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Sexualized Avatars Lead to Women's Self-Objectification and Acceptance of Rape Myths

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Fox, J., Ralston, R. A., Cooper, C. K., & Jones, K. A. (in press). Sexualized avatars lead to women's self-objectification and acceptance of rape myths. *Psychology of Women Quarterly*. doi: 10.1177/0361684314553578

Final version available online at the Sage website for *PWQ*:

<http://pwq.sagepub.com/content/early/2014/10/01/0361684314553578>

Acknowledgements

The authors would like to acknowledge the support of the Coca-Cola Critical Difference for Women Research Grants and the OSU Department of Women's, Gender, and Sexuality Studies.

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Abstract

Research has indicated that many video games and virtual worlds are populated by unrealistic, hypersexualized representations of women, but the effects of using these representations remains understudied. Objectification theory suggests that women's exposure to sexualized media representations leads to self-objectification. Further, we anticipated this process would lead to increases in rape myth acceptance. Two experiments (Study 1, $N = 87$; Study 2, $N = 81$) examined the effects of avatar features on women's experiences of self-objectification. In both studies, participants exposed to sexualized avatars experienced higher levels of self-objectification after the virtual experience than those exposed to nonsexualized avatars. Furthermore, in Study 2, self-objectification was found to mediate the relationship between controlling a sexualized avatar and subsequent levels of rape myth acceptance. Implications for both online and offline consequences of exposure to sexualized avatars are discussed.

Keywords: objectification theory, self-objectification, rape myth acceptance, avatars, video games, virtual environments, Proteus effect

Sexualized Avatars Lead to Women's Self-Objectification and Acceptance of Rape Myths

Avatar-based virtual environments, such as online video games and virtual worlds, are one of the most popular forms of media entertainment around the world. Last year, U.S. consumers spent nearly \$21 billion on video games (Entertainment Software Association, 2013) and the global video game market reached \$67 billion. *Grand Theft Auto V*, the latest version of a popular video game series notorious for its virtual strip clubs and simulations of sex with female prostitutes, recently broke the sales record for any entertainment medium when it made \$800 million the day of its release and its first billion in three days (Reuters, 2013). Despite the prevalence of sexist content in video games (Downs & Smith, 2010), 45% of video game players are female (ESA, 2013). With such widespread use by women, exploring the psychological effects of the sexualized female representations within these virtual environments is crucial.

Characters in these virtual spaces are often human-like, some with highly realistic features. Users often infer sex, age, race, and personality traits from human-like representations, just as they would when meeting another person (Guadagno, Swinth, & Blascovich, 2011; Nowak & Rauh, 2006). Although virtual men and virtual women often co-exist in these virtual spaces, their portrayals are quite different. Examinations of video games and virtual worlds reveal that men outnumber women (Williams, Martins, Consalvo, & Ivory, 2009) and that female representations are overwhelmingly stereotypical (e.g., kidnapped princesses in need of rescue) and often sexualized (Burgess, Stermer, & Burgess, 2007; Downs & Smith, 2010; Summers & Miller, in press). Despite the inequitable and objectified nature of women's representations in virtual environments, as well as a large body of research noting the deleterious effects of sexualized portrayals of women in other media (American Psychological Association

Task Force on the Sexualization of Girls, 2007; Moradi & Huang, 2008), limited research has addressed the effects of exposure to sexualized virtual women.

It is imperative to investigate the effects of virtual representations because they have distinct features compared to other media figures. Unlike images in other media, virtual humans are designed to respond to a user's actions (Blascovich et al., 2002). This dynamic creates a new and powerful experience beyond passive media consumption; rather, these interactions mirror communication in the physical world, and users often react to virtual humans in natural and social ways (Blascovich et al., 2002). Also, rather than merely observing characters, users may embody characters in virtual worlds and experience the virtual body as their own. Because of the enhanced realism, the opportunities for interactivity, and the experience of embodiment, it is possible that these representations will have powerful effects on users' beliefs, attitudes, and behaviors offline as well (Fox & Bailenson, 2009b; Fox, Bailenson, & Tricase, 2013; Yee & Bailenson, 2007, 2009).

