role in the development and employment of gender stereotypes by individuals is typically observed to be small but significant.

Taken together, this body of media effects research on body image, self-concept, and gender stereotyping demonstrates that even very brief exposure (i.e. 15 minutes or less) to stereotypical images of females may have negative effects on women's feelings about themselves and on men and women's gender stereotyping. However, as previously mentioned, the effect sizes reported in these studies are small, indicating that great statistical power is likely needed to observe such effects.

Although little to no empirical investigations have examined the effects of gender stereotypes on gamers, these findings based on traditional media point to the gender-related outcomes that can be anticipated. Furthermore, we do know something about learning from video games, in general. A host of studies have examined both the potential positive and negative learning outcomes from video game play.

Learning from Video Games

Despite the lack of scientific research examining learning about gender from video games, there is evidence that a variety of prosocial as well as antisocial learning outcomes may be associated with video game play. This research is significant in that it demonstrates that important learning outcomes do occur based on playing video games. This body of research points to the potential for video games to serve as a source for learning about new behaviors, ideas, and cultural norms.

Prosocial Outcomes

First, studies indicate that educational video games may be successful in teaching individuals about educational and health related topics (Lieberman, 2001). In particular, the educational value of playing video games in the classroom as an addition to regular

curricula has been studied. The use of video games in the classroom has yielded increased motivation in students, improved visual skills, advanced critical thinking skills, and retention of educational information in areas such as math and reading (Lieberman, 2001; Kulik, 1994; Rosas et al., 2003). Thus, it has been determined that the inclusion of these educational video games (i.e. games containing teaching and practical elements related to academic subjects) may improve students' understanding of material covered in class, and may increase students' interest in learning and performing well in the classroom. So, the addition of educational video games to regular classroom activities has been shown to provide some beneficial outcomes for both student and teacher.

Other research has examined the utility of playing health-related computer games. These computer games and interactive computer-based programs have demonstrated increased learning about coping with diseases, such as asthma (Lieberman, 2001; Shegog et al., 2001) and diabetes (Brown et al., 1997). Such programs have been used to help teach children how to manage their disease by engaging in preventative and treatment related health behaviors. The use of video games in these instances is devised to make learning about health care enjoyable for younger patients, increasing the likelihood that they will pay attention to the health-related information and be more motivated to employ the communicated coping and preventative techniques in their own lives, ultimately improving their health. In relation to asthma, in particular, computer games have proven to be successful in teaching children how to manage their disease (Shegog et al., 2001). Similarly, Brown et al. (1997) found that playing a video game about diabetes helped to

increase children's communication about their disease with their parents and to better manage their disease.

Taken together, these studies suggests that video games have the ability to positively enrich individuals' lives by imparting prosocial knowledge to game players that may be stored and used later to perform positive behaviors. In relation to this study, the positive, counter-stereotypical images of women in video games, then, may positively affect women's perceptions of self and promote more favorable and equitable beliefs about women and the roles they should and can/should occupy in society.

Antisocial Outcomes

Alongside this research documenting the positive learning outcomes resultant from video game use, much research has also been conducted examining the negative effects of exposure to video game violence. This research reveals that violent video game play is associated with a number of antisocial outcomes including increased physical and psychological aggression, heightened cardiovascular arousal, and diminished helping behaviors (see Anderson, 2004, for meta-analysis). Findings from Gentile et al.'s (2004), study on video game use in eighth and ninth grade students additionally links violent video game play with poorer school performance, physical fights, and feelings of hostility.

Given these results in the domains of educational gaming and violent video game play, it stands to reason that gender-related outcomes also may emerge. As Gentile and Anderson (2003) note, "If health video games can successfully teach health behaviors, and flight-simulator games can teach people how to fly, then what should we expect

violent, murder-simulating games to teach?” (p.146). Research suggests that violent video games do, in fact, impart lessons about aggression to players. This study, however, is most concerned with what the sexualized portrayals of women in video games are teaching gamers. The demonstration that video games can teach players to adopt some antisocial outcomes indicates that similar effects may occur for other types of antisocial video game content, such as gender-stereotyped content. Additionally, the literature on prosocial outcomes suggests that, perhaps, exposure to counter-stereotypical portrayals of women in video games will lead to positive outcomes, in terms of body image, self-concept, and gender-related beliefs.

The potential for learning exists, and based on this research alongside the research on learning from traditional media it is expected that exposure to sexualized images of women in video games will negatively influence attitudes toward women and women’s self-concept and body image. Moreover, the unique characteristics of video games in comparison to traditional media suggest that video games may be an even more powerful source of influence on individuals.

VIDEO GAMES AS A UNIQUE MEDIUM

Unlike traditional media, such as television and film, video games are characterized by interactivity. Video games have advanced greatly since the development of what many argue to be the first video game, Steve Russell's creation of *Spacewar* (1962), involving moving and controllable cursors (Malliet & de Meyer, 2005). However, even in this early stage of development, video games' level of interactivity far exceeded that of any other media. In *Spacewar*, individuals could control the movement of an object on the screen to affect the game play in a manner that involved the immediate response of the computer to the player. Today, video games provide gamers with the opportunity to engage in more sophisticated actions where the game alters itself to follow a host of unique movements of the characters.

Grodal (2003) very generally defines interactivity as "the [ability] of the user/player...to change the visual appearance of a computer screen (and/or sounds from speakers) by some motor action via an interface" (p.142). However, the concept of interactivity is more complex than this simple definition. Three components contribute to the level of interactivity: immediacy, range, and mapping. First, interactivity involves the immediate response of a computer game to the player's actions (Klimmt & Hartmann, 2005; Steuer, 1992). In other words, the quickness of the response of the computer to an individual's actions is important to the experience of interactivity with the mediated environment.

Second, the range of actions available to a player during the game influences its interactivity, such that the greater the number of choices of actions for a player, the

greater the interactivity of the game (Schneider et al., 2004, Steuer, 1992). Similarly, it is argued that “agency,” or the ability of a gamer to “[explore] and [manipulate] the environment and [influence] it” (Schott, 2006, p.134) contributes to the level of interactivity. Thus, in line with Grodal’s definition, Schott (2006) argues that true interactivity involves the power to alter the mediated environment rather than merely responding to changes in the environment created by the computer. So, the number of attributes that players may manipulate or change in a mediated environment affects the interactivity of that game experience. For example, the ability of gamers to alter the sounds, placement of objects, etc. influences the level of interactiveness.

Third, mapping (Steuer, 1992), defined as the “way human actions are connected to actions within a mediated environment” (p.86), contributes to interactivity. In other words, mapping refers to the logic and ease of controls used to perform actions in the game. For instance, the moving and clicking of the mouse manipulates the objects on the computer screen, and with some gaming systems individuals may jump up and down on sensor pads or shoot a fake gun at the screen to interact with the simulated environment. Steuer (1992) argues that a clear mapping system is needed to achieve interactivity. In sum, immediacy, range, and mapping are all important components of the interactivity of a video game.

Far from the days of *Pong* and *Frogger*, today’s video games have achieved very high levels of interactivity. Individuals may control the entire creation and/or destruction of whole civilizations (e.g., *Sim City* and *Civilization* game series). Or players can choose a game that allows them to control a single character, leading them through fantastical

and deadly obstacles to achieve a quest (e.g., *Tomb Raider*, *Oblivion*, and *Final Fantasy* game series). Further, within game play, players can choose to solve puzzles or riddles, form alliances with other characters, develop romantic relationships with other characters, engage in violence, work to improve their character's physical skills, or gain rewards. Clearly, the increasing range of actions available to players has made gaming highly interactive and entertaining, as well as unique compared to other more traditional media such as film and television. The high degree of interactivity with the video game environment, compared to a television environment, for example, is thought to increase individuals' involvement or engagement with the media stimulus. In other words, research suggests that as interactivity in video games increases so do levels of immersion with the medium (Schneider et al., 2004; Steuer, 1992). This, in turn, promotes presence, which is the idea that players may become so immersed in a video game that they forget that the mediated environment and objects are not real. This concept will be discussed in detail following social cognitive theory. Moreover, interactivity is likely to facilitate identification with media characters, which is pertinent to the predictions of social cognitive theory.

When mapped onto the model provided by social cognitive theory, these gaming features point to the potential for video game play to yield more pronounced effects than those resulting from exposure to traditional, less interactive media -- particularly in terms of gender stereotypes and gender-related outcomes (Schneider et al., 2004). The high degree of interactivity of video games is thought to enhance the presence experienced by the gamer, and thus increase the attention to the media content and possibly the

identification with the media models. Consequently the manner in which gender is represented in these games is meaningful as sexually objectified images may be even more likely to impact on players' self-esteem, body image, self-efficacy, and gender-based standards. This argument will be explicated through the discussion of the theoretical frameworks of social cognitive theory and presence.

THEORETICAL FRAMEWORK

Social Cognitive Theory

Social cognitive theory offers a framework that can be applied to understanding how exposure to mediated models (e.g., video game characters) may impart gender lessons to gamers, influencing their beliefs about gender roles and their own gender-related self-concept. From this theoretical perspective, media messages serve as a source for the acquisition of “gender-linked knowledge and competencies” including appropriate gender-based behaviors and conduct, normative gender roles, self-evaluative gender-specific standards, and even self-efficacy beliefs (Bussey & Bandura, 1999, p.692).

Originally termed ‘social learning theory,’ Bandura’s work was recognized for its divergence from traditional models of learning based on behaviorism. In particular, Bandura’s theory of learning is characterized by its sophisticated understanding of the interplay of environment, behavioral, and personal factors in the learning process. This concept, known as triadic reciprocal causation (Bandura, 1986), proposes that these three factors all interact causally to determine human behavior. Bandura characterizes personal influences as cognitive, biological, and affective events (Bandura, 2002). These personal factors interact with events in an individual’s environment and with one’s behavioral experiences to determine a person’s course of action (i.e. whether or not they will enact a given behavior) and adoption of attitudes and beliefs. Additionally, Bandura argues that each factor (personal, behavioral, and environment) may be weighed differently in determining one’s behavior based on the situation, the temporal ordering of events (i.e. which factors occur at which time), and individual differences in personality. Notably,

this complex transactional relationship emphasizes the combined influence of self and society on individual learning (Bandura, 2002). Building on the theory of social learning and imitation proposed by Miller and Dollard (1941), Bandura developed his framework by advancing newer ideas in psychology and challenging the limitations of classical and operant conditioning models of learning.

Specifically, social learning theory challenged the idea that behavior was learned directly through stimuli and rewards and punishments present in one's environment, without the influence of social or personality variables (Bandura & Walters, 1963). Classical conditioning, for example, proposes that one learns to perform a behavior based on a stimulus present in one's environment. The behavior is enacted in direct response to this stimulus, and the behavior then becomes associated or paired with it. Operant conditioning, on the other hand, argues that the shaping of one's behavior is determined by direct rewards and punishments that occur after one enacts a behavior (Miller & Dollard, 1941). Both of these models of learning assume that behavior is externally motivated and controlled through the environment. Social learning, however, views these models as being incomplete and an overly simplistic account of how most human learning occurs. The conceptualization of learning posed by these earlier behavioral models is not social, nor does it recognize the role of the self in the learning process, and it is limited by its assumption that learning occurs on one's own in direct response to the surrounding environment (Bandura & Walters, 1963). Social learning advanced understanding of behavioral learning by acknowledging both the social and cognitive nature of the process of reproducing modeled behaviors. Significantly, the learning

process is not thought of as an individual process, but instead as a social process wherein certain conditions will increase the likelihood of learning occurring.

Observational Learning

Bandura's concept of social learning proposes that most of what we learn is from observational learning, rather than enactive learning. He states:

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do.

Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action.

(Bandura, 1977, p.22)

Bandura suggests that individuals do not learn most things merely from trial and error, attempting to figure out how to successfully perform a new behavior on one's own. Learning only "through the effects of one's own actions" (Bandura, 1986, p.47) would be time consuming, and too much effort would be spent trying to correct errors. Thus, if one only learned through enactive learning, the amount and variety of new behaviors one could learn would be dramatically limited. Instead, social cognitive theory assumes that people learn most behaviors from the help of observing models perform those behaviors and by receiving instruction and feedback. Bandura and Walters (1963) developed this idea of observational learning by considering behaviorism models of learning and working to gather evidence to support this new model of learning, which rectified the

oversimplification of assuming that “human behavior is externally regulated” (Bandura, 1977, p.6) and an individual’s environment, alone, determines their behavior.

Bandura, Ross, and Ross (1961) found evidence of observational learning in studies of aggression in children. Their experimental research demonstrated that children who observed adults acting aggressively toward an inflated plastic doll enacted more aggressive behaviors than did children who observed adults acting non-aggressively. Many of the children who viewed aggressive models imitated the behaviors they witnessed, indicating that new behaviors can be learned from observing others. Further tests revealed that these effects transferred to the observation of mediated human models, as well as mediated non-human (i.e., cartoon character) models (Bandura, Ross, & Ross, 1963). Bandura, Ross, and Ross (1961) found that observing aggressive mediated models also led children to enact more aggressive behaviors, in comparison with children who viewed non-aggressive mediated models. This research was particularly significant because it supported claims that media models may be an equally powerful source of learning, and it demonstrated that behavior is not determined merely by directly experiencing rewards or punishments in the environment.

This observational learning process, therefore, is not thought to be spontaneous or only externally motivated, as suggested by earlier behavioral models of learning. Instead, social cognitive theory assumes that cognitions play an important role in the learning process, which is not thought to be merely impulsive, automatic, or unconscious, but rather is active and conscious (Bandura & Walters, 1963). In other words, social cognitive theory posits that learning is an internal process; that human behavior is goal-

directed; both externally and internally motivated; and self-regulated (Bandura, 2002). In addition, of particular import to the notion of observational learning is the basic assumption that individuals have symbolizing capability.

Symbolizing capability. Symbolizing capability enables the use of symbols, such as media imagery, to help one construct thoughts and store information for use in future judgments and behaviors. In other words, humans have the ability to make sense of the symbols they encounter, to cognitively organize these symbols and use symbolic communication to learn from observing (mediated) others. Bandura (1977, 1986) argues that we use symbols to comprehend our observations, and one's ability to decode and encode symbols we encounter is critical to our ability to adapt to our environment.

Of particular interest to the present study is one's ability to learn about gender through observations of media models. Bussey and Bandura (1999) suggest that this symbolizing capability allows for observational learning resulting in knowledge acquisition that influences individuals' own gender-related norms, attitudes, beliefs, and standards. Accordingly, social cognitive theory suggests that video game portrayals of the female body, for example, may be used to help form an individual's social and moral standards about gender-appropriate dress, ideal female body-type, and even evaluations of female (self)worth. In other words, it is the symbolizing capability that allows one to observe and cognitively organize mediated symbols so that they having meaning for that individual. Further, Bandura argues that media messages are a powerful source of information in our culture, and much of the symbols one encounters are in media messages. The pervasiveness and unique role of media in both reflecting and creating

culture (Bandura, 1986) suggests that media may be an important source of learning about gender norms and values.

Forethought capability. In addition to having the ability to use symbols, Bandura argues that our ability to use forethought is important to understanding how and why people adopt new behaviors. Forethought capability is our ability to anticipate what the consequences of our actions might be, and our tendency to set goals and plan behaviors (Bandura, 1986). In other words, people do not simply rely on past experiences and/or what is occurring in their present environment to make decisions about their course of action. Instead, people use their ability to symbolically think about the likely outcomes of behaviors and their own behavioral goals to determine their actions. Observations of gender models in the media serve as one source of information for individuals' ways of thinking about gender roles and standards, and may help guide their future gendered behavioral goals and expectations.

Vicarious capability. Also, critical to observational learning is the capability to experience things vicariously. Our ability to learn about the consequences of a given action by watching others' perform a behavior is known as vicarious capability (Bandura, 1986) and is an essential component of the observational learning process. Unlike operant conditioning, which assumes that learning occurs by enacting behaviors and then directly experiencing the consequences of those behaviors, social cognitive theory proposes that people can learn vicariously by observing others and the positive and negative consequences of their actions. For example, people can learn from others mistakes and have the opportunity to alter their own course of action to avoid making mistakes or

receiving similar negative consequences. Bandura also states that this vicarious capability allows us to learn rules and patterns of behaviors observationally, so that learning is much more effective and efficient than it would be if we had to gain this information through enactive learning (Bandura, 1977, 1986); this allows us to gain new skills and repertoires of behavior much more easily and quickly (Bandura, 2002). This skill moves beyond symbolizing capability, which allows humans to make sense of symbolic communication, and enables people to make judgments about what will happen if they choose to enact the modeled behavior; and these judgments are made without actually having to directly experience that behavior, but, rather, through observing others.

Self-regulatory capability. Another distinguishing feature of social cognitive theory is the idea that our behaviors are purposeful, goal-directed actions. The underlying assumptions of this idea are that people have the ability to regulate (i.e., exert some control over) their behaviors, and they have personal motivations and standards to help them do this (Bandura, 1977, 1986). Therefore, it is argued that there is an element of free will that is central to behavioral reproduction; people choose whether or not to engage in a behavior based on, not only external motivations, but their own preferences. This is an important contribution to the understanding of human learning, as it recognizes the individual agency that one has and the differences in courses of action that individuals will choose. Thus, social cognitive theory does not suggest that all individuals exposed to gender-related video game messages, for instance, will automatically adopt attitudes, beliefs, or behaviors consistent with these messages. Even if knowledge is successfully acquired, one may choose not to adopt this way of thinking or acting.

Self-reflective capability. The last capability that is central to the understanding of social cognitive theory is self-reflective capability. Self-reflection allows individuals to think about their experiences; evaluate their thinking on a give issue; and analyze the successes and failures of their courses of action and thought processes (Bandura, 1986). Bandura states that people look to the outcomes of their own and others' actions to verify "the correctness of one's own thinking" (Bandura, 2002, p.269). Moreover, Bandura argues that people can reflect on their own abilities to successfully carry out a course of action. This idea, again, recognizes the role of cognition and human agency in the observational learning process. Individuals make perceptions about their self-efficacy, or ability to successfully achieve behaviors.

Self-efficacy, along with a number of other key concepts, helps in explaining how and why observational learning occurs. Bandura describes four elements or processes of observational learning and posits that self-efficacy, identification, liking, motivation, and media content features all help facilitate learning.

The Processes of Learning

Observational learning consists of four processes: attention, retention, production, and motivation (Bandura, 1986, 2002). The first process in the social learning model is attention. For one to successfully acquire information from media content, or other such observations, one must first attend to the stimulus. After attended to, the information must be retained in memory for future use. Having stored the information offered by the media, the next step is to cognitively rehearse and even attempt the new behavior so that modifications can be made based on feedback. Once performance is satisfactorily

achieved, enactment of the behavior is influenced by one's motivation to use the acquired information. Negative consequences associated with the modeled events are not likely to motivate adoption, whereas positive consequences are likely to motivate individuals to utilize the observed information (Bandura, 1986).

However, not everyone will adopt or internalize what is modeled in a media message. Bandura (1986, 2002) argues that characteristics of the observer, the environment, and the media content itself affect these four observational learning processes and help determine whether or not learning will occur. Thus, what and whether or not an individual adopts a new way of thinking or a new behavior based on observing media models is highly personalized. Bandura identifies several key variables that are likely to facilitate learning from media.

Self-efficacy. First, self-efficacy is thought to facilitate the learning processes. Bandura defines self-efficacy as “a judgment of one's capability to accomplish a certain level of performance” (Bandura, 1986, p.391). The greater one's perceived self-efficacy, the greater the likelihood one will adopt and produce a behavior. Self-efficacy is increased due to a number of factors, including personal experiences of past successes, the persuasion used by others to boost one's confidence in one's abilities, and the observation of similar models successfully producing behaviors (Bandura, 1986). Most pertinent to this study is the influence of vicarious experience on self-efficacy. In this case, individuals who observe similar and attractive models are able to relate to these media images more greatly and vicariously experience the success of performing a

behavior. This particular source of self-efficacy is closely tied to the concepts of identification and liking of media models.