Given the dearth of research on the impact of new media representations, the current studies sought to investigate the effects of embodying sexualized female representations that commonly populate video games and other virtual worlds. These studies also addressed two additional gaps that Calogero (2011) noted, namely that "few empirical investigations have tested the link between experiences of sexual objectification and self-objectification or its proposed consequences" (p. 38-39). Although there is considerable research examining the link between traditional media and self-objectification, experimental research has been limited to media depictions of physical attractiveness, beauty advice, and weight as opposed to sexual objectification (Aubrey, Henson, Hopper, & Smith, 2009; Grabe, Ward, & Hyde, 2008). Further,

although self-objectification is often looked at an outcome, limited experimental research has examined the subsequent consequences of a state of self-objectification (Calogero, 2011).

Thus, the current studies intend to address these gaps by experimentally investigating the effects of sexualized avatars. Specifically, in both studies we examine the effects of placing women in sexualized compared to nonsexualized virtual bodies in an online virtual environment, Second Life. We also seek to investigate whether affordances of virtual environments (in Study 1, controlling the representation, and in Study 2, manipulating the representation to be similar or dissimilar to the self) affect the process self-objectification. Further, we seek to extend the current understanding of objectification processes to understand whether objectifying the self leads women to objectify and dehumanize other women by endorsing rape myths.

Objectification Theory

Objectification theory states that “the cultural milieu of sexual objectification functions to socialize girls and women to, at some level, treat themselves as objects to be looked at and evaluated” (Fredrickson & Roberts, 1997, p. 177). Collectively, media are one of the major forces in creating this culture and driving women to believe that their social value is defined by their appearance and sexuality. Content analyses have found that compared to men, women are relegated to secondary or subordinate roles (Ganahl, Prinsen, & Netzley, 2003) and are much more likely to appear in a sexualized or objectified manner, often solely for ornamental purposes (Stankiewicz & Rosselli, 2008). Because of the persistent and pervasive sexual objectification of women within society, women are depersonalized and judged as bodies and objects with solely sexual worth (Bartky, 1990).

As women are socialized in this culture, they gradually internalize this perspective and learn to see and value themselves based on their appearance (Fredrickson & Roberts, 1997). This

process of *self-objectification* has been tied to disordered eating (Noll & Fredrickson, 1998; Slater & Tiggemann, 2002), depression (Grabe & Jackson, 2009; Muehlenkamp & Saris-Baglama, 2002), body preoccupation (Quinn, Kallen, & Cathey, 2006), body shame (Calogero, 2004), and decreased cognitive performance (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Quinn, Kallen, Twenge, & Fredrickson, 2006). Exposure to sexual imagery in traditional media (e.g., magazines and television) has been linked to self-objectification in a number of studies (e.g., Aubrey, 2006b; Gordon, 2008; Grabe & Hyde, 2009; Vandenbosch & Eggermont, 2012), but very few studies have examined this experimentally (e.g., Aubrey et al., 2009; Daniels, 2009; Halliwell, Malson, & Tischner, 2011). Further, at this point minimal research has addressed the potential of new, interactive media (Fox et al., 2013). If women are at risk of these detrimental outcomes due to using sexualized avatars (which, if they play video games as female characters, is often their only option; Downs & Smith, 2010; Summers & Miller, in press), it is important to investigate their effects.

Further, the process of objectification is often tied to other deleterious outcomes in terms of social judgment. Several scholars note that objectification is a process of dehumanization in which women are no longer considered mindful social entities worthy of moral consideration (Calogero, 2013; Haslam, Loughnan, & Holland, 2013). Several studies have shown that the objectification of women has led to the perception of women as less than human (Heflick & Goldenberg, 2009; Heflick, Goldenberg, Cooper, & Puvia, 2011; Vaes et al., 2011). Loughnan and colleagues (2010) found that when women are sexually objectified, others' perceptions of the objectified women's humanity are diminished and that they are not perceived as deserving of moral consideration. This lack of moral consideration lays a dangerous foundation for what

society believes is acceptable treatment of women. Indeed, this lack of moral consideration and diminished humanity may be the justification for other troubling attitudes.

Rape Myth Acceptance

Given these findings, coupled with scarce research on new media representations, we sought to examine how a state of self-objectification evoked by using a sexualized avatar may activate or promote other anti-woman attitudes. *Rape myth acceptance* (RMA) is the endorsement of false beliefs about rape that typically place blame on the victim rather than the perpetrator (Brownmiller, 1975; Burt, 1980; Lonsway & Fitzgerald, 1994). Examples of rape myths include the belief that women do something to “deserve” getting raped (such as drinking, being out late at night, or dressing suggestively) or that rape victims are promiscuous. Not only is RMA associated with callousness toward rape victims, but also toward victims of interpersonal violence and women in general (Burt, 1980). Women who endorse rape myths are also less likely to take precautionary measures against rape (Hickman & Muehlenhard, 1997).

Although Burt’s (1980) initial research focused on identifying personality predictors of RMA, subsequent studies have elaborated on the role of media consumption as a predictor. Television viewing (Kahlor & Morrison, 2007; Kahlor & Eastin, 2011) has been positively correlated with RMA. Meta-analyses have synthesized dozens of studies and determined that exposure to sexualized media can also increase RMA (Allen, Emmers, Gebhardt, & Geary, 1995; Mundorf, D’Alessio, Allen, & Emmers-Sommer, 2006). At this stage, however, interactive media such as video games and virtual worlds remain largely understudied. One experiment found that interacting with stereotypical virtual representations of women can promote rape myth acceptance in men and women (Fox & Bailenson, 2009b).

It is unclear, however, why women exposed to sexualized portrayals of women in the media then endorse rape myths. One possibility is that sexualized portrayals lead to objectification and corresponding dehumanization of women (Haslam et al., 2013), which leads to the denigration of rape victims and the acceptance of rape myths. Although several studies have supported the relationship between objectification and dehumanization (e.g., Cikara, Eberhard, & Fiske, 2010; Heflick & Goldenberg, 2009; Heflick et al., 2011; Loughnan et al., 2010; Vaes et al., 2011), fewer studies have explored the link to beliefs and attitudes about rape. Rudman and Mescher (2012) demonstrated that men who implicitly dehumanized women reported more negative attitudes toward rape victims and greater rape proclivity. Loughnan and colleagues (2013) more explicitly parsed out the role of objectification in RMA in a study that exposed women to sexualized and nonsexualized portrayals of women who were allegedly the victim of an acquaintance rape. The authors found that participants objectified and dehumanized the sexualized victim, expressing less moral concern for her than for the nonsexualized victim, and also blamed her more for the rape.

Given that objectification of others leads to RMA, it is possible that women's own self-objectification leads to a greater endorsement of rape myths. When objectifying and dehumanizing the self, women may be more likely to objectify women in general and blame women for rape. Indeed, self-objectification predicts the objectification of others (Linder, Tantleff-Dunn, & Jentsch, 2012). Puvia and Vaes (2013) found that women's self-objectification led them to dehumanize other women. Given that dehumanization predicts RMA (Loughnan et al., 2013; Rudman & Mescher, 2012), it may be that self-objectification triggered by sexually objectifying media subsequently leads to RMA. Virtual environments, which emphasize

interactivity and in which sexualized representations of women abound, are an ideal context for systematic inquiry into this possibility.

The Representation of Women in Virtual Environments

Virtual environments are two- or three-dimensional digital representations of natural or imagined spaces (Blascovich et al., 2002). Video games are perhaps the most popular virtual environments. Within these virtual environments, human-like representations are common. An *avatar* is defined as a digital representation that is controlled by a human. Studies have consistently demonstrated the power of avatars to change users' attitudes and behaviors (Baylor & Plant, 2005; Blascovich et al., 2002; Fox & Bailenson, 2009a; Yee & Bailenson, 2007).