Identification and liking. Identification with and liking of media models both positively influence learning outcomes. More specifically, observational learning is thought to operate most effectively under conditions of identification and liking because individuals pay closer attention to the modeled behaviors and are more likely to imitate those behaviors (Bandura & Walters, 1963). Identification can be conceptualized as how similar one judges a model to be to oneself and the emotional attachment one has with that media model (Bandura, 1986). Additionally, identification is related to, but distinct from the concept of liking. Liking can be defined as positive feelings toward and enjoyment of a model, irrespective of similarity or emotional attachment to a model. Thus a viewer may like a model with whom they identify, but may also like a model with whom they do not identify.

Liking and identification play an important role in the attention and motivation processes of observational learning. First, higher levels of liking and/or identification encourage selective attention. Second, identification and liking of media models may influence a person's motivation to adopt a belief, attitude, or behavior. In particular, a high level of identification with a media model is related to greater feelings of self-efficacy in the individual. As explained earlier, one contribution to self-efficacy is the vicarious experience of models similar to oneself and/or deemed attractive increasing a person's feelings that they, too, could successfully perform the modeled behavior. Observing someone who you admire and/or someone who you perceive as very much

like yourself may increase your own confidence in your abilities to enact the modeled behavior, and thus improve your motivation to perform the behavior.

Accordingly, learning from video games should be facilitated by a person's feelings of identification with and/or liking of a video game character. Either one or both factors may apply. The result is an increase in the potential for learning from the range of gendered attitudes, beliefs, and behaviors portrayed in these games (Bandura 2002; Bussey & Bandura, 1999). To illustrate, although a male player may not identify with a female video game character, he may like the character, thereby enhancing possible learning. For the female player, both liking and identification may be relevant, increasing the chance for internalization of the content.

Motivation. Related to both self-efficacy and identification and liking is the concept of motivation. Social cognitive theory argues that an individual's motivation will influence the adoption of new attitudes, beliefs, and behaviors. The higher a person's self-efficacy for a given behavior, the more likely they are to be motivated to perform that behavior, due to their perception that they will succeed in this performance. This suggests that identification and liking are also related to one's motivation, given the contribution of both to feelings of self-efficacy. Although identification and liking may increase motivation to replicate behaviors and standards modeled by media characters, Bandura (2002) primarily emphasizes the role that rewards play in the motivation process.

Specifically, individuals are motivated to adopt behaviors when positive incentives are associated with those behaviors (Bandura, 1977). Unlike early behaviorism

models of learning, Bandura argues that motivation stems from both internal and external sources, and even the absence of modeled consequences may serve as motivation to adopt a behavior or way of thinking. In terms of external motivators, the observation of negative consequences associated with a modeled behavior will produce disinhibitory effects, reducing one's motivation and discouraging the adoption of the behavior (Bandura & Walters, 1963; Bandura, 1986). Traditionally, the modeling of costs or negative outcomes associated with a behavior is presumed to decrease the likelihood of behavioral adoption. In terms of video games, despite the inconsistency in action during game play across players and between game playing sessions, there are certainly consistent messages communicated about the rewards and/or consequences of different types of behaviors. For example, sparing the life of, or failing to kill, an enemy in a video game often results in negative outcomes. Players who do not kill opponents may lose points, not advance to the next level, or their character may even die as a result. In this case, the motivation to adopt violent, aggressive behaviors may be high, and the motivation to adopt peaceful, cooperative behaviors will probably be low.

Similarly, positive consequences associated with behaviors will likely motivate individuals to adopt the displayed behaviors. For example, killing other characters is routinely rewarded in video games through the awarding of points, new skills, and access to more advanced levels of the game; indicating that violence yields positive results. So, the player understands and continues striving to attain the external rewards associated with the aggression. According to social cognitive theory, these rewards serve as incentives to adopt the modeled behaviors.

In terms of the characterization of women in video games, content analytic research indicates that females are underrepresented (Dietz, 1996; Glaubke et al., 2001), thus, the mere presence of a prominent female video game character may serve as a reward. When playable female characters do appear in video games, they are typically overtly sexualized, wearing promiscuous dress and sometimes engaging in seductive acts (Dietz, 1996). Notably, however, these characters are often high status, powerful characters, such as the heroic figures more commonly associated with men. Therefore, these female models are privileged or rewarded, in a sense, by being afforded the opportunity to fulfill what is most often a male role; the role of the video game hero. So, although these female characters are typically confined by certain traditional feminine ideals (e.g., a sexualized, feminine appearance), the mere appearance of them in these prominent video game roles may serve as a reward. Accordingly, gamers may be motivated to adopt beliefs and standards that are in line with these sexualized portrayals, resulting in the desire to be like the characters (among women) and to judge self and other based upon the characters (among both men and women). In sum, the rewarding of certain actions and images with power, status, points, high scores, bonuses, advancement to new levels, and congratulatory statements encourage the adoption of these practiced behaviors and communicated gender standards in video games.

In addition to external motivations, social cognitive theory posits that people have internal sources of motivation, which guide them in determining which behaviors to adopt. The ability of individuals to self-regulate their thoughts and behaviors results in the ability to govern one's own motivational standards, which are used to judge the

desirability of behaviors (Bandura, 2002). For example, feelings of expertise, skill, or pride when achieving a goal while playing a video game may serve as an internal motivation to adopt the video game behavior in the real world. Behaviors that make us feel good about ourselves or that we *think* will make us feel good about ourselves will likely be adopted, particularly if external motivators are similarly positive in nature.

Media content features. In addition to the aforementioned influences, Bandura (2002) identifies attributes of media stimuli that are likely to increase the potential for observational learning. He argues that specific features of media content as well as the varying attributes inherent to different media play a role in social learning. In terms of garnering attention (the first process necessary for observational learning), the realistic and often stunning graphics of video games would be expected to play an influential role. The more distinctive/notable the content, the greater the chance it will gain and maintain attention. Indeed, the cornerstone of the gaming industry's success has been its focus on innovative technology and cutting edge imagery. With regard to the retention process, social cognitive theory suggests that repetition of messages positively influences the adoption of attitudes, values and behaviors depicted in the media (Bandura, 2002). Accordingly, the repetitive action sequences in video games alongside the tendency for gamers to repeatedly play the games would likely encourage retention of the messages provided by the gaming experience.

Moreover, unlike traditional media, video games allow individuals to actually play the character depicted on the screen, likely increasing the level of identification felt with this mediated model. Individuals take on the persona of the video game character,

control the actions of the character, and ultimately influence that character's story or outcome. This "active participation" (Gentile & Anderson, 2003) increases the likelihood that one will learn from the video game due to increased identification and, perhaps, self-efficacy. The relationship between a player and a video game character is likely to be stronger than the relationship felt between a movie viewer and a movie character, for example, where the same level of active participation is not required. This active participation with video games is likely to heighten one's attention to it and one's feelings of identification with the mediated models. This makes for a fertile environment for learning to occur, given the assumptions of social cognitive theory. Thus, it reasons that video games may serve as an important source of learning for game players.

Of course, as mentioned earlier, Bandura (2002) is careful to note that individuals additionally consider their own morals and standards alongside those modeled in the media. As a result of this self-regulatory capability, people are able to maintain agency over their thoughts and actions. Nonetheless, through the process of social learning from media, moral standards may shift resulting in the internalization of images modeled in the media. In applying the social cognitive model to gaming, what becomes abundantly clear is that the features of video games and game play are likely to enhance the potential for modeling. Consequently, it is essential to better understand the experience of video gaming and how the experience of participation with this medium differs from more traditional media such as television. The literature on 'presence' will serve this purpose. By incorporating presence into the social cognitive theory framework, our understanding of how video games operate uniquely in this learning process can be better recognized.

Presence

Presence is a concept that has been utilized in media research to better understand people's experiences with mediated environments. The basic idea of presence is "the perceptual illusion of nonmediation" (Lombard & Ditton, 1997, p.11) experienced while interacting with a mediated environment. In other words, presence is the feeling of the media environment being real and no longer mediated. Thus, feeling 'present' in a mediated environment is being immersed in it (Tamborini & Skalski, 2006), such that one forgets, or overlooks, that the medium/technology is creating the environment and that it is not real. When one experiences presence, they may experience the feeling of being physically located in a mediated environment (McMahan, 2003; Schloerb, 1995; Sheridan, 1992; Steuer, 1992; Witmer & Singer, 1998) and/or the feeling of interacting with a real environment and real beings (Lee, 2004; Tamborini & Skalski, 2006). In most cases, a person knows that the medium is generating the environment, but they "illogically" suspend or overlook this knowledge and feel and act as if the environment is real (Lombard & Ditton, 2006, p.9).

In general, individuals experience varying levels of presence in their daily lives and during their media interactions. To illustrate, when a person is shopping in a grocery store they may experience a variable sense of presence. On the one hand, they may feel a part of the environment and attend to the goods, people, sounds, etc. of this physical locale. On the other hand, they may be mentally located elsewhere, reviewing the day's events, planning the evening's events, etc. in their mind. Thus, if one is mentally located elsewhere, it is possible that their presence in the grocery store environment is

diminished. They might not feel a sense of being there in that environment. However, the use of the term ‘presence’ in this study (and related research) refers to one’s experience with a *mediated* environment. In addition to conceptualizing presence in these general terms specified above, some media researchers have found it helpful to further define the experience of presence with virtual/artificial environments. The following three dimensions of presence are often used to this end (Lee, 2004).

Spatial Presence

In the case of video gaming, it is argued that players experience high levels of presence when they are so immersed in the game that they forget that the game world they are viewing is merely a mediated world. The player may be physically located in one place (e.g., their living room) yet feel like they are present in the game environment. This first dimension of presence is referred to as ‘spatial presence,’ where one feels like they are “there” in the mediated environment (Tamborini & Skalski, 2006), or physically located in this virtual place. Characteristics of a video game can enhance this state. For example, how vivid and involving the game is will affect one’s feeling of spatial presence (Tamborini & Skalski, 2006; Witmer & Singer, 1998). The graphics, sounds, narrative, and the variety of actions a player can perform all contribute to how involving and vivid a game will be for players.

Social Presence

In addition to experiencing spatial presence, one may experience a second dimension of presence, termed ‘social presence.’ According to Lombard & Ditton (1997), this may occur when a consumer interacts with the medium and the social actors within

the medium as if it were real human-to-human communication. People interact with video game characters, for example, using social rules that they would utilize in the real world (Tamborini & Skalski, 2006). Players often follow cultural and social rules governing use of space when communicating with others. For instance, players position their character at what is considered a socially appropriate distance from other characters, based on their character's relationship and status to the other characters. Additionally, players may adhere to basic conversation patterns and norms, approaching and speaking with characters in the game using the same salutations and language patterns that one would use when interacting with real people. Last, Tamborini and Skalski (2006) state that players very often use group-based stereotypes (e.g., gender, age, and race stereotypes) as they would when interacting with people in the real world. The rules they have learned to use when interacting with people in the real world are applied to interacting with these virtual beings in this game environment. This highlights the idea that video game playing can be considered a social experience (Lombard & Ditton, 1997), where players feel as if they are interacting with real beings and a real entity, rather than computer generated characters and environs. Video game players experiencing social-presence treat the game characters and objects not as if they are computer-generated but as if they are human or real. In other words, they experience feelings of interacting with real social actors, rather than computer-generated actors, and apply their schemas of human interaction to this computer-mediated-communication.

Self-Presence

Last, video game players may experience a sense of 'self-presence' while playing

a game. This dimension of presence refers to “a state in which users experience their virtual self as if it were their actual self, perhaps even leading to an awareness of themselves inside the virtual environment” (Tamborini & Skalski, 2006, p.227-228). This issue of self functions in two ways simultaneously. First, it is argued that in experiencing self-presence, the real self is mapped onto the character a gamer uses while playing, and second, that character’s attributes may be used to evaluate the real self of the player outside of the game, in the real world. In other words, players may experience a sense of self-identity (Lee, 2004) while playing their video game character; as they take on the role of a wizard, fighter pilot, warrior, etc. they experience this character as a graphic representation of the self. Also, it is suggested that this experience may lead to changes in their self-concept. In this case, it is argued that as a player takes on the role of their video game character, mental representations of their real self are recalled and affected/altered by the mental representations they have generated about their virtual self (Biocca, 1997). Tamborini and Skalksi (2006) explain that both our body image and identity, for example, may be affected by our relationship or interaction with our virtual selves in video games.

This suggests that the experience of presence with a video game may play an important role in determining the effects of game play on one’s perceptions of their body and on their gender identity. The greater the level of presence felt, the more likely one is to use the traits of the video game character as a point of social comparison for making judgments about the self and others. For the present study, this suggests that higher levels of presence with a game may result in greater gender-related learning outcomes. For

females, this means that the portrayals of the bodies of the female video game characters will be more likely to be vicariously learned and adopted as a standard against which to judge their own bodies and self worth. Additionally, for both male and female players, it is likely that higher levels of presence would heighten observational learning of gender-related beliefs and attitudes.

Presence as an Individualized Experience

It is important to note that it is not necessary for one to experience all three dimensions of presence in order to have a high level of presence, however the depth of this experience is likely to increase as individuals' experiences in these three domains increases. So, although some scholars do not discuss or recognize these different dimensions, they do help to explicate the concept of presence (Lee, 2004) and provide a deeper understanding of what is happening when a gamer feels 'present' in the video game world.

Additionally, it is important to recognize that the experience of presence is highly individual, meaning that although the characteristics of a media product may encourage feelings of presence, each individual will experience presence differently based on innumerable factors. A person's comfort with using a technology, past experiences with similar technology, personality traits, and situational factors, for example, may all help determine whether an individual will experience a low or high level of presence while playing a video game. For instance, it is argued that a player's involvement with the game influences their level of presence. Involvement is defined as the extent to which a gamer is able to interact with the video game environment; how well they can manipulate

the environment; and how well the environment responds to the actions taken by the gamer (Witmer & Singer, 1998). Some games afford players a wide range of actions from which they can choose, whereas others are designed in such a way that players are severely limited in how much they can explore the game environment and interact with virtual objects and characters. Video games that are designed well typically provide players with a great variety of things they can do in the environment, and are very responsive to the players' movements of their character, etc. The suggestion of the literature is that the greater a player's involvement in a game, the greater the experience of presence is likely to be. And although the quality of a video game may contribute to player involvement this experience ultimately varies based on the individual.

In the experience of presence, other individual differences may also come into play. Gamers who choose to attend to the mediated stimuli rather than the stimuli in their physical location are more likely to experience presence (Witmer & Singer, 1998). This idea of selective attention suggests that even if a group of individuals all play the same video game with high quality graphics, a strong narrative component, and with a high potential for involvement with game characters and objects, each individual will experience a different level of presence based on their attention to the game, as well as, perhaps, other factors such as how much they like the game, their mood state, and personality. So, while the level of interactivity of a video game is important to the experience of presence, ultimately presence is an experience that resides within each individual, not the game itself.

Presence and the Facilitation of Learning

Notably, evidence in the gaming literature suggests that presence is positively related to learning from video games. Garris et al. (2002) cite Hannifin and Hooper's (1993) work on cognitive immersion and learning to demonstrate that increased immersion in games facilitates learning from those games. Thus, it reasons that presence would have a similar effect on learning outcomes. Findings from Tamborini et al.'s (2004) study on video games and violence support this notion and underscore the important role of presence in predicting outcomes associated with video game play. Their results reveal increases in aggression following violent/aggressive video game play to be positively related to the gamers' experience of presence during game play. In addition, the more present an individual is with the video game the more likely they are to identify with the characters and to be influenced by their gaming experience (Kioussis, 2002; Pinhanez et al., 2000).

Social cognitive theory provides an understanding of why presence may heighten learning effects resultant from video games. By mapping presence onto the social cognitive model, the role presence plays in the learning process is elucidated. First, presence may play an important role in the attention processes of observational learning. Higher presence during game play means that the player is more cognitively and perceptually immersed in the game, paying more attention to the features of the game than a player who experiences low presence. Further, they are more likely to identify with the mediated models if they experience a high level of presence with the game characters. In both cases, social cognitive theory argues that the potential for learning from the game

would be increased due to heightened attention to game content and greater identification with the characters.

Second, presence likely influences the level of motivation a player has to adopt attitudes, beliefs, or behaviors consistent with the video game messages. This may occur on a couple of different levels. On the one hand, presence may increase identification with the mediated models, resulting in greater perceived self-efficacy and greater relevance of the video game messages to oneself. As previously mentioned, the concept of self-presence suggests that presence is positively related to observing video game models and using the knowledge garnered from this observation to reflect on one's own identity and self worth. This may be facilitated by one's identification with the video game characters. Moreover, the level of identification with video game characters is thought to be higher in comparison to less interactive media, such as television. Given the important role of identification within the social cognitive model, this association is of considerable consequence. The nature of video game play lends to, perhaps, greater learning outcomes in comparison with traditional media due to the unique features of the interactive gaming environment.

In addition to this explanation, one might also reason that presence affects one's motivation through the influence of vicarious incentives on learning. The higher a player's experience of presence is with a game, the more likely they are to value the observations they have made and use them to make future judgments in the real world. In other words, presence may serve to increase the likelihood that a player will utilize information consistent with their observations of the game to determine whether or not it

would be fruitful for them to adopt similar attitudes, beliefs, or behavioral patterns represented in the game.

Taken together, these ideas suggest that presence may help to facilitate learning from video games by increasing the likelihood that individuals will attend to, identify with, and be motivated to adopt game consistent information and behaviors. In essence, presence may heighten the occurrence of effects that enhance observational learning, as specified by social cognitive theory. Of particular interest to this study is the role of presence in learning about gender. In order to better understand what the potential learning outcomes may be, the content analytic findings of portrayals of females in video games are discussed next.

PORTRAYALS OF FEMALES IN VIDEO GAMES

The potential learning that may occur from video games has great importance when considering the portrayals of women in video games. Video games, similar to television, film and other media, communicate messages about race, gender, and age, for example, as well as behavioral norms and associated consequences. They have a narrative function, communicating to gamers particular stories (Juul, 2005); stories about good and evil, being male or female, White or Black, etc. Of particular import to this study are video games' stories about gender. More specifically, this study is primarily concerned with the sexualization of women in video games and the subsequent gender-related messages these images may convey to consumers.

Not unlike other media, video games offer a narrow range of roles to female characters. Overall, research suggests that when female characters appear in video games they most often serve as victims or prizes (Provenzo, 1991; Dietz, 1998; Sherman, 1997) and occupy stereotypical gender roles such as sexualized beings and objects of sexual desire (Beasley & Strandley, 2002; Dietz, 1998; Ivory, 2006). Ward and Harrison (2005) suggest that this frequent sexualization of female media characters is the image that is most concerning, stating:

Women's bodies are habitually presented as objects for others' viewing pleasure, objects used to beautify and adorn. Although showing a woman as a ... sexual being is not inherently problematic, it becomes a problem if they are almost

always shown this way, which normalizes objectification and provides a limited perspective on women's humanity. (p.3)

Video game publications, such as *Girls in Gaming*, emphasize the centrality of sexuality to female video game characters. Female characters are posed in provocative clothing and suggestive positions in such publications, reinforcing the role of the female video game character as that of a sex object. In a *Playboy*-like fashion, these characters serve as pin-up girls of sorts and are primarily discussed in terms of their sexiness and beauty. Content analyses of video games support this generalization, indicating that women are frequently depicted as sexual objects in video games (Beasley & Strandley, 2002; Dietz, 1998; Ivory, 2006). For instance, Glaubke, et al. (2001) indicated that female characters were two times more likely than male characters to be depicted wearing revealing clothing, resulting in greater sexualization of female characters in appearance in comparison to their male counterparts. Similarly, video game trailers, reviews, and advertisements emphasize the sexuality of female characters. Ivory (2006) reported that video game reviews were 12 times more likely to mention the sexual attractiveness of female characters than male characters, and nearly half of all game reviews featuring images contained sexualized images of females.