Thus, it is important to understand how sexualized avatars may affect users. Despite the prevalence of objectified representations (Downs & Smith, 2010; Summers & Miller, in press), only a handful of studies have probed the effects of sexualized avatars. Studies have found that sexualized avatars can diminish women's self-efficacy (Behm-Morawitz & Mastro, 2009), encourage men and women to perceive women as less intelligent (Behm-Morawitz & Mastro, 2009), promote hostile sexism (Fox & Bailenson, 2009b), make men more tolerant of sexual harassment (Dill, Brown, & Collins, 2008), and increase men's likelihood to sexually harass (Yao, Mahood, & Linz, 2010).

Previous research on sexual objectification in media has focused largely on the effects of photographs and photorealistic representations of women in traditional media (e.g., Aubrey, 2006a, 2006b; Aubrey et al., 2009b; Vaes et al., 2011). Avatars are a particularly interesting mediated representation to investigate because although they are designed to be human-like, they are still based on computer-generated graphics. Thus, it is possible that these representations are more likely to be dehumanized and objectified. Further, it is possible that this dehumanization

will be internalized. Bastian, Jetten, and Radke (2011) and Greitemeyer (2013) found that playing a video game in which one's avatar performed violent acts led players to perceive themselves as less human.

Another reason it is important to investigate whether sexualized avatars promote self-objectification is because both users and scholars have argued they can be “powerful” or “empowering” (see Deuber-Mankowsky, 2005; Kennedy, 2002; Royse, Lee, Baasanjav, Hopson, & Consalvo, 2007). These claims parallel the idea of empowerment through sexual agency espoused by third wave feminists (Gill, 2008), but focus on the affordances of virtual environments as being the source of empowerment: unlike objectified women in other media such as television or magazines, the user is able to play as the sexualized representation, making the avatar more of an agentic subject than an object. For example, Lara Croft of the *Tomb Raider* series was one of the first playable virtual female characters in a successful, mainstream video game. As such, the character has been labeled a “feminist icon” (Kennedy, 2002) and a “cyber heroine” (Deuber-Mankowsky, 2005) and has been conceptualized as a positive example of how virtual spaces have evolved to accommodate women (Jenson & De Castell, 2010), despite the fact that she is hypersexualized and objectified (Kennedy, 2002). Indeed, a content analysis of playable female characters noted that 77% of the female characters were hypersexualized, yet the authors categorized these representations as evidence of “the Lara phenomenon,” defined as “the appearance of a strong and competent female character in a dominant position” (Jansz & Martins, 2007, p. 147). The definition of this “phenomenon” does not acknowledge that the majority of these “strong,” “dominant” female characters depict a double bind and are disempowered through their sexual objectification (Brown, 2011).

These conceptualizations imply that female users are empowered through controlling an objectified representation. In contrast, findings from the framework of objectification theory across other media suggest that exposure to sexualized imagery causes self-objectification in women (Aubrey et al., 2009b; Vaes et al., 2011), even when sexualized women are depicted as having agency (Halliwell et al., 2011). Thus, it is an essential first step in this research to examine whether controllable virtual representations trigger self-objectification in female users, or whether the ability to control a sexualized representation diminishes the negative effects that objectification theory predicts.

Two studies have specifically investigated self-objectification and sexualized avatars. Behm-Morawitz and Gerding (2013) surveyed users of the virtual world Second Life and found that women's self-objectification was correlated with their avatar's sexualization. Fox and Bailenson (2013) found that women who embodied sexualized avatars in fully immersive virtual reality experienced higher levels of self-objectification than women who embodied nonsexualized avatars. At this point, however, research in this area is extremely limited.

The current studies sought to extend existing research in several ways. First, replication is necessary to support the singular study thus far demonstrating that the embodiment of sexualized avatars causes self-objectification (i.e., Fox et al., 2013). Second, this previous study has been criticized for its lack of generalizability given it was conducted in fully immersive virtual reality, a highly complex simulation which is not technologically comparable to virtual worlds accessible to the average consumer (Ahn, Le, & Bailenson, 2013; Blascovich et al., 2002). Thus, it is necessary to see if these same effects hold in popular, commonly used online contexts. Third, closer examination is necessary to ascertain the conditions and experiences in virtual environments that lead to self-objectification. Given the unique interactive affordances of virtual

environments, these experiences may differ from traditional media. Finally, previous research has not looked beyond the experience of self-objectification prompted by sexualized avatars, and limited experimental self-objectification research has examined its consequences, particularly regarding potential increases in RMA. We seek to extend existing research on objectification to see if the process of self-objectification may further activate other detrimental attitudes about women.

Study 1

The first goal of Study 1 was to provide a replication of a previous study to determine whether or not self-objectification can be triggered in a less immersive virtual environment. Given that previous research on sexually objectifying media has focused on photorealistic representations in traditional media (Aubrey, 2006a, 2006b; Aubrey et al., 2009b; Vaes et al., 2011) and the solitary study performed using avatars used highly photorealistic avatars (Fox et al., 2013), it is essential to see if the avatars typical of commonly accessed virtual worlds are sufficient to trigger experiences of self-objectification. Further, previous research has found that the effects of experiences in fully immersive virtual environments are often diminished if not eliminated when the same treatment is observed in a nonimmersive desktop environment (Ahn et al., 2013). Given that the only previous study using avatars had participants physically walking around in the virtual bodies and seeing their own virtual body sexualized (similar to the swimsuit/sweater paradigm employed by Fredrickson et al., 1998), this powerful experience may be considerably different than pushing buttons and observing a virtual body on a desktop monitor. We expect, however, that the sexually objectified imagery will still promote experiences of self-objectification:

H1: Participants exposed to a sexualized avatar will experience higher levels of self-

objectification than participants exposed to a nonsexualized avatar.

Secondarily, we wanted to investigate whether controlling the avatar, as opposed to watching it, would have any impact on experiences of self-objectification. Controlling an avatar is an affordance unique to interactive media, and thus this experience may affect individuals differently than traditional media that have been tested in experiments with sexually objectifying stimuli. It is also important to investigate this difference in terms of the generalizability of this research, as video games and virtual environments feature both avatars controlled by the player as well as characters controlled by other players and the computer.

Previous studies have shown that controlling an avatar leads to greater effects than merely watching an avatar controlled by another person (Ahn & Bailenson, 2011). Although there are no existing studies examining avatar control and objectification, Chen and colleagues (2013) found that women who experienced sexual objectification reported higher levels of self-objectification only when they felt responsible for the objectification. Thus, it is possible that participants who are controlling the sexualized avatar feel more responsible for its appearance and behavior than those merely watching, and thus they will experience greater self-objectification. Given the findings of Ahn and Bailenson and Chen et al., we expect that:

H2: Participants who control a sexualized avatar will experience higher levels of self-objectification than those in other conditions.

The process of self-objectification requires an internalization of the objectifying message conveyed by the medium. One possible explanatory mechanism for the internalization of the sexualized portrayal is that, in the process of embodiment, participants begin to identify as the avatar. *Identification* refers to the extent to which an individual relates to a media character and feels that s/he is similar to the character (Bandura, 1977; Cohen, 2001). Observers may then

adopt the character's perspective and experience the mediated environment as the character (Cohen, 2001). The experience of identification may influence how observers learn from media (Bandura, 1977).

Klimmt, Hefner, and Vorderer (2009) distinguish avatars' capacity to promote identification from literary roles or television characters. Klimmt et al. argue that due to avatars' interactivity and the user's control over the avatar, video games create a *monadic* relationship wherein "players do not perceive the game (main) character as a social entity distinct from themselves, but experience a merging of their own self and the game protagonist" (p. 354) and are thus more powerful than traditional media. Thus, it may be that embodying an avatar yields the experience of identification, which may influence whether or not users internalize the characteristics of their avatar. Indeed, some studies have found a link between identification with violent game characters and aggression (Konijn, Bijvank, & Bushman, 2007) and identification leading to stereotyping and hostility (Eastin, Appiah, & Cicchillo, 2009). Thus:

H3: Participants who control an avatar will experience greater identification than those who watch an avatar.