Generally, content analytic research reveals that females are vastly underrepresented in popular video games and are often hypersexualized when depicted (Beasley & Strandley, 2002; Dietz, 1998; Ivory, 2006). Indeed, Glaubke, et al. (2001) founds that "female sexuality [is] often accentuated with highly revealing clothing" (p.14), ensuring the prominence of the sexualized image of females in video games. For

example, Beasley and Strandley (2002) found that 70 percent of female characters in Mature-rated video games and 46 percent of female characters in Teen-rated video games had voluptuous cleavage, 86 percent of female characters were depicted wearing clothing with low/revealing necklines, and 48 percent of female characters were dressed in outfits with no sleeves. This is in contrast to only 22 percent of male characters being depicted in clothing with no sleeves and 14 percent of male characters wearing clothing with low/revealing necklines. Further, Glaubke, et al. (2001) reported that one fifth of all female characters in top-selling video games modeled either unhealthy or unrealistic body types, and females were twice as likely as males to be shown wearing revealing clothing.

The sexualization of women involves the use of female bodies in a way that renders them the object of a sexual gaze or perception by others; their bodies are objectified and they are reduced to that of a sex object. Typically, the sexual objectification of women in the media is for the purpose of the 'male gaze,' reinforcing the status quo of the male gender as the powerful and active gender, and the female gender as the less powerful and more submissive gender in our society (Inness, 1998). This sexualization, best thought of as occurring on a continuum rather than as a category, is most often defined through the appearance of females in the media – by the degree to which their body is exposed and their figure idealized with larger breasts and a smaller waist. In particular, in content analytic research (e.g., Beasley & Strandley, 2002; Glaubke, et al., 2001), female video game characters are coded as being more sexualized based on the amount of skin bared in the chest, buttocks, arms, and stomach regions.

Additionally, the size of the breasts and waist of the character is used to determine the level of sexualization, with large breasts accompanied by a small waist indicating a higher level of sexualization. So, the presence of bared skin, large breasts, and a small waist define a female character as being more sexualized in appearance. More average-sized female bodies and modest clothing are coded as less sexualized.

Thus, it is difficult to categorize a character strictly as sexualized or non-sexualized, as there are degrees of sexualization; however the attributes described above are used to place a character on a continuum of sexualization, enabling one to determine whether or not a character is highly sexualized or less sexualized, or somewhere in between. The present study is concerned with measuring the effects of playing a highly sexualized video game heroine and a less sexualized (i.e. falling on the low end of the sexualization continuum) heroine. For ease of discussion, the characters used in this study will be referred to as either sexualized or non-sexualized, although, strictly speaking, the “sexualized” character is conceptualized as being highly sexualized and the “non-sexualized” character is conceptualized as being low in terms of her sexualization.

Notably, the previously discussed portrayals of females in video games have changed very little over the past two decades. The majority of video games feature only male characters, and when female characters are present they are often seen in stereotypical gender roles, playing the “damsel in distress” (e.g., Jen in *Prey* [2006], Princess Zelda in *The Legend of Zelda: A Link to the Past* [2002]) or submissive background characters (e.g., female characters in *Grand Theft Auto* [2004]) (Dietz, 1998; Glaubke et al., 2001; Ivory, 2006; Sherman, 1997). For example, depictions of princesses

and other hapless female characters in need of rescue are plentiful in video games. Dietz (1998) found that 21 percent of female characters in Nintendo and Sega Genesis games were depicted as victims, and that these characters were most often sexualized. Such portrayals create an image of women as weak, submissive, and dependent. And most often in these games submissive female characters are used for sexual purposes and/or serve as victims of violence.

In addition to these types of submissive roles, many female characters appear as background characters who serve the purpose of sexual conquests (Dietz, 1998; Ivory, 2006). A number of video games in the “adventure” gaming genre are structured around male characters who seek the sexual companionship of (sexualized) female characters. For example, *Leisure Suit Larry* and *Playboy Mansion* both feature a male protagonist whose primary goal is to form sexual relationships with female characters. The only purpose of the female characters is to serve as a sexual partner for the male character. Similarly, *Grand Theft Auto*, a game series that has sold over 30 million copies (Snider, 2004), contains portrayals of women as prostitutes who can be hired by the male protagonist for engagement in sexual relations. Unlike *Leisure Suit Larry* and *Playboy Mansion*, however, *Grand Theft Auto* allows (and encourages) players to kill the prostitutes after the sexual “services” have been rendered, so that players may be refunded the money spent on the sexual encounter. This accompaniment of violence with the sexualization of women is not uncommon in video games. In fact, some games encourage players to engage in sexual relations with women and then assault or kill them

(Dietz, 1998; Smith, 2006). Such treatment of women is rewarded with points or money during game play.

However, females are not just subjugated to the role of the damsel in distress or submissive background characters; they are sometimes granted the role of the hero, but most often they are limited to the role of the *sexualized* female heroine. Thus, even when depicted as the protagonist, women are confined to roles as sex objects as their sexuality is their most prominent feature (Dietz, 1998; Ivory, 1996; Mikula, 2003). So, although the heroines are powerful characters, they are most notably defined by their sexuality.

In general, females are underrepresented in video games, accounting for only approximately 17 percent of all characters (Glaubke et al., 2001). Additionally, Glaubke et al. (2001) found that only 12 percent of all characters in video games were female characters that could be controlled by the player. In other words, not only are female characters few and far between, player-controllable female characters are especially uncommon in video games. So, the opportunities to play a female heroine are few. Content analytic findings reveal that when females are featured in the seemingly counter-stereotypical role of the strong heroine, they are typically presented as scantily clad and hypersexualized (Beasley & Strandley, 2002; Dietz, 1998; Ivory, 2006), with bodies featuring very large breasts and small waists. For example, the character Lara Croft in the *Tomb Raider* video game series has garnered a great deal of attention for her hypersexualized appearance (Smith, 2006).

Lara Croft is a strong female protagonist who fights her own battles and conquers most challenges independently. Although Lara Croft defies the stereotype of the weak,

helpless female characters through her intellect, independence, and strength, she is still contained within or limited to traditional notions of feminine sexuality. Her hypersexualized female body and revealing clothing sexualizes her strength and power. Appropriately, Smith (2006) refers to Lara Croft as a “femme fatale” whose body is characterized by “unrealistically large breasts and disproportionately small [waist]” (p.66). Revealing clothing and an exaggerated feminine form are characteristically used to emphasize the sexuality of most video game heroines.

Thus, although Lara Croft, for example, conforms to normative characteristics of an action hero (i.e. male action hero) by demonstrating strength, speed, intellect, and independence (Richard & Zaremba, 2005), her sexuality is her defining feature, relegating her status to that of an object to be gazed upon (Mikula, 2003). In other words, her role as an action hero is tied to her sexuality and body. Video game producers likely rely on this stereotypical portrayal of females for a number of reasons, one of which may be to appeal to male consumers. As Flynt (2006) remarks, the video game artist seeks to “[create] a work of art that induces gazing” (p.17). He refers to this process as the ‘seduction’ of gamers through the creation of appealing, and even irresistible, visual material that renders gamers spellbound, inviting their gaze. The hypersexualization of the female body in video games likely serves this purpose of the seduction of the consumer – primarily the male consumer. Such portrayals, however, reinforce the role of women as sexual objects.

From the perspective of social cognitive theory, exposure to such video game images of women has the potential to result in negative gender-related outcomes. If

gamers adopt the images of women seen most commonly in video games as standards for women in society, it would be expected that not only would male conceptualizations of females be deleteriously impacted but women's self concept, self-esteem, and even social standards may also be influenced. Although it could also be the case that exposure to images of strong, powerful female heroines in video games may empower girls and women through these characters' embodiment of female success, strength, and intelligence, the overwhelming presence of female sexualization is likely to diminish positive effects that may emerge.

In other words, blending a stereotypical and counter-stereotypical attribute into female heroines complicates this relationship. On one hand, powerful female characters are strong, bold, intelligent, and independent, but on the other hand they are 'made-up' (with makeup and clothing), sexualized, and objectified (Inness, 1998). These latter characteristics are what maintain females' vulnerable and non-threatening status (Inness, 1998). Thus, the powerful role of the female heroines is diminished by the emphasis on their physical feminine appearance. In particular, it is the sexualization of female characters in video games that seems likely to negatively influence gamers' perceptions of self and women in society. In order to test this relationship the current experimental study is proposed.

THE PRESENT STUDY

The present study assesses the influence of exposure to sexualized and non-sexualized video game heroines on players' self-esteem, gender stereotyping, body image, and self-efficacy. From a social cognitive theory perspective, it would be expected that sexualized, stereotypical portrayals of female characters would lead to lower self-esteem and self-efficacy in female players and increased gender stereotyping in both male and female players. Similarly, it is to be expected that playing a non-sexualized (thus, counter-stereotypical) female character would result in higher self-esteem, self-efficacy, and less gender-stereotyping. These hypothesized relationships will be moderated by presence.

Findings for Funk and Buchman (1996) lend support to the assertion that video game play may be negatively associated with self-esteem and self-efficacy in women. Their study investigated the influence of playing video games on adolescent self-concept and reported that video game playing is negatively associated with self-esteem for girls. For girls, then, as video game playing increased their self-esteem decreased. However, Funk and Buchman only examined the influence of time spent playing video games, and did not specifically test the effects of gender portrayals in video games. Further, they did not identify the causal mechanisms that may be at work here. The present study will help elucidate the processes underlying this relationship and lend insights into why female self-esteem may be negatively associated with video game playing by examining the effects of playing specific types of female characters. It reasons that the type of character played may have an influence on the self-esteem and self-efficacy in female gamers.

More specifically, it is expected that playing the sexualized female character will result in lower self-esteem and self-efficacy than playing the non-sexualized female character or no video game at all.

In the domain of traditional media, it is clear that exposure to sexualized images of women has the potential to negatively influence female's self-concept (Lavine et al., 1999). Viewing idealized images of female bodies has been repeatedly linked to lower feelings of worth in female consumers. Similarly, then, it is expected that playing a sexualized video game heroine would result in lower feelings of self-worth in female players than playing a counter-stereotypical character or having no media (i.e. video game) exposure at all. Thus, the following hypothesis is predicted.

H1a: Playing a sexualized female character will result in lower self-esteem in female participants, in comparison to playing a non-sexualized female character or no video game.

H1b: Playing a sexualized female character will result in lower self-efficacy in female participants, in comparison to playing a non-sexualized female character or no video game.

Females begin to use the media as a key source for social comparison in terms of appearance during adolescence, particularly regarding body image (Botta, 2003; McCabe, Ricciardelli, & Finemore, 2000). Although males certainly also use the media as a source of social comparison, research suggests that females' media use is more strongly related to body image and is a stronger predictor of body satisfaction (Botta, 2003; Harrison, 2000; McCabe, Ricciardelli, & Finemore, 2002; Ricciardelli & McCabe, 2001). Given

this, the sexualization of women in video games is likely to also contribute to perceptions that the female body is a sexual object to be gazed upon and that the desirability and power of a woman are intrinsically tied to this feature. Thus, female gamers may adopt the idea that sexuality and physical appearance are of primary import to their value as women. This is consistent with social cognitive theory assertions implicating media in the process of learning gender roles (Bandura & Bussey, 1999). Social cognitive theory would suggest that female gamers might adopt the modeled female images as a standard to which they should judge their own appearance and worth. Accordingly, it would be expected that exposure to sexualized images of women in video games would result in lower body esteem (i.e., feelings of satisfaction with one's own body) and increased self-objectification (i.e., concern with one's appearance; see Noll & Frederickson, 1998) in female gamers. To test this assertion, the following hypotheses are proposed:

H2: Playing a sexualized female character will result in lower body esteem in female participants, in comparison to playing a non-sexualized female character or no video game.

H3: Playing a sexualized female heroine will result in higher self-objectification in female participants, in comparison to playing a non-sexualized female character or no video game.

In addition, the literature on presence and social cognitive theory together suggest that when an individual experiences a high level of presence they are more likely to be influenced by the game content. Thus, presence is anticipated to moderate the relationship between exposure and the outcomes identified in Hypotheses 1-3.

H4: Video game character and player's level of presence will interact in predicting subsequent self-esteem, self-efficacy, body esteem, and self-objectification among female players, such that higher levels of presence will enhance the effects described in hypotheses one, two, and three.

The effects of exposure to such images are likely not isolated to women. Of equal consequence are the implications of gaming on male users' attitudes toward women. In order to examine this relationship, the effects of exposure to sexualized female heroines on male players also will be assessed. Although Eastin (2006) found that playing a character of the same sex increases presence, male participants may nonetheless experience great involvement with the game. Consequently, video gaming may increase male (and female) gamers' negative attitudes toward women and girls, and, more generally, may serve to encourage and/or justify negative and unfair treatment of women. Accordingly, based on the tenets of social cognitive theory and the findings from empirical research on the effects of exposure to sexualized images of women in traditional media, it is expected that video game play would result in negative attitudes and beliefs about women in society. Thus, the following hypothesis is offered.

H5: Playing a sexualized female character will result in greater belief in traditional gender roles and unrealistic female body expectations for all participants, in comparison to playing a non-sexualized female character or no video game.

In addition to the hypothesized main effects for condition, it is possible that sex

may moderate this relationship. Previous research does not provide support for specific predictions in terms of how the sex of the participant may, first, simply affect one's gender role beliefs and perceptions of the ideal female body, and second, how sex may interact with condition in determining these outcomes. To address the possible role of sex in this relationship, the following research question has been developed.

RQ1: Will sex of the participant affect gender role beliefs and expectations of the female body, and will the sex of the participant interact with condition to determine these gender-related outcomes?

It is expected that presence will also moderate this relationship. Hypothesis six proposes this relationship between presence and the predicted outcome proposed in hypothesis five.

H6: Video game character and level of presence will interact in predicting subsequent beliefs in traditional gender roles and unrealistic female body expectations for male and female participants. Specifically, higher levels of presence will result in greater belief in traditional gender roles and unrealistic female body expectations for participants who play the sexualized female character, in comparison to playing a non-sexualized female character or no video game.

Past research does not suggest, however, whether or not, or how, male participants will be affected in terms of self-esteem, self-efficacy, body esteem, or self-objectification. For men, exposure to sexualized images of women may have no effect on these variables. It reasons that men will not look to female characters as a standard along

which to compare their own gendered self, thus resulting in no effect on their self-esteem, self-efficacy, or body image. On the other hand, it is possible that playing a female character that is styled for the 'male gaze' may increase male's feelings of power and pleasure, resulting in increased self-esteem and self-efficacy based on their ability to control this sexualized character. The following research questions explore this issue.

RQ2: Will there be differences in self-esteem and self-efficacy for male participants based on the type of female character they play?

RQ3: Will there be differences in body esteem and self-objectification for male participants based on game play of either or both sexualized and non-sexualized characters?

RQ4: Will the relationship between character and male self-esteem, self-efficacy, body esteem, and self-objectification be moderated by presence?

METHOD

Pilot Study

A pilot study was conducted to determine the video game stimuli. In particular, the pilot study helped to ensure that the two video games: (1) effectively feature the female images under investigation [i.e. one highly sexualized heroine and one less sexualized heroine]; and (2) are similar to one another except in their physical portrayal of the female heroine. Three top-rated video games were played and evaluated by 56 undergraduate students enrolled in a communication course. Females ($n = 34$) made up 61 percent of the sample. The majority, approximately 71 percent, of the participants were White ($n = 40$). The average age of the participants was 20 years old. Each participant was randomly assigned to play a video game for 15 minutes and fill out a survey about the game and its character after game play was concluded.

The survey asked questions about the difficulty of game play; the level of violence in game play; how engaging the video game was; and how enjoyable the game was to play. For example, participants were asked to respond to the following questions on a seven-point likert scale: “How violent was your video game play?,” “How difficult was the game to play?,” and “How involving was the video game?” Additionally, the survey contained 11 items from the Presence Scale.

Second, participants responded to questions about the characteristics of the character they played. They were asked to identify the gender, approximate age, and race of the character they played and to assess their character based on adjectives and phrases set on a seven-point semantic differential scale. Participants were asked to judge their

character based on the following adjectives: attractive/unattractive; strong/weak; aggressive/submissive; violent/passive; scantily clad/fully clothed; revealingly dressed/conservatively dressed; skillful/incompetent; good/evil (moral character); sexualized/not sexualized. The responses to these semantic differential items were used to assess the perception of the portrayal of the female character in each game. See Appendix A for the pilot study questionnaire in its entirety.

One video game, *Tomb Raider: Legend* (2006), emerged as the best video game to use for both the sexualized and non-sexualized female character conditions. Notably, this game is a top seller, selling over 2.6 million copies within a few weeks of its April 11, 2006 release in the U.S. (www.tombraidercentral.net). Lara Croft, the featured female character in this game, is depicted in a highly sexualized manner throughout most of the game, however some portions of the game feature Lara in less sexualized, conservative attire that does not reveal bare skin (i.e. bare shoulders, stomach, buttocks, or chest) or showcase her body in a highly sexualized way. See Appendix B for images of each Lara portrayal. The “sexualized” portrayal is consistent with how content analytic work codes highly sexualized video game characters, and the “non-sexualized” portrayal reflects how characters who are not, or who are very minimally sexualized, are coded.

The character, Lara, differs only in appearance throughout the game, and her skills, actions, and weaponry remain consistent. Thus, internal validity is strengthened as the consistency in game play with the two different Lara portrayals ensures that the only content feature varying across conditions of game play is the degree of sexualization of the character. In other words, confidence is increased that the experiment is actually

testing the difference between playing a sexualized and non-sexualized female character, and any emerging differences between gaming conditions are due to the character portrayal and not differences in type of game play, quality of game, etc.

The pilot study participants confirmed that the two gaming conditions were equivalent and identified no significant differences in game play or characteristics, other than the sexualization of appearance of the two different Lara Croft portrayals. In other words, participants did not report any significant differences between the two portrayals in terms of: aggression, $t(33) = -1.41, p = .17$; strength, $t(33) = -2.36, p = .82$; attractiveness, $t(33) = -0.56, p = .58$; skill, $t(33) = -1.62, p = .12$; violence, $t(33) = .03, p = .98$; moral character, $t(33) = 0.09, p = .93$; game violence, $t(33) = -1.09, p = .28$; game difficulty, $t(33) = -1.44, p = .16$; game enjoyment, $t(33) = 1.22, p = .23$; or quality of game graphics, $t(33) = 0.22, p = .83$. The level of presence experienced while playing the two different portrayals also did not differ significantly, $t(33) = 0.88, p = .39$. (See Appendix C for the game instructions, which detail what happens during the game play for each character portrayal.) Additionally, there was general agreement in terms of the characters' age, race, and sex. All of the participants identified their character as being female and of adult age, and approximately 94 percent identified their character as White.

However, participants did rate the characters as being significantly different in terms of their clothing, $t(33) = 6.84, p = .00, r^2 = .59$, indicating that the “sexualized Lara” ($M = 1.18, SD = .39$) was in fact scantily clad, whereas the “non-sexualized Lara” ($M = 4.70, SD = 2.03$) was deemed to be more fully clothed. Similarly, participants found the “sexualized Lara” to be dressed in a much more revealing manner compared to the

“non-sexualized Lara,” $t(33) = -4.77, p = .00, r^2 = .41$. The “sexualized Lara” ($M = 1.24, SD = .56$) was perceived as dressing in a revealing manner, whereas the “non-sexualized Lara” ($M = 3.22, SD = 1.63$) was perceived as more conservatively dressed. Additionally, the “sexualized Lara” ($M = 3.70, SD = .75$) was rated as significantly more sexualized compared to the “non-sexualized Lara” ($M = 6.65, SD = .49$), $t(33) = 13.53, p = .00, r^2 = .85$. These findings are consistent with how sexualization of women in video games has been conceptualized by content analytic research, and the physical appearance of the “sexualized Lara” falls along the sexualized end of the continuum. In particular, the “sexualized Lara” is depicted wearing sleeveless clothing with a very low neckline and short hemline. Additionally, her body is characterized by a thin frame with a large chest. In contrast, the “non-sexualized Lara” (or the less sexualized Lara) is fully clothed from neck to toe, and her proportions appear to be more realistic. See Appendix B for images.