Although previous research has yet to empirically examine identification with sexualized avatars, previous studies indicate that when participants identify more with their avatars, the effects of those avatars are stronger (Eastin et al., 2009; Konijn et al., 2007). Thus, we expect that:

H4: Participants who experience higher levels of identification with sexualized avatars will demonstrate the highest levels of self-objectification.

Method

Sample. Female participants were recruited from a large Midwestern university for a study on virtual worlds. Participants received course credit for their participation. The final

sample ($N = 87$) ranged in age from 18 to 29 ($M = 20.04$, $SD = 1.83$) and reported their race/ethnicity as: 79.3% Caucasian/European-American/White ($n = 69$); 8% Black/African/African-American ($n = 7$); 6.9% Asian/Asian-American ($n = 6$); 2.2% Latina/Hispanic ($n = 2$); 2.2% multiracial ($n = 2$); and 1.1% Middle Eastern ($n = 1$). Participants reported the number of hours they spent using avatar-based games or virtual environments daily ($M = .13$, $SD = .47$).¹

Procedure and Stimuli. At least one week before participation in the experiment, participants completed an online survey. When they arrived at the lab, participants were randomly assigned to one of four conditions: Controlling Sexualized Avatar ($n = 22$), Watching Sexualized Avatar ($n = 20$), Controlling Nonsexualized Avatar ($n = 20$), or Watching Nonsexualized Avatar ($n = 25$).

The online interaction took place in the virtual world Second Life. Because user behavior is not restricted in this world, scholars have turned to Second Life as a research platform to study human behavior and responses to virtual representations (e.g., Guadagno, Muscanell, Okdie, Burk, & Ward, 2011; Yee, Bailenson, Urbanek, Chang, & Merget, 2007). In Second Life, users can build their own private, customized areas, and thus scientists are able to create highly controlled spaces for research (Yee et al., 2007). Second Life avatars are also highly customizable, which makes them optimal for examining the effects of sexualized representations.

Another advantage of Second Life is that it allowed us to manipulate sexual objectification according to Aubrey et al. (2009), who identified two ways sexual objectification is conveyed in the media: 1) sexualized body exposure and 2) the focus on women's body parts as opposed to the whole. To determine the stimuli for use in the experiment, 54 participants from a separate pool than the main experiment were asked to evaluate 26 White female avatars in various states of dress and determine "How sexy is this representation?" (1 = *Not sexy at all*; 5 =

Very sexy); “How is this representation dressed?” (1 = *Conservatively clad*; 5 = *Suggestively clad*); and “How attractive is this representation?” (1 = *Not attractive at all*; 5 = *Extremely attractive*). Based on these qualities, four avatars were selected (two sexualized and two nonsexualized). Within condition, the two avatars were rated equally on these traits. Sexualized avatars were judged to be significantly more sexy and suggestively dressed than the nonsexualized avatars, although there were no significant differences in attractiveness between the sexualized and nonsexualized avatars. See Figure 1 for examples.

To meet the second objectification criterion of a focus on women’s body parts (Aubrey et al., 2009), the experimental script was written with directions on how the avatar would be moved and viewed. In the Controlling conditions, participants were instructed to change the camera angle several times, including front, side, and rear views, and to zoom in to inspect the body close up from each of these angles as the avatar walked through rooms, looked at her reflection in a virtual mirror, and interacted with virtual objects. The Watching conditions featured these same steps, although this was viewed as a video and the participant did not control the avatar’s movements or the camera angle. After the experience in the virtual world, participants completed the measures and were subsequently debriefed.

Measures

Trait self-objectification (Time 1). Before the experiment, participants completed an online pretest that included Fredrickson and Noll’s (1997) Self-Objectification Questionnaire (SOQ). The SOQ assesses trait-level self-objectification by asking participants to rank various body traits from most to least important. The traits vary on whether they are appearance-based (e.g., sex appeal, physical attractiveness) or competence-based (e.g., energy level, health).

Competence-based scores are subtracted from appearance based-scores and range from -25 to 25; higher scores indicate higher levels of trait self-objectification ($M = -.22$, $SD = 12.05$).

State self-objectification (Time 2). Following Aubrey et al. (2009), after exposure to the stimulus, participants were asked to complete the Twenty Statements Test (TST; Fredrickson et al., 1998). The TST is composed of 20 blank statements that begin with “I am _____.” Responses are coded based on whether participants focus on their appearance (e.g., “I am beautiful,” “I am fat”) or on other facets of themselves (e.g., “I am creative,” “I am stressed out,” “I am a student.”) Appearance-based items are scored as indicators of self-objectification. Two research assistants blind to condition and study purpose coded each response ($M = 2.00$, $SD = 2.43$); intercoder reliability was Cohen’s $\kappa = .88$.

Identification. Eight items were adapted from Cohen (2001) and used to assess participants’ feelings of identification with the avatar ($M = 2.53$, $SD = .79$). Participants indicated on a 5-point scale (1 = *Strongly disagree*; 5 = *Strongly agree*) their agreement with statements including “While I was inside the virtual environment, I could really feel the experiences the avatar portrayed” and “I think I have a good understanding of the avatar.” Cronbach’s alpha of $\alpha = .89$ was achieved.

Manipulation check. To verify the Sexualization manipulation, the same two items from the stimulus pretest were used to determine how suggestively dressed and sexy the participant believed the avatar to be. An independent samples t -test revealed that participants in the Sexualized conditions indicated that the avatar was more sexy ($M = 3.12$, $SD = 1.37$) and suggestively dressed ($M = 4.40$, $SD = 1.11$) than participants in the Nonsexualized conditions (sexy, $M = 2.43$, $SD = 1.39$; suggestively dressed, $M = 1.82$, $SD = 1.17$), sexy: $t(84) = 2.31$, $p < .05$, Cohen’s $d = .50$; suggestively dressed: $t(85) = 10.55$, $p < .0005$, Cohen’s $d = 2.26$. One item

was included to verify the Interactivity manipulation: “I felt as if I was controlling the avatar” (1 = *Strongly disagree*; 5 = *Strongly agree*). An independent samples *t*-test revealed that participants in the Controlling conditions ($M = 4.21, SD = 1.44$) indicated that they felt they were controlling the avatar significantly more than participants in the Watching ($M = 1.61, SD = 1.30$) conditions, $t(84) = 8.80, p < .0005, \text{Cohen's } d = 1.89$.

Results and Discussion

H1 hypothesized that women exposed to a sexualized avatar will experience greater self-objectification than women exposed to a nonsexualized avatar. An ANCOVA was performed with sexualization as the independent variable, self-objectification as the dependent variable, and Time 1 trait self-objectification as a covariate. Trait self-objectification was not a significant covariate, $F(1, 84) = .68, p = .41, \text{partial } \eta^2 = .01$, and was removed from the analysis.² The analysis revealed that participants in the Sexualized condition ($M = 2.79, SD = 2.98$) demonstrated significantly higher levels of self-objectification than participants in the Nonsexualized condition ($M = 1.27, SD = 1.45$), $F(1, 85) = 9.31, p = .003, \text{partial } \eta^2 = .10$. H1 was confirmed.

H2 hypothesized that controlling or watching the avatar would moderate the relationship between sexualization (IV) and self-objectification (DV). A factorial ANOVA was run. Trait self-objectification was not a significant covariate, $F(1, 82) = .53, p = .47, \text{partial } \eta^2 = .01$, and was removed from the analysis.² The interaction was not significant, $F(1, 83) = 2.50, p = .12, \text{partial } \eta^2 = .03$. H2 was not supported.

H3 predicted that, compared to those watching an avatar, those controlling an avatar (IV) would experience greater identification (DV). An ANOVA revealed that participants in the Controlling condition ($M = 2.82, SD = .79$) reported significantly more identification with the

avatar than participants in the Watching condition ($M = 2.26$, $SD = .71$), $F(1, 85) = 12.12$, $p = .001$, partial $\eta^2 = .13$. H3 was confirmed.