Thus, the two character portrayals and the game play associated with these portrayals were rated as equivalent other than the sexualized appearance of the character. Based on the high internal validity afforded by the use of just one video game and one character for both the non-sexualized and sexualized character conditions, *Tomb Raider: Legend* was chosen for the main experiment.

Main Experiment

Design

A 3 (condition) x 2 (gender) x 2 (presence) experimental design was utilized to test the influence of video game portrayals of females on video game players.

Undergraduate students were recruited to participate in the project in exchange for extra

credit in a Communication course in which they were enrolled. An undergraduate sample is particularly appropriate to this project given that college-age individuals make up a large part of the primary target market for video games. An industry survey indicated that the average age of the video game player in the U.S. is 29 years old (ESA, 2005), suggesting that video gaming is becoming more popular amongst teens and adults and is no longer just a childhood activity.

There were a total of 329 participants, 63 percent female ($n = 207$) and 37 percent male ($n = 122$). Approximately 70 percent of the participants were white ($n = 231$), and the average age of the participants was 20 years old.

Independent Variables

Independent variables include video game condition (i.e., sexualized video game, non-sexualized video game, or no video game), sex of participant, and presence. Factor analysis was conducted in the construction of the scales measuring the construct presence. Items were assessed using principal-axis factoring and with a varimax rotation, and only items that achieve a factor loading of 0.50 or higher were retained. Cronbach's alpha is reported for these measures. Additionally, see Table 9 for a correlation matrix of all independent and dependent variables.

Portrayal of Female Video Game Character. The portrayal of the female video game character was manipulated, such that participants in experimental conditions were randomly assigned to the sexualized female heroine or non-sexualized female heroine, as described earlier.

Sex. The participant's gender was assessed based on self-report of biological sex (i.e., male/female).

Presence. Presence ($\alpha = .89$, $M = 4.19$, $SD = 1.06$) was measured using 12 items from the Presence Questionnaire (PQ) (Witmer & Singer, 1998), Kim and Biocca's (1997) eight-item Presence Scale (PS), and five items related to character identification (see Appendix D). The items taken from the PQ and PS were adapted to represent the video game medium. For instance, Kim & Biocca's scale refers to presence experienced with a television program, so any reference to television was replaced with "video game" or "video game environment." The resultant scale contained items measuring spatial, social, and self presence, the three dimension of presence described earlier. All items were measured on a seven-point scale, ranging from "strongly disagree" (1) to "strongly agree" (7), where low numbers indicate low presence and high numbers indicate high presence. A median split was performed to categorize participants' experience of presence as high or low.

Dependent Variables

Dependent variables include: self-esteem; body esteem; self-efficacy; self-objectification; gender role beliefs; and enjoyment of the character and game. Factor analysis was conducted in the construction of the scale measuring the construct gender role beliefs. Items were assessed using principal-axis factoring and with a varimax rotation, and only items that achieved a factor loading of 0.50 or higher were retained. Cronbach's alpha is reported for these measures.

Self-Esteem. Self-esteem ($\alpha = .85$, $M = 5.74$, $SD = .87$) was measured using Rosenberg's Self-Esteem Scale (see Appendix E). Participants responded to 10 items and rated their current feelings about self on a scale from 1 (strongly disagree) to 7 (strongly agree), where lower numbers indicate low self-esteem and higher numbers indicate high self-esteem. Negatively stated items (e.g., "At times I think I am no good at all.") were reverse coded.

Self-Efficacy. Self-efficacy ($\alpha = .79$, $M = 5.60$, $SD = .62$) was measured using the 10-item General Self-Efficacy Scale (Sherer & Maddux, 1982) (see Appendix F). The scale has demonstrated high construct validity, as evidenced by the scale's correlation with, but distinction from, related constructs, such as self-esteem (Sherer & Maddux, 1982). Participants responded to statements on a seven-point scale, where lower numbers indicate low self-efficacy and higher numbers indicate high self-efficacy. Negatively worded items were reverse coded.

Body Esteem. Body esteem ($\alpha = .92$, $M = 4.89$, $SD = 1.13$) was measured using the weight concern and physical condition portions of the Body Esteem Scale (Franzoi & Shields, 1974) (see Appendix G). These two portions of the scale that relate to body esteem include 19 seven-point Likert items. One item, height, was dropped from the scale, because it failed to achieve a factor loading of 0.50 or higher. The scale required participants to rate, from 1 (very dissatisfied) to 7 (very satisfied), their satisfaction with their general appearance and specific body parts (e.g., face, stomach, chest, and thighs). The convergent validity of the Body Esteem Scale has been tested by comparing it to the

results of the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and it was found to demonstrate sufficient validity (Franzoi & Shields, 1974).

Self-Objectification. Self-objectification was measured using the Self-Objectification Questionnaire (Noll & Frederickson, 1998) (see Appendix H), which consists of 12 body attributes that participants must rate in terms of their importance to their self-concept. Two separate factors emerged in factor analysis. Six of the items (physical attractiveness, coloring, weight, sex appeal, measurements, and muscle tone) comprise the appearance ($\alpha = .84$, $M = 2.77$, $SD = 1.01$) scale, and the other six items (muscular strength, physical coordination, stamina, health, physical fitness, and physical energy level) make up the competence ($\alpha = .82$, $M = 2.06$, $SD = .75$) scale. The Self-Objectification Questionnaire measures individuals' concern, not satisfaction with their appearance (Noll & Frederickson, 1998).

Gender Role Beliefs. Gender role beliefs were measured using four factors that emerged from a modified version of the Attitudes Toward Women Scale (AWS) (Spence & Helmreich, 1972) and additional statements about traditional gender roles (see Appendix I). Participants responded to nineteen statements related to four dimensions concerning attitudes toward women: career and domestic labor ($\alpha = .86$, $M = 3.78$, $SD = 1.00$), female appearance ($\alpha = .82$), female mental capabilities ($\alpha = .79$, $M = 2.72$, $SD = 1.18$), and female physical capabilities ($\alpha = .80$, $M = 3.70$, $SD = 1.41$). All items were measured on a seven-point scale, ranging from "strongly disagree" (1) to "strongly agree" (7), with low numbers indicating positive attitudes toward women and high numbers

indicating negative attitudes toward women. Negatively stated items (e.g., “There are jobs in which men should be given preference over women.”) were reverse coded.

Expectations of Female Body. Participants’ expectations of the female body were assessed using the Figure Rating Scale (FRS) (Stunkard, Sorenson, and Schulsinger, 1983) (see Appendix J). The scale has demonstrated “good test-retest reliability and adequate validity” (Thompson & Altabe, 1991, p.618). The scale contains nine drawings of the female body, ranging from very thin (1) to very large (9). Participants indicated the number of the image that was closest to their ideal image of what the female body should look like.

Covariates

Gaming Experience. Gaming experience served as a covariate. Participants’ general experience playing video games and their previous experience playing *Tomb Raider: Legend* was determined through self-report. *General use* of video games was measured with two items asking about the number of hours they play video games per day and per week. *Specific use* of the video game played by the participant was measured with one item asking about the number of times the individual has played this game in the past.

Recognition of Character. In addition to controlling for previous gaming experience, individuals’ recognition of the character served as a covariate. Participants were asked if they recognized their character, Lara Croft. Due to the popularity of the two movies based on the video game series, *Tomb Raider*, it was important to control for any effect prior exposure to the character may have had on game play and subsequent

judgments. One item was used to measure character recognition, and the response selections provided were “yes” and “no.”

Perception of Performance. Last, individuals’ perception of their performance was assessed and controlled for. This accounts for the positive and negative feelings one may have about their own game performance, which might be expected to affect their subsequent judgments following game play. Participants in the video game conditions responded to two items that asked them if they were happy with their game performance.

Procedure

Participants were randomly assigned to one of three conditions: the sexualized video game condition, the non-sexualized video game condition, or the control (no video game) condition. Each participant assigned to a video game condition was briefed on how to play the game. The researcher provided instruction sheets (see Appendix C) for each person assigned to play a game, and the researcher spent approximately 3-5 minutes familiarizing the participants with how to play the game. The instructions provided a summary of the game, specific game play tips to progress in the game, and the commands/actions available during game play. The participants were told that they did not have to use the detailed walkthrough game instructions if they preferred to explore the game and play without using the hints given on the instruction sheet.

After the instruction period, the participants were told to play the game on their own for 30 minutes. This timeframe was selected based on previous research designs which have typically utilized game play periods of 10-30 minutes (e.g., Carnagey & Anderson, 2005; Cicchirillo & Chory-Assad, 2005; Eastin, 2006). Additionally, as

discussed earlier, traditional media effects research demonstrated effects on body image, self-esteem, self-efficacy, and gender beliefs after exposure to idealized images of the female body for as little as 10-15 minutes. Thus, it was determined that playing a video game for 30 minutes should be sufficient time for effects to be observed, if they are present.

So, for this study, students were asked to play the game for 30 minutes, giving them enough time to acclimate to the game and progress in the game, allowing them to get to know their character and her skills and traits. They were told that their game play was not being monitored or recorded and that their skill level was not being assessed in any way. Also, they were asked not to play with or ask questions of the other participants in the room. Headphones were provided to each game player to hear the auditory aspects of the game and to provide a more private playing experience for them, limiting distractions from other players in the room.

Upon completion of the game play period, participants filled out an online survey asking questions about their video gaming habits; enjoyment of the game and character; presence experienced during game play; gender role beliefs; self-objectification; body image; self-esteem; and self-efficacy. The participants randomly assigned to the control condition did not play a video game, and simply completed a similar online questionnaire, excluding the questions about presence and enjoyment.

Analyses

Analysis of variance tests were used to analyze the hypothesized relationships between video game play, sex, presence, and the dependent variables. ANOVA was

selected for statistical analysis due to the design of the study, which manipulated the level of sexualization of the video game characters and tested the effects across groups of individuals who played one of the two characters or no video game.

For hypotheses one, two, and three, only females were included in analysis and sex and condition were entered as fixed factors. Hypothesis four included the addition of presence as a fixed factor. Both males and females were included in analysis for hypothesis five, where sex and condition were entered as fixed factors. Hypothesis six added presence as a fixed factor. Any interaction effects that emerged were decomposed by conducting independent sample t-tests.

Initially, ANCOVA was used in order to include the covariates in analysis, however the inclusion of the covariates did not affect the hypothesized relationships so they were dropped from analysis.

RESULTS

Hypothesis 1a

Hypothesis 1a postulated that playing the sexualized female character would result in lower self-esteem for females. No support was found for this prediction. There were no differences in terms of playing the non-sexualized video game character ($M = 5.53$, $SD = .58$) in comparison with playing the sexualized character or no video game. So, condition had no significant effect on female self-esteem, $F(2, 204) = .98$, $p = .38$. Table 1 contains ANOVA descriptives, and Figure 1 provides a pictorial representation of means across the three conditions.

Hypothesis 1b

Hypothesis 1b stated that playing the sexualized female character would result in lower self-efficacy in women. Support was found for this prediction. Results indicate that condition had a significant effect on female self-efficacy, $F(2, 204) = 3.55$, $p = .03$, $\eta^2 = .03$. Specifically, Tukey pairwise comparisons ($p < .05$) indicated that playing the sexualized character ($M = 5.40$, $SD = .66$) versus playing no video game ($M = 5.67$, $SD = .52$) resulted in lower self-efficacy for female participants. In other words, playing a sexualized female video game character negatively affected feelings of self-efficacy in women, compared to playing no video game character. Table 1 contains ANOVA descriptives, and Figure 1 provides a pictorial representation of means across the three conditions.

Hypothesis 2

Hypothesis 2 proposed that playing the sexualized characters would result in lower body esteem for female participants. No support was found for this hypothesis, $F(2, 204) = .37, p = .69$, indicating that condition had no significant effect on women's feelings of body satisfaction. Table 1 contains ANOVA descriptives, and Figure 1 provides a pictorial representation of means across the three conditions.

Hypothesis 3

Hypothesis 3 postulated that females who played the sexualized female character would report greater self-objectification than those who played the non-sexualized female character or no video game at all. It was expected that playing the sexualized character would result in females judging appearance to be more important than competence, in comparison to the females who did not play the sexualized character. No support was found for this hypothesis. Condition had no significant effect on how females rated physical appearance, $F(2, 204) = 2.25, p = .11$, or physical competence, $F(2, 204) = 2.21, p = .11$ as being important to them. See Table 1 for ANOVA descriptives and Figure 1 for a pictorial representation of means across the three conditions.

Hypothesis 4

Hypothesis 4 posited that the relationships in hypotheses one, two, and three would be moderated by presence. In other words, the females who participated in one of the video game conditions would be differentially affected by the level of presence they experienced during the game. It was expected that a high level of presence would enhance the effects of the video game exposure, such that participants who reported high

levels of presence would report lower self-efficacy, self-esteem, and body-esteem, and greater self-objectification than females who experienced a low level of presence during game play.

No support was found for this hypothesis. Level of presence did not interact with character portrayal to determine ratings of self-efficacy, $F(1, 125) = .96, p = .33$, self-esteem, $F(1, 125) = 0.00, p = .96$, or body esteem, $F(1, 125) = 1.55, p = .22$. Additionally, level of presence did not interact with type of character to determine self-objectification in terms of females' ratings of the importance of physical appearance, $F(1, 125) = .71, p = .40$, or physical competence, $F(1, 125) = .37, p = .54$. See Table 2 for descriptive statistics. See Figures 2 and 3 for pictorial representations of the results.

Hypothesis 5

Hypothesis 5 proposed that playing the sexualized female video game character would result in increased negative attitudes toward women, in comparison to playing the non-sexualized character or no video game. Some support was found for this prediction. Specifically, participants who played the sexualized character ($M = 2.93, SD = 1.17$) reported less favorable attitudes toward women's mental capabilities than did participants who did not play a video game ($M = 2.52, SD = 1.01$), $F(2, 325) = 3.38, p = .04, \eta^2 = .02$. There were no significant differences with the non-sexualized character ($M = 2.72, SD = 1.13$). Additionally, no significant differences were found for the career/domestic, $F(2, 327) = 0.21, p = .81$, appearance, $F(2, 327) = 0.29, p = .75$, or physical capabilities, $F(2, 327) = 2.64, p = .07$, gender role dimensions.

Hypothesis 5 also posited that playing the sexualized female video game character would result in more unrealistic expectations of the female body, in comparison to playing the non-sexualized character or no video game. No support was found for this prediction, $F(2, 322) = 0.39, p = .68$. See Figures 4-6 for pictorial representations of the results.

Research Question 1

Research question 1 asked whether sex of the participant would affect one's gender role beliefs. Main effects were found for sex on all four gender attitudes components. First, a main effect for sex emerged on the physical capabilities component, $F(1, 322) = 52.76, p = .00, \eta^2 = .14$. So, men and women reported differences in attitudes toward women in regards to physical capabilities, such that male participants ($M = 4.39, SD = 1.41$) reported less favorable attitudes toward women than female participants ($M = 3.30, SD = 1.25$). In other words, in general, male participants reported less confidence in female physical capabilities, in comparison to male physical capabilities, than did female participants.

Second, a main effect for sex emerged on the mental capabilities component, $F(1, 322) = 111.48, p = .00, \eta^2 = .25$. Men and women reported differences in attitudes toward women in regards to mental capabilities, such that male participants ($M = 3.50, SD = 1.15$) reported less favorable attitudes toward women than female participants ($M = 2.25, SD = .92$). Looking at the means it is evident that neither male nor female participants strongly agreed with the idea that men are more mentally capable than women, however male participants did adhere more strongly to this belief than did female participants.

Third, a main effect for sex emerged on the female appearance component, $F(1, 322) = 34.62, p = .00, \eta^2 = .10$. Men and women reported differences in attitudes toward women in regards to female appearance, such that male participants ($M = 4.19, SD = 1.11$) reported less favorable attitudes toward women than female participants ($M = 3.47, SD = 1.02$). Overall, men held more traditional ideas related to how females should dress and appear in public.

Last, a main effect for sex emerged on the career/domestic work component, $F(1, 322) = 7.30, p = .01, \eta^2 = .02$. So, men and women reported differences in attitudes toward women in regards to career and domestic work, such that male participants ($M = 3.98, SD = .96$) reported less favorable attitudes toward women than female participants ($M = 3.67, SD = 1.0$). In other words, men were more likely to be supportive of statements that were reflective of traditional gender roles in terms of career choices and domestic work. See Table 3 for ANOVA descriptives for the four gender role beliefs.

Additionally, a main effect for sex emerged for expectations of the female body, $F(2, 322) = 8.77, p = .00, \eta^2 = .03$. Women ($M = 3.12, SD = .88$) reported the ideal female body to be thinner/less heavy than did men ($M = 3.41, SD = .79$), indicating that women had slightly stricter weight/body shape expectations for the female body than did men. See Table 4 for descriptive statistics.

In addition to main effects, research question 1 asked whether sex of the participant would interact with condition in predicting participants' gender role beliefs and expectations of the female body. A significant two-way interaction between sex and condition was found for the physical capabilities component of the attitudes toward

women scale, $F(2, 322) = 2.98, p = .05, \eta^2 = .02$. See Figure 7 for an illustrative example of this interaction effect. T-tests were run to further analyze this relationship. These tests revealed that men and women who played the sexualized character reported differences in attitudes about women's physical capabilities, $t(105) = -2.00, p = .05, r^2 = .04$, such that male participants ($M = 4.29, SD = 1.59$) reported less favorable attitudes toward women than female participants ($M = 3.71, SD = 1.40$) in the sexualized game condition. Men and women who played the non-sexualized character reported differences in attitudes about women's physical capabilities, $t(105) = -5.56, p = .00, r^2 = .23$, such that male participants ($M = 4.39, SD = 1.34$) reported less favorable attitudes toward women than female participants ($M = 3.06, SD = 1.17$) in the non-sexualized game condition. This is not surprising given that a main effect for sex was found for all four gender role components. However, interestingly, significant differences emerged for females when looking at differences across the sexualized and non-sexualized conditions.

Specifically, women reported differences in attitudes about women's physical capabilities based on condition, $F(2, 205) = 5.08, p = .01, \eta^2 = .05$. Female participants in the sexualized condition ($M = 3.71, SD = 1.40$) reported less favorable attitudes toward women than female participants in the non-sexualized condition ($M = 3.06, SD = 1.17$) and the no video game condition ($M = 3.17, SD = 1.13$). This suggests that playing the sexualized character resulted in less favorable attitudes toward women in regards to women's physical capabilities. See Figure 8 for a pictorial representation of this interaction effect.

This was not the case for male participants. Men did not report differences in attitudes toward women's physical capabilities based on condition, $F(2, 121) = 0.31, p = .73$.

No significant interaction effect for sex by condition were found for the mental capabilities, $F(2, 322) = 1.01, p = .37$, career/domestic work, $F(2, 322) = 0.85, p = .42$, or appearance, $F(2, 322) = 0.79, p = .50$, components of the attitudes toward women scale.

Hypothesis 6

Hypothesis 6 predicted that presence would moderate the relationship proposed in hypothesis five, such that a high level of presence experienced during game play would result in greater negative attitudes toward women and more unrealistic expectations of the female body. No support was found for this prediction. Level of presence did not interact with condition to determine participants' attitudes toward women in terms of mental capabilities, $F(1, 212) = .01, p = .94$, physical capabilities $F(1, 212) = 0.10, p = .76$, female appearance, $F(1, 212) = 2.12, p = .15$, or career and domestic work, $F(1, 212) = 1.52, p = .22$. Table 5 contains ANOVA descriptive statistics, and Figures 9-16 for pictorial representations of these results. Additionally, level of presence did not interact with condition to determine participants' expectations of the female body, $F(1, 212) = 0.69, p = .41$. See Table 6 for ANOVA descriptive statistics.

Research Question 2

Research question 2 asked whether playing the sexualized character, non-sexualized character, or no video game would have different effects on males' self-

esteem and self-efficacy. No significant differences emerged for self-esteem, $F(2, 122) = 0.43, p = .65$, or self-efficacy, $F(2, 122) = 0.10, p = .90$, based on condition. This suggests that exposure to either of the two character portrayals did not affect male participant's self-esteem or self-efficacy. See Table 7 for ANOVA descriptives.

Research Question 3

Research question 3 probed whether differences in body esteem and self-objectification would emerge for men, based on whether they played the non-sexualized character, the sexualized character, or no video game. No significant differences were found for men's body esteem, $F(2, 119) = 0.23, p = .80$, based on condition. Similarly, no effects emerged self-objectification. No significant differences were found for male participants' ratings of the importance of physical appearance, $F(2, 119) = 0.82, p = .44$, or physical competence, $F(2, 119) = 0.33, p = .72$, based on condition. See Table 7 for ANOVA descriptives.

Research Question 4

Research question 4 asked whether or not presence would have any effect on the relationships probed in research questions two and three. A main effect for presence on men's body esteem emerged, $F(1, 87) = 6.28, p = .01, \eta^2 = .07$. Male participants who experienced a high level of presence reported higher body esteem compared to males who experienced a low level of presence during game play. This suggests that presence is positively related to body esteem in men. No significant interaction was found between presence and condition for male body esteem, $F(1, 87) = 0.49, p = .49$, indicating that the

type of female character (i.e. sexualized or non-sexualized) had no effect on their feelings of body satisfaction.

A main effect for presence on men's level of self-objectification also emerged. Specifically, level of presence had an effect on male participants' ratings of the importance of physical competence, $F(1, 87) = 5.11, p = .03, \eta^2 = .06$. Men who experienced a high level of presence rated physical competence characteristics as being more important to them than did men who experienced a low level of presence. No significant interaction effect was found between presence and condition for self-objectification in terms of physical competence, $F(1, 87) = 0.15, p = .70$, or physical appearance, $F(1, 87) = 0.09, p = .76$.

Lastly, presence did not interact with condition to determine males' feelings of self-efficacy, $F(1, 87) = 2.68, p = .11$, or self-esteem, $F(1, 87) = 0.55, p = .46$. Taken together, these results suggest that presence may play a role in determining men's body-related responses following game play, but does not affect men's self-esteem or self-efficacy. See table 8 for ANOVA descriptives for research question 4.

DISCUSSION

The primary purpose of this study was to illuminate the relationship between exposure to the sexualization of female video game characters and feelings about oneself, one's body, and attitudes toward women. Content analytic research suggests that women are underrepresented and often portrayed unfavorably in video games, as sex objects, damsels in distress, victims, and sexualized heroines (Dietz, 1998; Glaubke et al., 2001). This study examined the effects of playing the sexualized heroine and, the less common (counter-stereotypical), non-sexualized video game heroine. Media effects research suggests that exposure to the sexualized heroine would result in negative effects on women's body image and less favorable (more stereotypical) beliefs about women. Conversely, exposure to the non-sexualized heroine was thought to result in more positive effects on body image and gender-related beliefs.

Social cognitive theory and presence were used to explain how such learning outcomes occur. According to Bandura (1977, 1986), individuals are more likely to learn from video game content when they identify with the video game characters, closely attend to the content, and are motivated to adopt modeled attitudes, beliefs, and behaviors. By integrating presence into this theoretical framework, it is suggested that players' feelings of presence during game play would heighten the effects of exposure to the female characters. Specifically, it was argued that higher levels of presence would be associated with greater identification with the characters, closer attention to the game content, and increased motivation to adopt the modeled gendered aspects of the game. In other words, presence would make conditions more favorable for learning from the

games. This study sought to shed some light on the role of presence in observational learning of gender-related outcomes from video games.

Although video gaming has garnered important attention by scholars over the last decade, little to no research has considered the effects of gendered portrayals of video game characters on gender-related outcomes. Consequently, this study contributes important insights to our knowledge about the effects of video game playing, and illuminates the effects that may occur from exposure to sexualized portrayals of women and girls in video games. Moreover, the findings of this study will contribute to theory building in the area of video game research.

Body Image and Self-Concept

Based on traditional media effects research, it was predicted that playing the sexualized female character would result in lower body esteem, self-esteem, self-efficacy, and greater self-objectification in women. Little support was found for these predictions. One significant relationship emerged, however, between type of character played and female self-efficacy. For female participants, playing the sexualized heroine resulted in lower self-efficacy in comparison to playing the non-sexualized heroine or no video game at all. This suggests that exposure to sexualized images of women in video games may cause women to feel less confident in their abilities to succeed in the real world. This is particularly interesting in that it supports the idea that the sexualization of strong female media models may negate the potential positive effects of being exposed to a female who exhibits many counter-stereotypical characteristics, such as physical strength, independence, and power. Given that the two characters were identical in every way

except for the sexualization of their appearance, the findings from this study demonstrate that sexualized video game images of females can, just by the nature of their sexualization, negatively affect women's feelings of self-efficacy. One can speculate that this may have occurred because the sexualization of the character confines her and limits her power by making her sexualized body her most prominent feature. Further, this finding is consistent with traditional media effects literature examining the effects of exposure to idealized images of females in the media and feelings of self-worth.

It is also interesting to note that playing a video game was not associated with lowered self-esteem in female players, which counters previous research findings. One explanation for failure to reject the null is insufficient statistical power. Based on traditional media effects research, the influence of exposure to idealized images of the female body on people's self-concept and body image is notable but small, suggesting that great power is needed to observe such effects. It is possible that this study did not have enough power to observe these effects; so one should not discount the findings as confirming the null hypothesis when in fact more participants may have been needed to observe such small effects that may be present. This study had a sample of 207 females, and a power analysis reveals that with this sample size there is only a 60 percent chance of being able to reject the null hypothesis if an effect is, in fact, present. Further, this experiment utilized a total sample of 329 (including both males and females) for a number of analyses, and a power analysis suggests that a sample size of at least 540 participants would be needed to be confident in whether the data actually fails to reject the null hypothesis. In other words, power analysis revealed that 180 or more participants

per condition would be needed to observe small effects, so it is possible that non-significant findings are attributable to lack of power. Power was calculated assuming a small effect size and an alpha of .05.

However, it is useful to consider these findings in comparison to previous research and speculate about possible reasons for the inconsistency in findings. Unlike the survey study conducted by Funk and Buchman (1996) that found video game playing, in general, was associated in lower self-esteem in girls, this experimental study suggests that playing video games may not always result in lower self-esteem in female players. With the female sample of undergraduate students in the present study, no negative effects on self-esteem based on game play were observed. It was speculated that this study may shed some light on the relationship between video gaming and female self-esteem by examining the role of the type character played. Specifically, it was reasoned that playing a non-sexualized female video game player may result in greater self-esteem in female players, in comparison to playing a sexualized female character. However, the present findings do not support this prediction. Looking at the means in Table 1, there is very little difference across the conditions. Thus, this study does not provide any support for the idea that, for women, playing a non-sexualized character, or even a same-sex character of either a sexualized or non-sexualized nature, positively (or negatively) affects level of self-esteem. Further research needs to be done to compare game play with other types of female portrayals, such as the victim and prize female characterizations, in order to test whether or not the type of female character has any effect on female players' self-esteem.

In terms of body image, findings were inconsistent with traditional media effects research in that no effects on female body esteem or self-objectification emerged as a result of type of character played. Traditional media effects research suggests that exposure to idealized images of females in the media is linked to lower body esteem and greater self-objectification in women. Thus, it was expected that similar effects would emerge with exposure to images in video games. In addition to inadequate power, as discussed above, there are a few different explanations for why no effects on female body image emerged.

First, it is possible that exposure to *virtual* images of women have less effects on female body image in comparison to exposure to real *human* images. Perhaps female players take note of the artificiality of this type of fictional portrayal, and are therefore less likely to use it as a source for social comparison when making judgments about their own bodies. In other words, they may view this image of a woman as fantasy and not representative of women in reality, whereas human models may be deemed representative of what a real woman should ideally look like. Therefore, although previous research demonstrates that observational learning can occur based on exposure to animated/cartoon media models (Bandura, Ross, & Ross, 1963), it is possible that adult women do not look to such models to learn about the female body. If social comparison is at play, these virtual models in video games may be deemed too unrealistic to use as a source of comparison when judging one's own body.

Second, it is possible that actually taking on the role of this sexualized character somehow mitigates the negative effects for female players. Unlike traditional media,

video games are highly interactive requiring players to take on the role of different characters, rather than merely watching them. So, when women assume the role of the sexualized heroine they might no longer use this media image to make judgments about the self, because the sexualized heroine becomes part of the self during game play. Alternatively, it could be argued that playing a strong female character affords the female player some sort of power or status that overrides the potential negative effects of playing a sexualized female.

Lastly, the physical strength and capability of the two images of video game heroines may explain the reason why female players who played the sexualized character did not self-objectify. Self-objectification occurs when a person rates their body in terms of appearance, so the overt physical competence of the sexualized female character may have influenced women to feel that appearance was not more important than the competence of one's body.

In addition to examining the effects of game play on women's body image and self-concept, this study explored this relationship with men. Media effects research demonstrates that exposure to idealized images of same-sex models may diminish body esteem, but no research suggests what effect, if any, would occur based on exposure to idealized images of the opposite sex. This is because individuals typically look to those of their same sex to determine gender norms for appearance. Findings from this study support this assumption and suggest that male video game players do not use female video game characters as a model for assessing their own (male) bodies and self worth.

However, it was found that presence had a main effect on men's body image. A high level of presence while playing either of the female video game character portrayals resulted in male participants rating the competence of their bodies as more important than those participants reported a low level of presence. Given that both character portrayals are strong, powerful, athletic women, it reasons that participants experiencing greater involvement or presence with the game would report health and fitness related aspects of one's body to be important to them. In accordance with social cognitive theory, it is possible that the athleticism and power of Lara Croft had a greater influence on males' beliefs about their bodies when they had a higher degree of identification and involvement with the game character. Thus, this finding provides some support that presence may heighten the effects of learning from video games. In this case, presence had a positive effect on males by increasing their body esteem and lessening their likelihood to self-objectify.

Gender Stereotyping

Overall, findings from this study suggest that the level of sexualization of female video game characters has limited effects on players' gender-stereotyping. It was predicted that playing the sexualized female video game character would result in less favorable attitudes toward women. This was found to be true in two instances. First, playing the sexualized character resulted in less favorable attitudes toward women's mental capabilities. This was true for all (both male and female) participants. Second, playing the sexualized character for female participants resulted in less favorable judgments about female physical capabilities. Specifically, women who played the

sexualized character were more likely to agree with statements that suggested that women were less physically capable in comparison to men, whereas the women who played the non-sexualized character were less likely to agree with such unfavorable statements. This indicates that even though the sexualized heroine was very physically able, playing this character led to greater gender-stereotyping on the dimension of physical ability. It is unclear, however, why similar results did not emerge on the other gender role dimensions. Looking at the descriptive statistics across conditions for female participants, the means for three of the four gender role dimensions are highest in the sexualized character condition. This trend indicates that playing the sexualized character, for females, is associated with less favorable attitudes toward women, but only significantly so for the physical capabilities dimension. There is no clear trend that emerges from examining the means for the male participants. Again, these non-significant findings may be attributable to inadequate statistical power, or it may be that no such effects exist.

Gaming condition had no significant effect on male players' gender-stereotyping. However, main effects were found for sex and gender-stereotyping, indicating that men were much more likely than women to report unfavorable attitudes toward women. In other words, men were more likely to give responses that were consistent with gender stereotypes about women. This occurred on all four gender role dimensions studied. However, video game exposure and presence had no significant role in this relationship for men. Previous research suggests that playing the sexualized character should have resulted in more unfavorable attitudes toward women, however it is possible that the strength and power of the character helped to diminish negative effects. In other words,

the stereotypical appearance of the sexualized character may not have had a negative influence on men's attitudes toward women (in comparison to playing the non-sexualized character or no video game) due to the other traits of the character, which are arguably positive/counter-stereotypical. This suggests that power female video game characters may have a positive influence on male players in that (regardless of sexualization) they are much stronger and more powerful representations of women than is typical of many other popular media products. Exposure to such powerful images may decrease the tendency to gender-stereotype based on appearance.

Presence

Although the findings of the present study provide support for social cognitive theory, the expected role of presence in observational learning from media models was not supported. Counter to theoretical reasoning, presence did not heighten the effects predicted regarding game play of the sexualized female character. Higher levels of presence were expected to result in lower self-esteem, self-efficacy, and body esteem, and higher self-objectification in women. Additionally, higher levels of presence were predicted to result in greater belief in traditional gender roles and expectations of the female body. No support was found for these hypothesized relationships. Instead, the level of presence seemed to have no effect on the players' gender-related judgments, with the exception of male players' body esteem. This is significant in that it points to the need for much more exploration in terms of the role of presence in the video gaming experience.

The relationship between presence during game play and subsequent learning outcomes has not frequently been tested, and much of the published literature in this arena is theoretical in nature. This study did not lend support to the theoretical arguments supporting the idea that presence is positively related to learning from video games, however it is possible that the design of the study may have impacted this in some way. The selection of items used to measure presence, the artificial setting of the experiment, the length of game play, and the type of game play may all play some role in the effects of presence on learning outcomes. The current research does not suggest what type of role(s) these variables may play; future research in this area is clearly needed.

Limitations and Future Research

One limitation of this study is the use of only one video game in the experiment. Although this helped to ensure high internal validity, results from this study may not be representative of effects of other video games on the market. Future studies should examine different genres of games, different female and male portrayals, and utilize multiple games in analyses. This will provide a more complete picture of the effects of playing gendered portrayals in video games on people's gender-related attitudes and perceptions of self. Additionally, it is possible that the degree of sexualization of the non-sexualized character was too great to demonstrate the unique effects of playing a truly non-sexualized character versus a sexualized character. In other words, perhaps the difference in appearance between the two character portrayals was not great enough to demonstrate effects that may have emerged if the characters had been more extreme in

their differences in appearance. Future studies should examine different video game heroines to test this idea.

Additionally, the particular game playing experience in the present study may have presented a limitation. Individuals who play games often/regularly (i.e. gamers) have longer term exposure to the images studied in this experiment, and the game play experience likely differs from the game play that is experienced in a laboratory. In other words, the design of this study is limited by its experimental nature in that the participants and game setting may not be representative of the gaming experience in the real world. Future studies should consider triangulation, utilizing multiple methods to compare results between a laboratory experiment, survey design, and a natural setting experiment.

Lastly, the manner in which self-efficacy was measured in this study was limited. Although the self-efficacy scale used was appropriate based on previous media research that suggests that exposure to idealized images of the female body is related to lower self worth in females, this measure does not best reflect the concept of self-efficacy as defined by Bandura. Future studies should include a measure of self-efficacy that is consistent with social cognitive theory to better test the social cognitive model of learning from video games. For example, items asking about the efficacy participants felt in relation to game play would be interesting to analyze.

Although this study provides some interesting insights into the relationship between the sexualization of video game heroines on gender-related outcomes, the role of presence in this relationship needs clarification. The results of this experiment, generally,

do not provide support for the idea that presence is positively related to learning outcomes. It is unclear why presence did not moderate the significant relationship found between female participants playing the sexualized character and the reporting of lower self-efficacy and less favorable beliefs about women in terms of physical capabilities. The effect on self-efficacy and beliefs about female physical capabilities emerged for all female players regardless of their level of presence during game play. Future studies should test different types of game play (e.g., shooter games, sports, role playing, strategy, etc.) and manipulate the time spent playing the game to see if either game type or length of exposure influences the role of presence in learning from video games.

Despite the limitations of this study, the findings will inform media effects researchers; parents who are concerned about monitoring their children's video game play; legislators involved in policy-making related to video game content and ratings; and video game programmers. This area of research is still largely untouched, and this study provides just a glimpse into the potential negative and positive effects of playing female video game characters, for both men and women. Continued research in this area will help to reveal learning trends based on character portrayal, and much needed explication in terms of the theoretical underpinnings for such effects is likely to develop.

APPENDIX A

Pilot Study Survey

1. What is your sex?

Female _____ Male _____

2. What is your age?

18 _____ 19 _____ 20 _____ 21 _____ 22 _____ 23 _____ 24 _____ 25+ _____

3. What is your race/ethnicity?

American Indian or Alaska Native _____

Asian _____

Black or African American _____

Native Hawaiian or Other Pacific Islander _____

White (Non-Hispanic) _____

White (Hispanic) _____

Other: _____

Please respond to the following questions about the video game experience you had during this study.

4. How well were you able to control your actions in the videogame?

Not at all 1 2 3 4 5 6 7 Very well

5. How involving were the visual aspects of the game?

Not at all 1 2 3 4 5 6 7 Very much

6. How involving were the auditory aspects (sounds, music, etc.) of the game?

Not at all 1 2 3 4 5 6 7 Very much

7. How involved were you in the videogame experience?

Not at all 1 2 3 4 5 6 7 Very much

8. How well were you able to look around or search the game environment?

Not at all 1 2 3 4 5 6 7 Very well

Respond to the following statements about the video game experience you had during this study.

9. While playing the videogame, I NEVER forgot that I was in the middle of an experiment.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

10. While playing the videogame, I was unaware of the noises in the room in which I am sitting.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

11. While playing the videogame, I was unaware of the movements of others in the room in which I am sitting.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

12. I felt upset when my character did not do well in the game (e.g., was injured, killed, got lost, or failed a mission).

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

13. I felt happy when my character did well in the game (e.g., achieved a goal of some kind).

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

14. I felt like my character was a real person.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Please respond to the following questions regarding the character that you played in the video game.

15. What was the sex of the character you played?

Female ____ Male ____

16. What was the approximate age of the character you played?

Child ____ Teen ____ Adult ____ Elderly ____

17. What was the race/ethnicity of the character you played?

White _____
 Black _____
 Hispanic _____
 Asian _____
 Other _____

Please rate your character on the following attributes. Do NOT rate based on your own performance, but rate the character based on their attributes.

18. Attractive	1	2	3	4	5	6	7	Unattractive
19. Aggressive	1	2	3	4	5	6	7	Submissive
20. Strong	1	2	3	4	5	6	7	Weak
21. Violent	1	2	3	4	5	6	7	Passive
22. Scantily Clad (showing a lot of skin)	1	2	3	4	5	6	7	Fully Clothed
23. Dominant	1	2	3	4	5	6	7	Subservient
24. Skillful	1	2	3	4	5	6	7	Incompetent
25. Good	1	2	3	4	5	6	7	Evil
26. Sexualized	1	2	3	4	5	6	7	Not Sexualized
27. Revealing in Attire	1	2	3	4	5	6	7	Conservative in Attire

Please respond to the following questions regarding the video game that you played.

28. Overall, how violent was your video game play?

Not At All Violent 1 2 3 4 5 6 7 Extremely Violent

29. Overall, how enjoyable was the video game?

Not At All Enjoyable 1 2 3 4 5 6 7 Very Enjoyable

30. How involving was the video game?

Not At All Involving 1 2 3 4 5 6 7 Very Involving

31. How difficult was this game to play?

Easy 1 2 3 4 5 6 7 Very Difficult

Please answer the following questions about your video game use.

32. Had you ever played a video game before participating in this study?

Yes _____ No _____

If “yes,” please answer the remaining questions...

33. On average, how many hours per week do you spend playing video games?

0-1 _____

2-3 _____

4-5 _____

6-7 _____

8-9 _____

10+ _____

34. On average, how many hours per day do you play video games?

0-30 minutes _____

30 minutes – 1 hour _____

1-1.5 hours _____

1.5-2 hours _____

2-2.5 hours _____

More than 2.5 hours _____

35. Was this the first time you had played this video game?

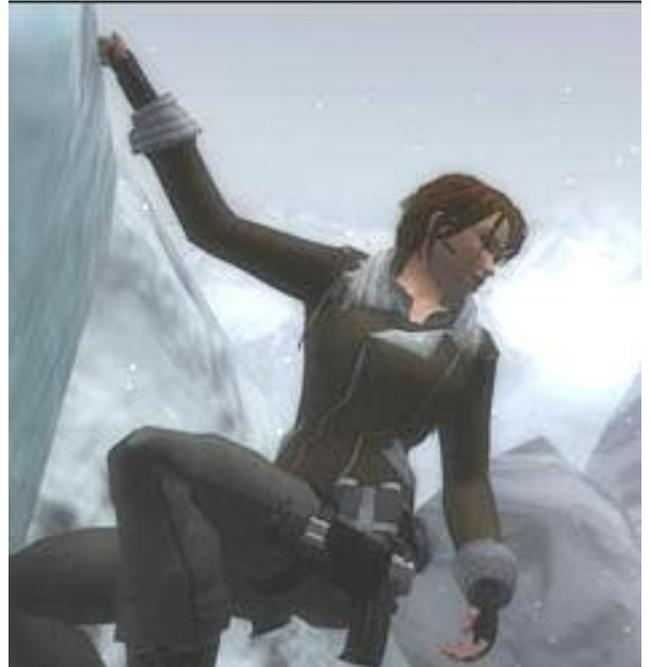
Yes _____ No _____

APPENDIX B

Sexualized Lara Croft



Non-Sexualized Lara Croft



APPENDIX C

Video Game Play Instructions**Story**

Your character is searching for an ancient South American relic. Along the journey she meets a dangerous figure from her past, which changes her course of action dramatically as she races to recover one of history's most famous artifacts.

**KEYBOARD & MOUSE COMMANDS:**

GENERAL CONTROLS	COMMAND
Run forward, left, right	Arrow keys or W, A, S, D keys
Jump	Spacebar
Pull up from ledge	Spacebar
Walk/sneak	Shift key
Crouch/roll/dive	F key
Pick up items or interact with items/people	E key
Grab hold of ledge securely if hanging from one hand	E key
Look at PDA	Tab key
Turn on/off personal light	Delete key
Reset camera view	J key
Use binoculars	Page down key
Lock-on/off target (pull out gun)	G key
Throw grenade/flare	K key
Fire weapon	Left mouse button or H key
Switch weapon	End key
Use health pack (increase health)	Home key
Use grapple (i.e. hooked device)	Use both G and Q keys
Pull grapple	E key
BIKE CONTROLS	COMMAND
Steer	A, D keys
Accelerate	W key
Brake/reverse	S key

Game Play

When the game begins, it will be in “movie mode” and you just need to listen and watch – you won’t be able to control your character during these “movies” in the game. When this ends you will see the back of your character, and you now have control over her movements.



Start by going downstairs and finding the bartender and talking to him. Press the E key to talk to the bartender when in front of him. After that, follow the directions you’re given to visit the office down one of the two hallways. You’ll talk to Nishimura, and then return to the party.

The party scene will have changed, and you’ll have a run in with Takamoto and his guards. After talking to Takamoto, be prepared to use the G key to aim your gun, and the H key to fire on enemies. Keep moving during combat! You’re less of a target if you run while you shoot. And if you do get killed, the game will reload and you can continue to play. Pick up any health packs and weapons dropped by enemies. After eliminating all the guards in the party area, two or three more guards will appear from one of the hallways. Eliminate them, and then you’ll have another conversation with Nishimura. Take the elevator card from him and go down the other hallway to ride the elevator.

When you exit the elevator, head forwards and approach the glass door. You’ll talk to one of your guides through your headset about the bike locked in the room with the glass door. Go to the left and through the doorway to exit to the roof of the building. Go to the right to hear your guide talking again. He’ll tell you that the building across the way is Takamoto’s. You need to get to the top floor of that building. Watch out for more guards on the roof – you may have to engage in more combat to eliminate them.



Explore, and see a barrel behind a metal grate/cage. Draw your weapon and shoot the barrel. It will explode, blowing up the grate/cage with it. Now you can climb the pole/drainpipe behind the grate. Climb to the top of the pole and jump to the ledge on the right. Climb to the roof and go to the left.



Walk on the glassed part of the roof and notice the shimmering raised part of the glass roof. Use the grapple command to pull back the glass roof so that it slides open. Drop through the opening and go down the ramp to find the crate with the bike. The other two crates contain rewards. Shoot those crates open to pick up those rewards. You’ll have to move the boxes out of the way to get to one of the crates.

Now get on the bike (by pressing E) and ride out onto the roof. You don’t have much room to maneuver the motorcycle, but this isn’t necessary. Leave the mouse alone and just use the directional keys to drive out onto the open rooftop. Line the motorcycle up facing the ramp at the base of the broken pedestrian bridge (the bluish metal structure with the two arches) and then accelerate as if to jump across to the next building. As soon as an icon appears, quickly press the control (arrow keys) indicated to keep from crashing to your death.

Jump to the black-yellow bar ahead and swing to the upper plank. Pull up. Jump over the gap to the second plank. Careful they won’t stay put. Here a dangling replacement window glass is

blocking the way. Aim at the clamp to break it. The glass will drop and the path is clear. Use the remaining cable to swing to the next plank.

Run to the end of the scaffold and jump up to the cable, and slide to the ledge of the opposite building. Turn to the left. There you will find a moving scaffold. Pull it closer, using the grapple. Then jump onto it. Jump off on the other side and throw out the grapple to get a grip on the lamp overhead. Turn to the right. Swing towards the platform there.



Pull the next moving scaffold closer. Jump onto it. With a little luck the momentum will suffice so you can jump straight towards the second. Then jump again and use the grapple to use it as a rope again. Turn to the right and swing past the broken rail to the patio.

Run ahead and a group of three guards, accompanied by two pitbulls, appears. The lanterns here are explosive. You'll need to get past these guards and dogs. Collect all the weapons and health packs you can carry, then step through the door. Go down the stairs and retrieve a reward from one of the crates. Now go up the second set of stairs. At the back, on the right side, you can jump onto the pipes. Make your way to the wall on the left. Here you can jump to the ledge. Shimmy to the right and jump backwards onto the pipes. Walk to the crate and shoot it. Inside you can find the second reward. Then jump back to the previous ledge. Drop to the lower ledge and then down to the ground. Next run towards the office door on the middle level. Open the door to enter the office.

In the office quite a few guards are awaiting you. Take them on. After finishing them, explore the office. You're now on your own if you make it this far in your journey. Have fun, and do the best you can navigating the game and achieving the tasks/goals that unfold with the story.

Video Game Play Instructions

Story

Your character is searching for an ancient South American relic. Along the journey she meets dangerous obstacles and characters, which change her course of action dramatically as she races to recover one of history's most famous artifacts.

KEYBOARD & MOUSE COMMANDS:



GENERAL CONTROLS	COMMANDS
Run forward, left, right	Arrow keys or W, S, A, D keys
Jump	Spacebar
Pull up from ledge	Spacebar
Walk/sneak	Shift key
Crouch/roll/dive	F key

Pick up items or interact with items/people	E key
Grab hold of ledge securely if hanging from one hand	E key
Look at PDA	Tab key
Turn on/off personal light	Delete key
Reset camera view	J key
Use binoculars	Page down key
Lock-on/off target (pull out gun)	G key
Throw grenade/flare	K key
Fire weapon	H key or left mouse button
Switch weapon	End key
Use health pack (increase health)	Home key
Grapple	G and Q keys
BIKE CONTROLS	COMMANDS
Steer	A, D keys
Accelerate	W key
Brake/reverse	S key

Game Play

When the game first begins, you will be standing on top of a snowy cliff. One of your guides will talk to you. After listening, walk forward and use the arrow keys to freefall off the cliff. Use the arrow keys to open your parachute to land safely on top of the building. (If you die during your attempt, the game will reload and you can try again.) Once you land on the roof, look around you. Try lining up directly behind the sniper gun. Press the E key and then the left mouse key or H key to fire to eliminate the guards below (press E key to disengage from gun when finished). Blow up exploding crates and barrels when a guard is standing near it. You can also jump of the building and engage in combat on ground level. During combat make sure to keep moving! Run and shoot when using your personal weapons. If your health is low, you can use a health pack (by pressing the home key). (Tip: Always pick up health packs and weapons dropped by enemies.)

If you kill all guards from the roof, then go to the right and jump onto the next roof. Jump to grab flagpole, and from there, jump to grab the crate and climb on the roof. Shoot the crate and get the reward inside. Look and see that five more guards are patrolling below. Eliminate them from here or jump down.

Enter the building with the windows. In the left part of



the building you can find a ladder. Climb up onto the roof. Shoot the guard on the next roof. Then step onto the glass roof and jump to that roof. Collect anything dropped by the guard. You can shoot the next guards below from up here, or slide down the plank on the left to the lower roof, and even jump down. Take out all the guards. A couple of explosive barrels can be found here and used to make it easier for you. When you have killed all the guards and dropped down, you will find, that you are on the other side of the fence now. At the left end, close to the train station, you will find a fenced area. There is a gap in the fence, through which you can shoot an explosive barrel. (Don't stand too close.) When you shoot at the barrel, the fence will be destroyed. Explore the rest of the area. On the right is a metal gate with a pad on the left, where you need to enter a security code. Unfortunately, you don't have it. Enter the medical building on the left, near the turret.



Inside you'll find two physicians who are being held prisoner by a guard. You'll free them. In exchange, they give you the code for the gate at the other end of the complex. Collect remaining weapons. Step outside again and you will find that more guards are waiting there for you. Eliminate them all and then open the gate.



There are two guards at the top of the ascent that throw some barrels that explode. Avoid the barrels and go through the gate. Then enter the building. This is the command center you have been looking for. You check some satellite photos from a computer. You'll have a conversation about these photos, and about a train that is about to leave to the laboratory. Your objective now is to catch up with the train that runs past the abandoned Soviet laboratory. Climb up the ladder close to the control panel to reach the roof. Jump to grab the ladder of the tower and climb to the top. Grab the wire and slide to the roof on the other side of the area. Grab the wire there to slide to the roof of the opposite building (close to the train). The door of the tunnel will open and two guards will start shooting from there. You'll decide to use a motorbike (instead of riding the train). Get on the bike, and drive into the tunnel.

Drive along the platform until it ends. Then chase the enemies through the snowy landscape. You have to shoot, ram or blow up the enemies appearing in your way. Do not slow down too much or you might lose the train. After awhile, the train will go through a tunnel and they will decouple some of the cars, which will block the tunnel. Drive to the right.

You have now lost sight of the train. Drive ahead and through the mountain paths. Stay on the left path. At the third intersection, you'll have to drive to the left. Continue to follow the path and kill all the enemies on motorbikes, as well as those in the SUVs. After three SUVs appear all at once you will leave the tracks again.

To jump over the train, speed over a wooden bridge to the left. Shortly after, do the same thing again to get back to the right side of the train. Be careful that you are fast enough and don't lose

the train. You will speed up a mountain path right of the train, and then you'll have to jump onto the lower cars of the train. Drive ahead and park the bike.

If you make it this far, you're now on your own. Have fun, and do the best you can navigating the game and achieving the tasks/goals that unfold with the story.

APPENDIX D

Presence Measure

How well were you able to control your actions in the videogame?

Not able 1 2 3 4 5 6 7 Very able

How much did the visual aspects of the environment involve you?

Not at all 1 2 3 4 5 6 7 Very much

How much did the noises/music of the environment involve you?

Not at all 1 2 3 4 5 6 7 Very much

How completely were you able to look around or search the game environment?

Not able 1 2 3 4 5 6 7 Very able

How well were you able to interact with objects and/or people in the game?

Not at all well 1 2 3 4 5 6 7 Very well

How involved were you in the videogame experience?

Not at all involved 1 2 3 4 5 6 7 Very involved

How well did you adjust to the videogame experience?

Not at all quickly 1 2 3 4 5 6 7 Very quickly

When I stopped playing the videogame, I felt like I came back to the "real world" after a journey.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

While playing the videogame, I felt I was in the world of the videogame.

Never 1 2 3 4 5 6 7 Always

While playing the videogame, I NEVER forgot that I was in the middle of an experiment.

Never 1 2 3 4 5 6 7 Always

While playing the videogame, I was unaware of the noises in the room in which I am sitting.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

While playing the videogame, I was unaware of the movements of others in the room in which I am sitting.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I was NOT AT ALL involved in the video game while I was playing it.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

During game play, I felt like I really was my character.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I felt upset when my character did not do well in the game (e.g., was injured, killed, got lost, or failed a mission).

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I felt happy when my character did well in the game.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I felt like my character was a real person.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

APPENDIX E

Self-Esteem Scale

On the whole, I am satisfied with myself.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

At times, I think I am no good at all.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I feel that I have a number of good qualities.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I am able to do things as well as most other people.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I feel that I do not have much to be proud of.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I certainly feel useless at times.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I feel that I am a person of worth, at least on an equal plane with others.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I wish I could have more respect for myself.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

All in all, I am inclined to feel that I am a failure.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I take a positive attitude toward myself.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

APPENDIX F

Self-Efficacy Scale

I can always manage to solve difficult problems if I try hard enough.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

If someone opposed me, I can find the means and ways to get what I want.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

It is difficult for me to stick to my aims and accomplish my goals.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I am confident that I could deal efficiently with unexpected events.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Thanks to my resourcefulness, I know how to handle unforeseen situations.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I can solve most problems if I invest the necessary effort.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I can remain calm when facing difficulties because I can rely on my coping abilities.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

When I am confronted with a problem, I can usually find several solutions.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

If I am in trouble, I can rarely think of a solution.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

I can usually handle whatever comes my way.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

APPENDIX G

Body Esteem Scale

How satisfied are you with your:

Height

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Weight

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Chest

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Body Shape

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Waist

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Hips

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Thighs

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Stomach

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Face

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Body Build

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

Shoulders

Very dissatisfied 1 2 3 4 5 6 7 Very satisfied

APPENDIX H

Self-Objectification Scale

The following is a list of physical attributes related to *your* body. Please rate the twelve attributes in terms of their importance to you. Rate each attribute from 1 = very important to 7 = not important.

Physical attractiveness

Very important 1 2 3 4 5 6 7 Not important

Physical coordination

Very important 1 2 3 4 5 6 7 Not important

Coloring

Very important 1 2 3 4 5 6 7 Not important

Health

Very important 1 2 3 4 5 6 7 Not important

Height

Very important 1 2 3 4 5 6 7 Not important

Stamina

Very important 1 2 3 4 5 6 7 Not important

Physical energy level

Very important 1 2 3 4 5 6 7 Not important

Sex appeal

Very important 1 2 3 4 5 6 7 Not important

Measurements

Very important 1 2 3 4 5 6 7 Not important

Muscle tone

Very important 1 2 3 4 5 6 7 Not important

Muscular strength

Very important 1 2 3 4 5 6 7 Not important

Physical fitness

Very important 1 2 3 4 5 6 7 Not important

APPENDIX I

Gender Role Beliefs

A woman's children should come before her career.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

A women's marriage should come before her career.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

It looks worse for a woman to be drunk than a man.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Men and women should share housework chores equally.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women rather than men should do the cooking at home.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women rather than men should be in charge of child-rearing.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Jobs that require manual labor (e.g., construction, heavy lifting, etc.) should be done by men rather than women.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Compared to men, it is more important that women look their best when appearing in public.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Men are more rational than women.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women should dress in a traditionally feminine manner.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women are as strong as men.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women should not look masculine in appearance.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Women should dress in a way that pleases and attracts men.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

A woman that dresses in a sexy or provocative manner is more powerful than a woman who does not.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Men are better at problem solving than women.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Men are better at taking on physical challenges than women.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

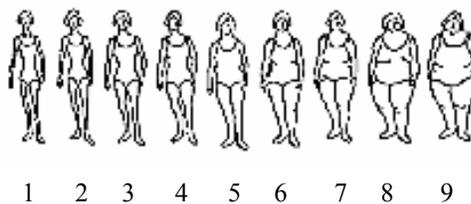
Men are better at taking on mental challenges than women.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

APPENDIX J

Figure Rating Scale

Below are pictorial representations of nine different female body shapes. Circle the number below the figure that represents the *ideal* female body image to you.



FIGURES

Figure 1

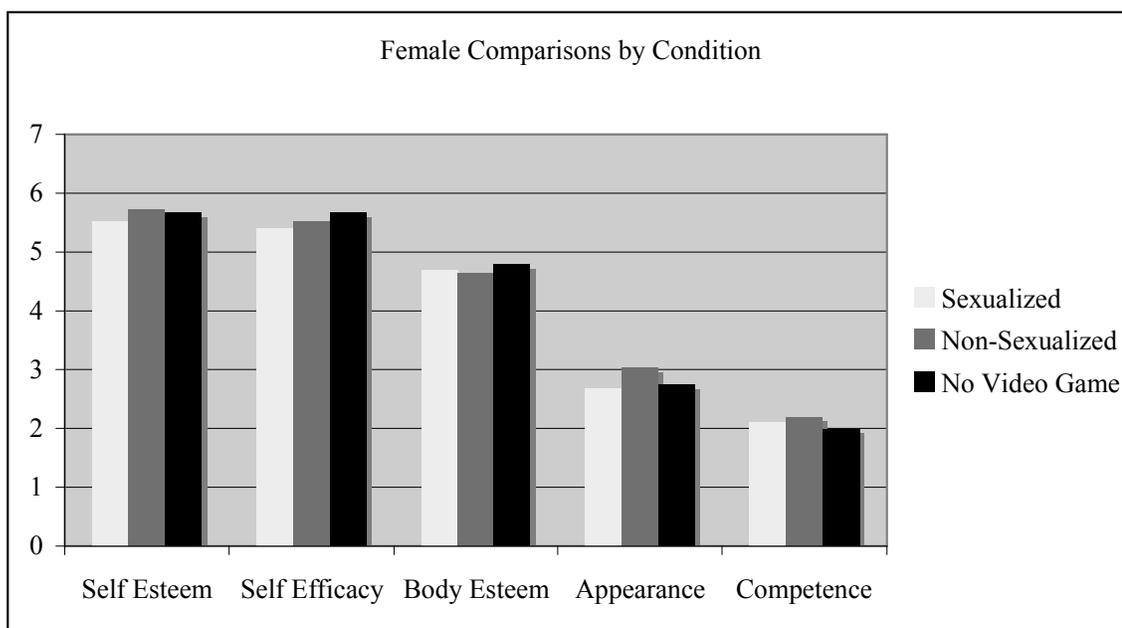


Figure 2

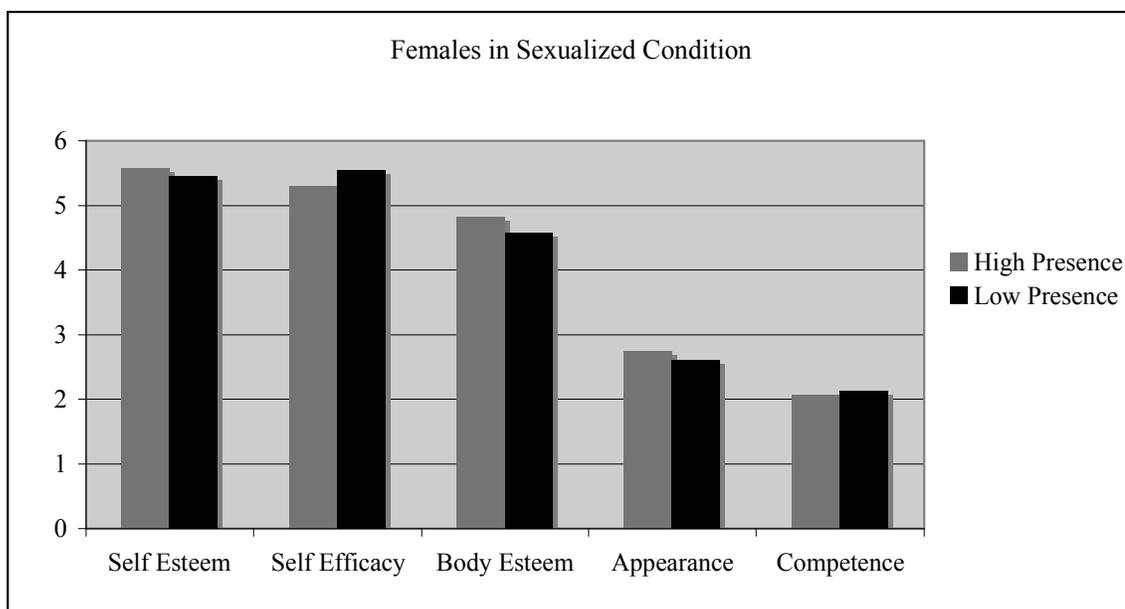


Figure 3

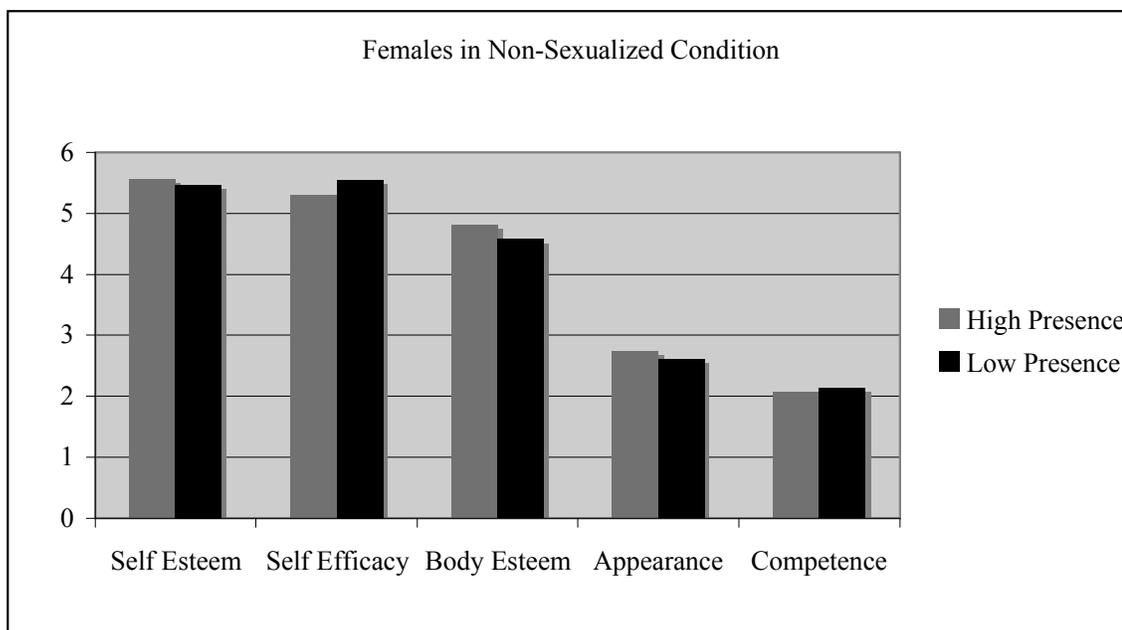


Figure 4

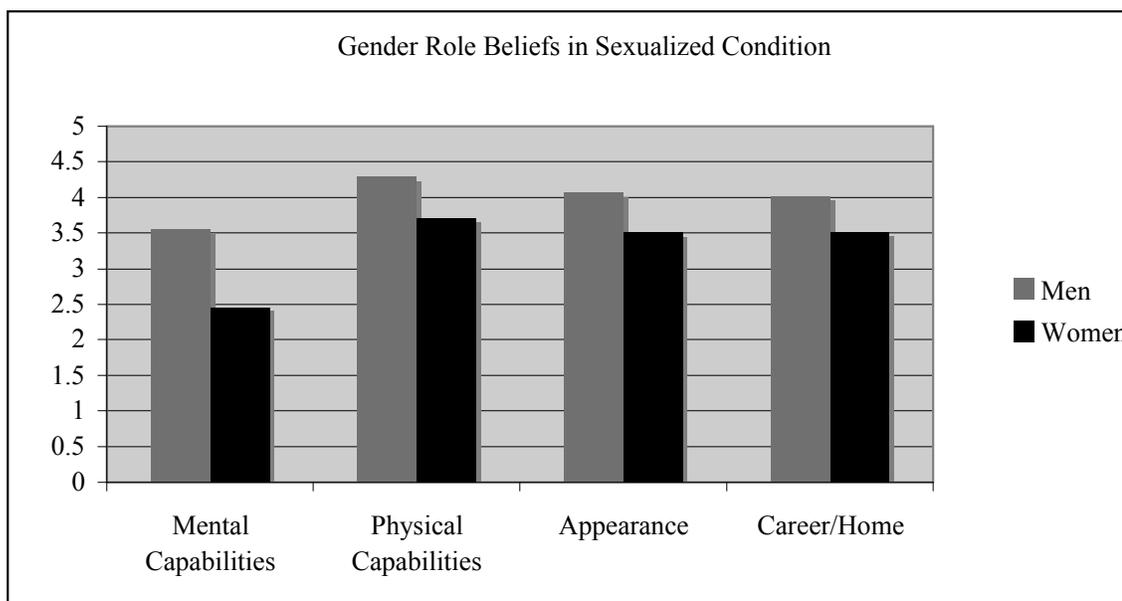


Figure 5

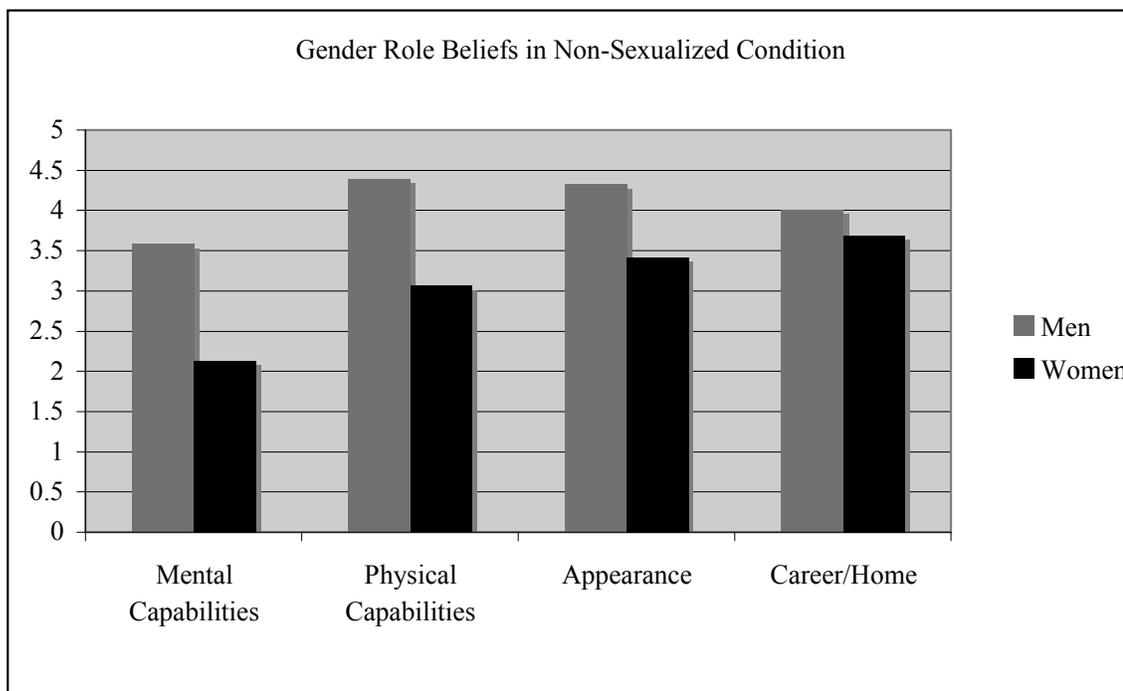


Figure 6

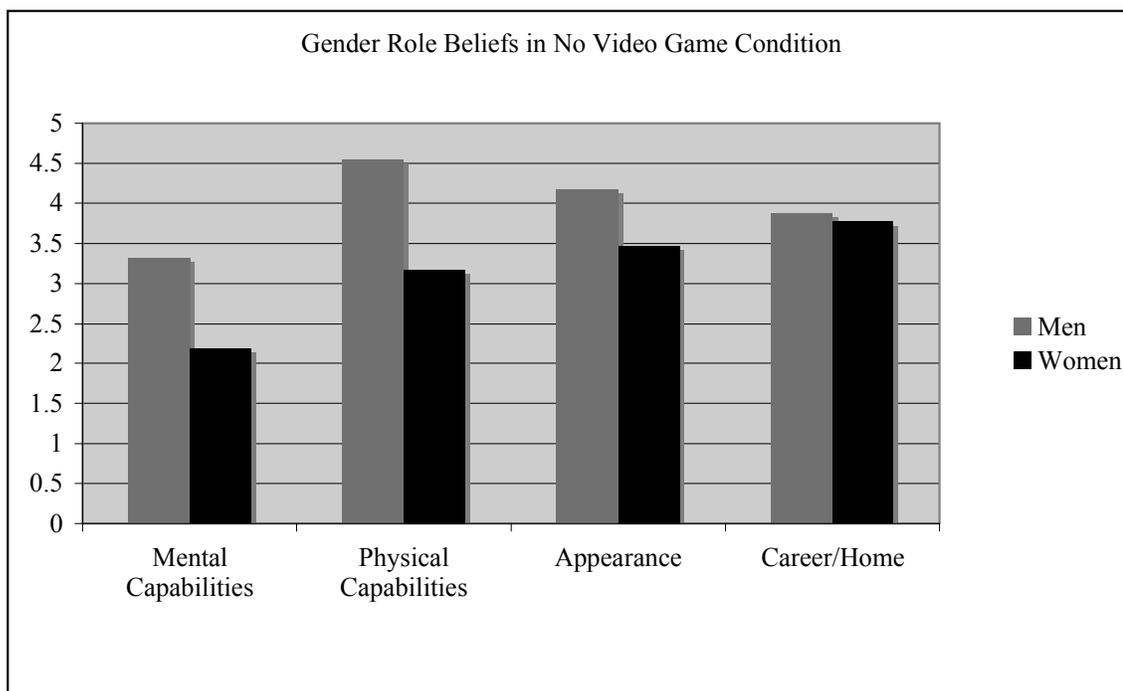


Figure 7

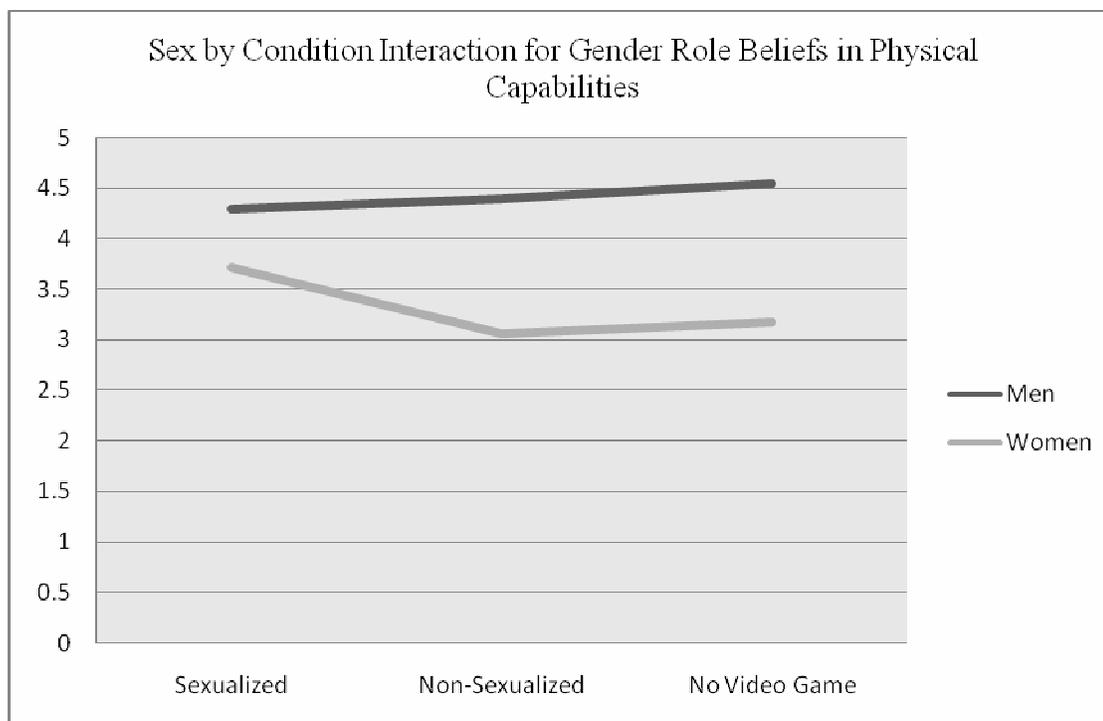


Figure 8

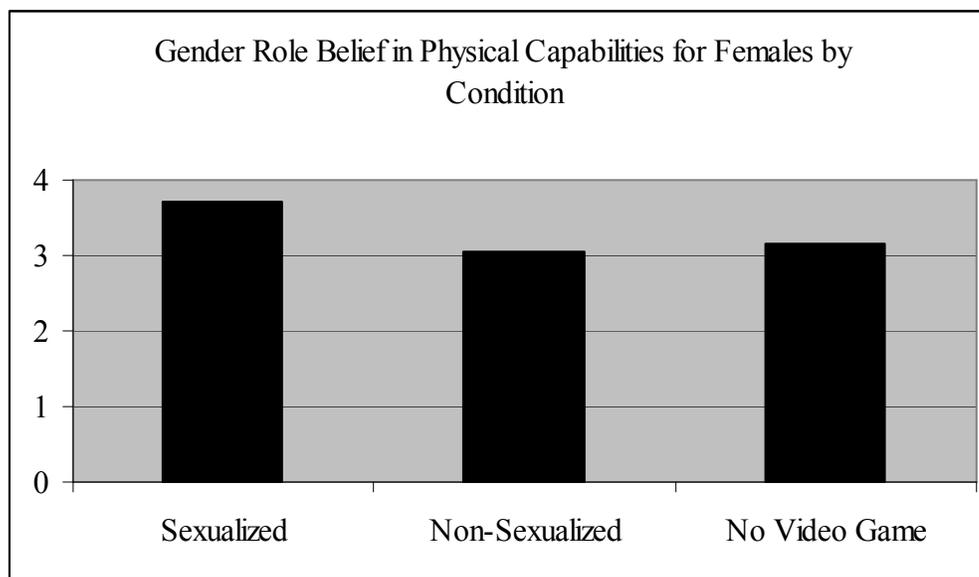


Figure 9

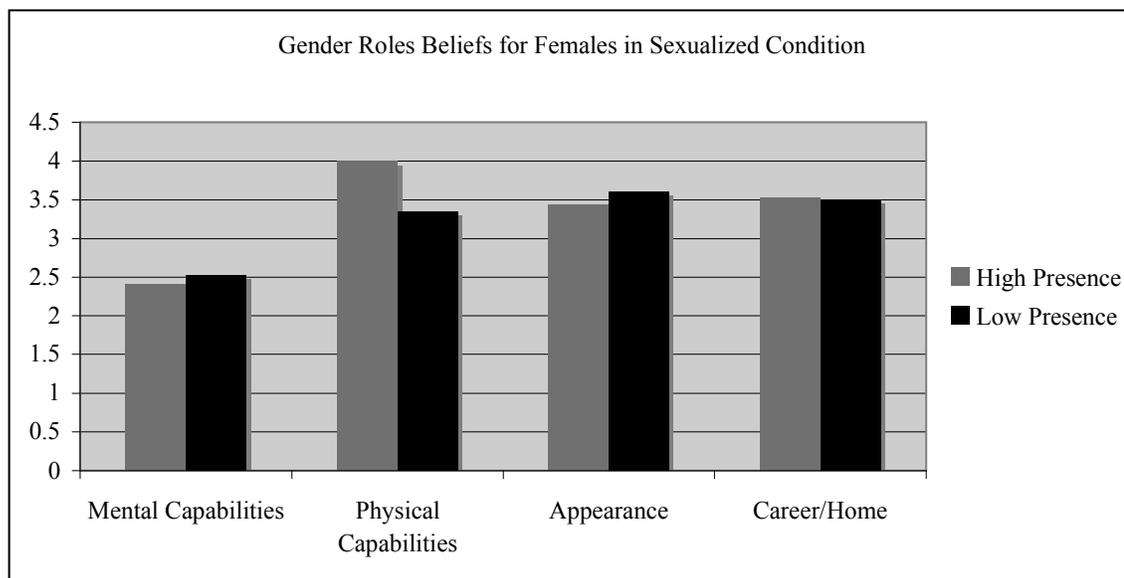


Figure 10

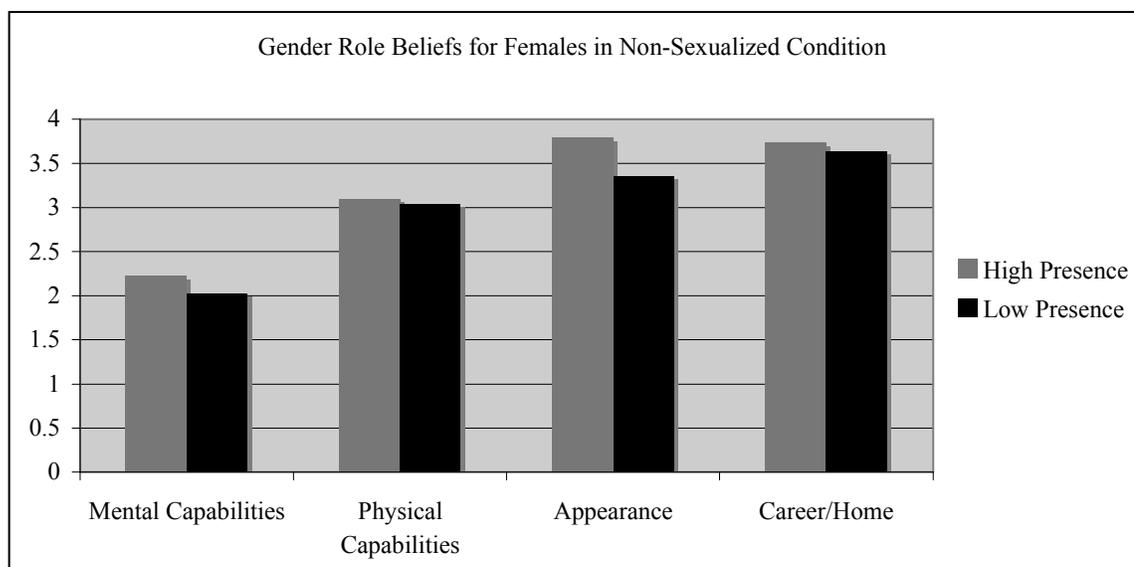


Figure 11

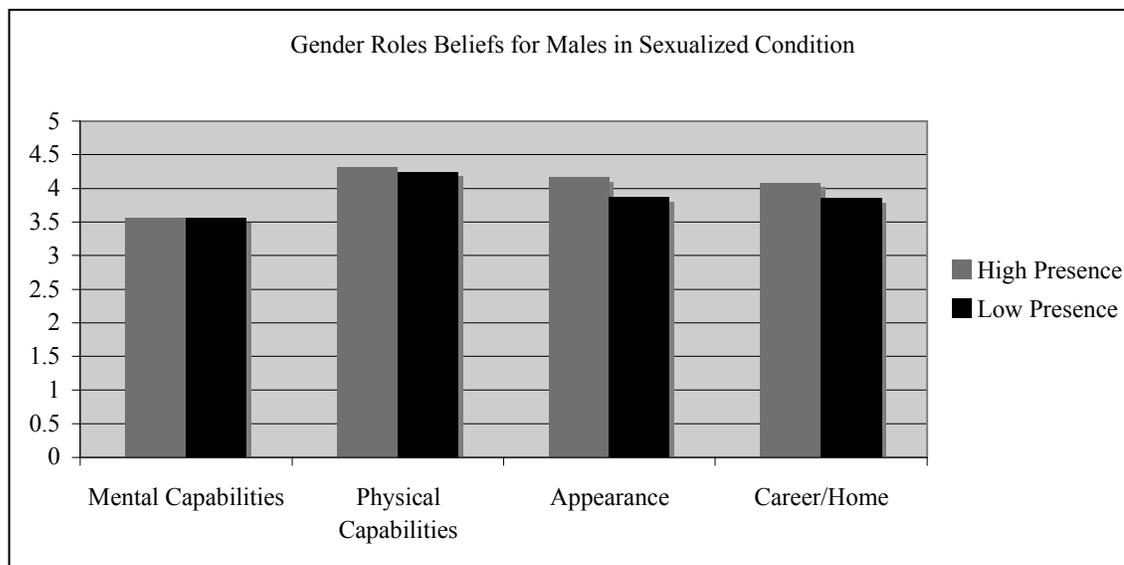


Figure 12

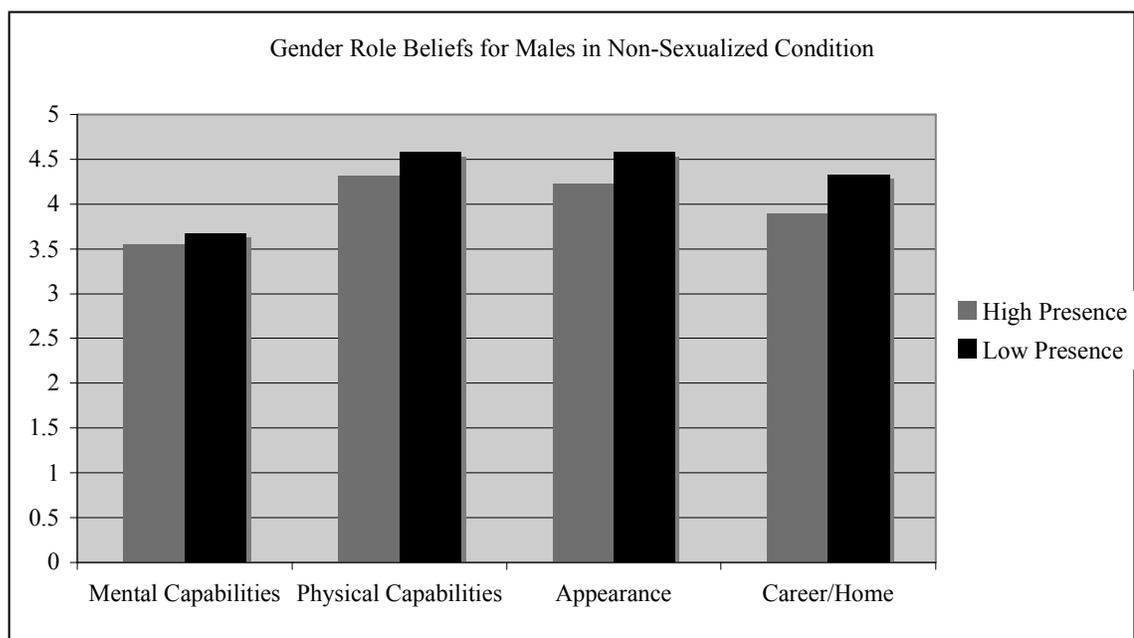


Figure 13

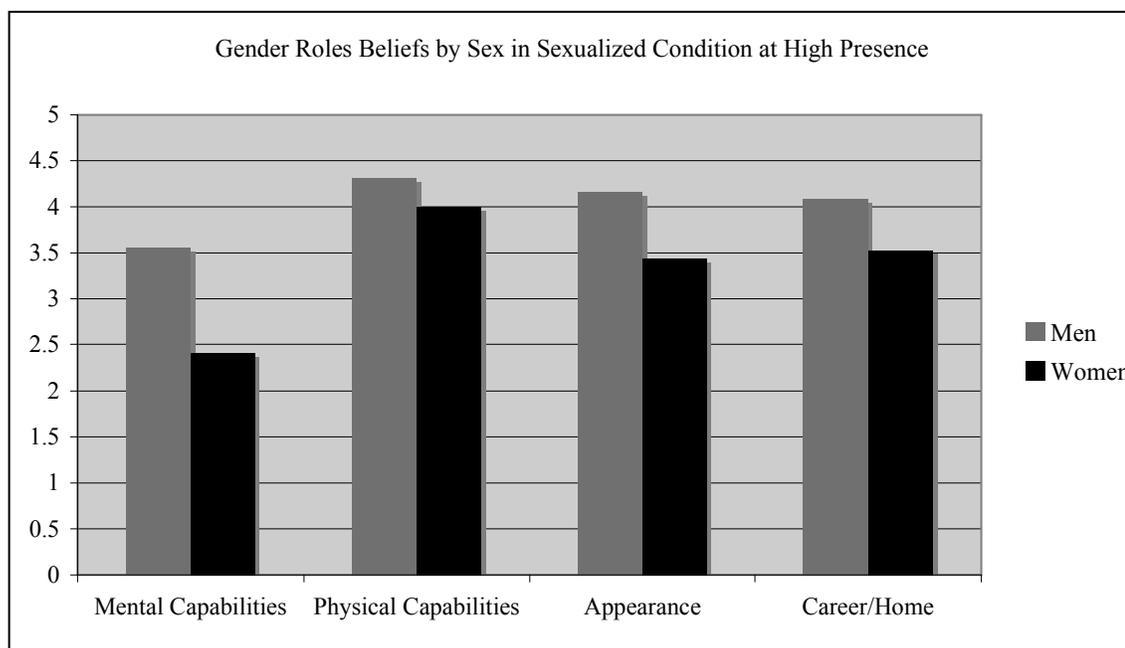


Figure 14

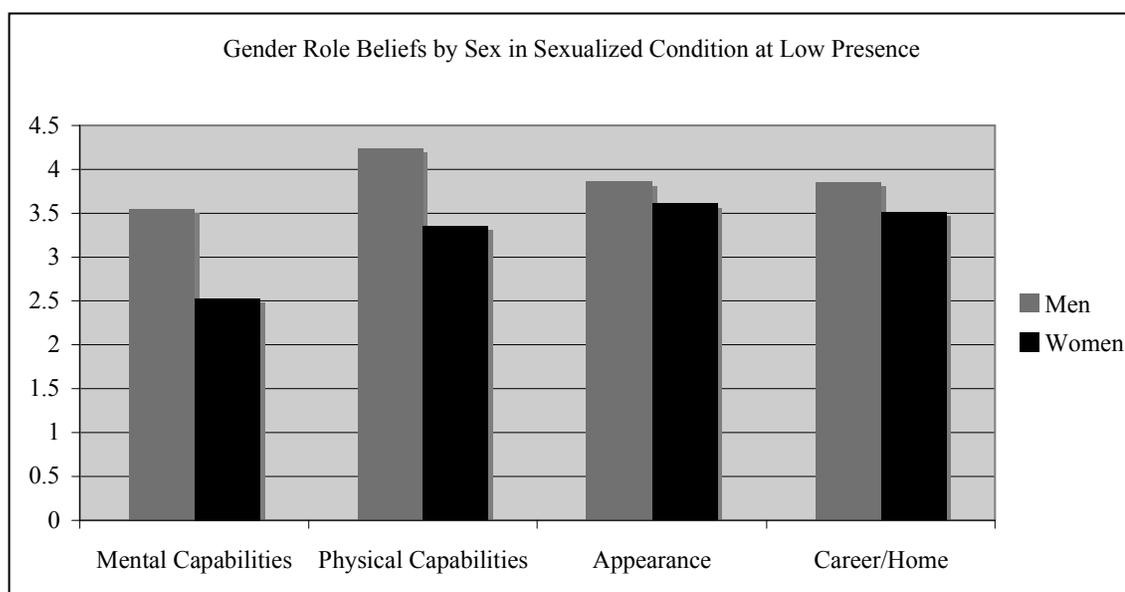


Figure 15

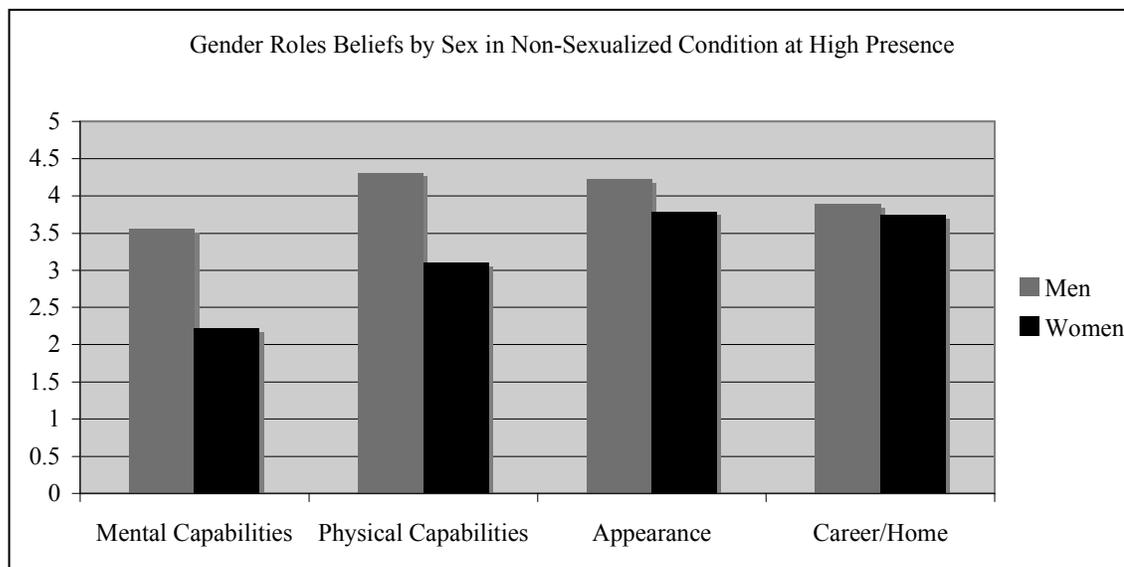
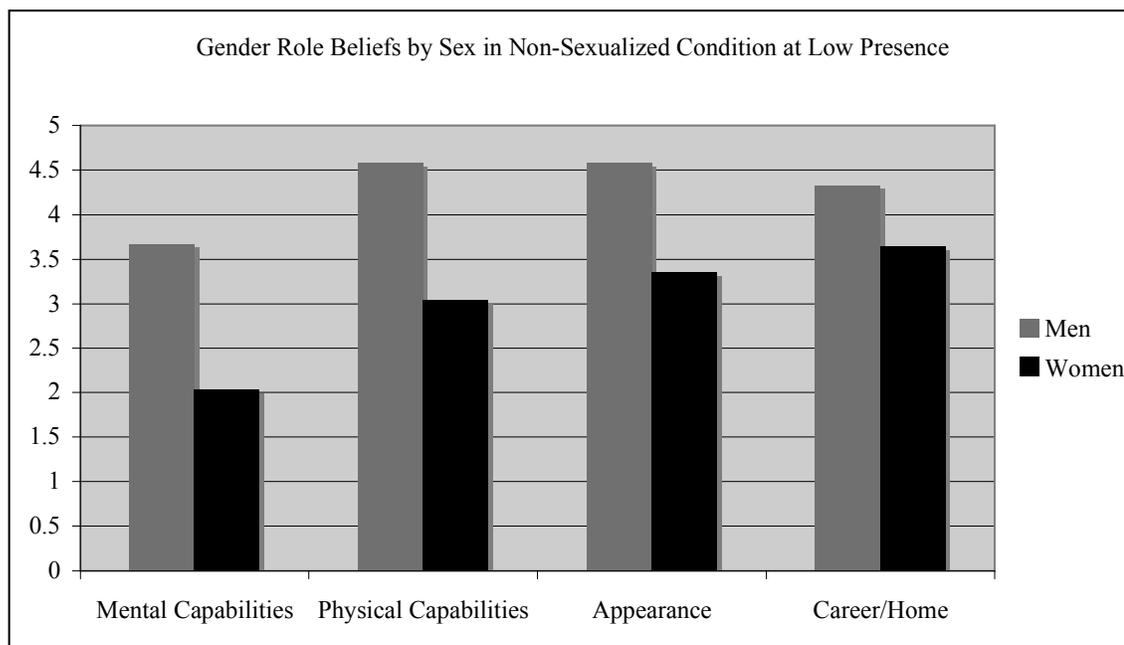


Figure 16



TABLES

Table 1

Means and Standard Deviations for Female Self-Esteem, Self-Efficacy, Body Esteem, and Self-Objectification

Variable	Condition		
	Sexualized <i>M(SD)</i>	Non-Sexualized <i>M(SD)</i>	No Video Game <i>M(SD)</i>
Self-Esteem	5.52(1.00)	5.73(.85)	5.68(.80)
Self-Efficacy	5.40(.66)	5.53(.58)	5.67(.52)
Body Esteem	4.69(1.02)	4.64(1.27)	4.80(1.18)
Self-Objectification			
Appearance	2.68(.95)	3.03(.95)	2.74(.99)
Competence	2.10(.63)	2.19(.91)	1.99(.53)

Notes: For self-esteem, self-efficacy, and body esteem, higher means indicate higher self worth (e.g., the higher the mean, the higher the self-esteem). For appearance and competence, the lower the mean the greater the importance of the variable to their perceptions of their body.

Table 2

Means and Standard Deviations for Female Self-Esteem, Self-Efficacy, Body Esteem, and Self-Objectification when Moderated by Presence

Condition	Variable				
	Self-Esteem <i>M(SD)</i>	Self-Efficacy <i>M(SD)</i>	Body Esteem <i>M(SD)</i>	Appearance <i>M(SD)</i>	Competence <i>M(SD)</i>
Sexualized					
Hi Presence	5.57(.99)	5.30(.73)	4.82(1.06)	2.74(.82)	2.07(.55)
Lo Presence	5.46(1.03)	5.55(.55)	4.58(.96)	2.61(1.10)	2.13(.73)
Non-Sexualized					
Hi Presence	5.78(.83)	5.51(.47)	4.79(1.10)	2.93(1.04)	2.07(.68)
Lo Presence	5.59(.87)	5.54(.66)	4.52(1.39)	3.12(.117)	2.30(1.06)

Notes: For self-esteem, self-efficacy, and body esteem, higher means indicate higher self worth (e.g., the higher the mean, the higher the self-esteem). For appearance and competence, the lower the mean the greater the importance of the variable to their perceptions of their body. The appearance and competence variables are related to self-objectification, such that lower scores on appearance indicate a higher degree of self-objectification.

Table 3

Means and Standard Deviations for Gender Role Beliefs

Condition	Variable			
	Mental Capabilities <i>M(SD)</i>	Physical Capabilities <i>M(SD)</i>	Appearance <i>M(SD)</i>	Career/Home <i>M(SD)</i>
Sexualized				
Women	2.46(1.01)	3.71(1.40)	3.51(1.04)	3.52(.98)
Men	3.55(1.08)	4.29(1.59)	4.07(1.23)	4.01(.95)
Non-Sexualized				
Women	2.13(.83)	3.06(1.17)	3.42(1.15)	3.69(1.12)
Men	3.58(1.30)	4.39(1.34)	4.32(1.11)	4.01(1.01)
No Video Game				
Women	2.19(.80)	3.17(1.13)	3.47(.89)	3.77(.89)
Men	3.32(1.03)	4.55(1.24)	4.17(.94)	3.88(.93)

Table 4

Means and Standard Deviations for Ideal Appearance of Female Body

Variable	
Appearance of Female Body	
Condition	<i>M(SD)</i>
<hr/>	
Sexualized	
Women	3.03(1.00)
Men	3.39(.86)
Non-Sexualized	
Women	3.16(.77)
Men	3.47(.69)
No Video Game	
Women	3.14(.88)
Men	3.35(.84)

Table 5

Means and Standard Deviations for Gender Role Beliefs when Moderated by Presence

Condition	Variable			
	Mental Capabilities <i>M(SD)</i>	Physical Capabilities <i>M(SD)</i>	Appearance <i>M(SD)</i>	Career/Home <i>M(SD)</i>
Sexualized				
Women				
Hi Presence	2.41(.93)	4.00(1.35)	3.44(1.10)	3.53(.99)
Lo Presence	2.53(1.12)	3.35(1.39)	3.61(.96)	3.51(1.00)
Men				
Hi Presence	3.55(.99)	4.31(1.43)	4.16(1.02)	4.08(.86)
Lo Presence	3.55(1.32)	4.24(1.95)	3.86(1.63)	3.85(1.16)
Non-Sexualized				
Women				
Hi Presence	2.22(1.01)	3.10(1.33)	3.79(1.12)	3.74(1.02)
Lo Presence	2.03(.84)	3.04(1.33)	3.36(1.21)	3.64(1.20)
Men				
Hi Presence	3.55(1.28)	4.31(1.23)	4.23(1.16)	3.89(1.06)
Lo Presence	3.67(1.40)	4.58(1.63)	4.58(.96)	4.33(.81)

Table 6

Means and Standard Deviations for Expectation of Female Body Moderated by Presence

Variable	
Appearance of Female Body	
Condition	<i>M(SD)</i>
<hr/>	
Sexualized	
Women	
Hi Presence	3.06(1.07)
Lo Presence	3.00(.92)
Men	
Hi Presence	3.50(.72)
Lo Presence	3.14(1.10)
Non-Sexualized	
Women	
Hi Presence	3.26(.86)
Lo Presence	3.08(.68)
Men	
Hi Presence	3.48(.76)
Lo Presence	3.42(.52)

Table 7

Means and Standard Deviations for Male Self-Esteem, Self-Efficacy, Body Esteem, and Self-Objectification

Variable	Condition		
	Sexualized <i>M(SD)</i>	Non-Sexualized <i>M(SD)</i>	No Video Game <i>M(SD)</i>
Self-Esteem	5.87(.81)	5.97(.91)	5.79(.81)
Self-Efficacy	5.73(.70)	5.67(.67)	5.71(.55)
Body Esteem	5.17(1.07)	5.04(1.09)	5.18(.90)
Self-Objectification			
Appearance	2.77(1.16)	2.53(.86)	2.77(.85)
Competence	2.07 (.91)	1.95(.76)	2.07(.91)

Notes: For self-esteem, self-efficacy, and body esteem, higher means indicate higher self worth (e.g., the higher the mean, the higher the self-esteem). For appearance and competence, the lower the mean the greater the importance of the variable to their perceptions of their body.

Table 8

Means and Standard Deviations for Male Self-Esteem, Self-Efficacy, Body Esteem, and Self-Objectification when Moderated by Presence

Condition	Variable				
	Self-Esteem <i>M(SD)</i>	Self-Efficacy <i>M(SD)</i>	Body Esteem <i>M(SD)</i>	Appearance <i>M(SD)</i>	Competence <i>M(SD)</i>
Sexualized					
Hi Presence	5.86(.78)	5.72(.61)	5.30(1.09)	2.72(1.02)	1.96(.87)
Lo Presence	5.89(.90)	5.77(.90)	4.86(.99)	2.89(1.45)	2.32(.97)
Non-Sexualized					
Hi Presence	5.77(.72)	5.79(.61)	5.25(.98)	2.53(.80)	1.81(.69)
Lo Presence	6.04(.97)	5.33(.75)	4.47(1.06)	2.55(1.05)	2.32(.84)

Notes: For self-esteem, self-efficacy, and body esteem, higher means indicate higher self worth (e.g., the higher the mean, the higher the self-esteem). For appearance and competence, the lower the mean the greater the importance of the variable to their perceptions of their body. The appearance and competence variables are related to self-objectification, such that lower scores on appearance indicate a higher degree of self-objectification.

Table 9

Correlation Matrix for All Independent and Dependent Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Condition	--	-.12*	.89	.02	.01	-.06	-.16*	.03
2. Sex		--	.12*	.13*	.18*	-.07	-.03	.33*
3. Self-efficacy			--	.46**	.21**	-.08	-.24**	.12
4. Self-esteem				--	.41**	.03	-.11	.11
5. Body esteem					--	.01	-.12*	.18*
6. Appearance						--	.57**	-.10
7. Competence							--	-.20**

Variable	8.	9.	10.	11.	12.	13.
8. Presence	--	.02	.05	.10	.08	.21**
9. Gender Career/Home		--	.52*	.36**	.41**	-.13*
10. Gender Appearance			--	.54**	.48**	-.14*
11. Gender Mental				--	.54**	.05*
12. Gender Physical					--	-.01
13. Female Body						--

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