H4 predicted that identification would moderate the relationship between sexualization (IV) and self-objectification (DV). Given the moderator was continuous, PROCESS model 1 was run (Hayes, 2013). PROCESS is a software application that executes path analysis-based moderation and mediation analysis using OLS regression. Trait self-objectification was examined as a covariate, but was not significant, $t(82) = -.89$, $p = .38$, and was removed from analyses.² The analysis revealed that identification did not moderate the relationship between sexualization and self-objectification, $F(1, 83) = .01$, $p = .91$.

The findings indicate that exposure to a sexualized avatar led to greater feelings of self-objectification than nonsexualized avatars, supporting previous literature on sexualized portrayals of women. Although controlling the avatar led to greater feelings of identification than watching it, neither control nor identification moderated the relationship between sexualization and self-objectification. Thus, a second study investigated other possible variables to explore the experience of self-objectification in virtual environments and also to investigate subsequent outcomes of this self-objectification.

Study 2

Study 1 provided further evidence that sexualized avatars may trigger feelings of self-objectification, but it did not identify moderators that may influence when self-objectification occurs. Additionally, Study 1 did not investigate any outcomes resulting from this elevated state of self-objectification. Study 2 was designed with three purposes. First, in accordance with the recent efforts to promote replication in psychological research (Yong, 2013), this study sought to re-examine the effects of sexualized avatars. Thus, we hypothesized that:

H5: Participants controlling a sexualized avatar will experience higher levels of self-objectification than participants controlling a nonsexualized avatar.

Second, this study investigated another potential contextual variable influencing the experience of self-objectification: the perceived similarity of the avatar to the participant. Third, this study examined participants' attitudes following an objectifying experience to see if sexualized avatars, through the mechanism of self-objectification, may influence attitudes toward women in general.

Similarity

Given the interactivity manipulation did not influence feelings of self-objectification in Study 1, another variable was manipulated. Avatars are often highly customizable and users often choose traits that reflect aspects of the self (Konijn et al., 2007). Previous research has elucidated the role of physical self-resemblance in determining the effects of controlling avatars, suggesting that self-similarity may yield stronger effects (Fox & Bailenson 2009a; Fox et al., 2013). These studies, however, have used actual photographs to create highly realistic virtual selves. In most online video games and virtual worlds, including Second Life, although similar avatars can be created, they are not photorealistically self-similar. Thus, it is important to test the extent to which physical resemblance of the avatar affects the user.

H6: Similarity will moderate the relationship between avatar sexualization and self-objectification.

We expect that the experience of self-objectification, triggered by exposure to a sexualized avatar, is the mechanism that influences subsequent negative outcomes (in this case, rape myth acceptance). Objectification theory proposes a pathway from experiences of sexual objectification to self-objectification to negative outcomes (see Moradi & Huang, 2008, for a detailed deconstruction). Scholars have examined this path experimentally in examining

detrimental outcomes such as decreased math performance (Fredrickson et al., 1998) and diminished attentional capacity (Quinn, Kallen, Twenge, et al., 2006), although many previous studies have not conducted mediational analyses to examine self-objectification as the mechanism in this relationship (for an exception, see Quinn, Kallen, & Cathey, 2006).

In terms of RMA, research has shown that women's RMA can be influenced by exposure to sexualized media (see Allen et al., 1995, for a review), although why this happens remains unclear. This study proposes an explanation: women exposed to sexualized media experience heightened self-objectification, and these objectifying and dehumanizing feelings are associated with the self as a woman, leading to negative attitudes toward women such as rape myth acceptance. See Figure 2. Given these arguments, we expect that:

H7: Self-objectification will mediate the relationship between avatar sexualization and rape myth acceptance.

Sample

The same sampling procedure as Study 1 was followed, and participants from Study 1 were excluded from participation in Study 2. The final sample ($N = 81$) ranged in age from 18 to 28 ($M = 19.91$, $SD = 1.61$) and reported their race/ethnicity as: 67.9% Caucasian/European-American/White ($n = 55$); 9.87% Black/African/African-American ($n = 8$); 8.64% Asian/Asian-American ($n = 7$); 7.4% multiracial ($n = 6$); and 6.17% other ($n = 5$). Participants also reported the number of hours they spent each day using avatar-based games or virtual environments ($M = .17$, $SD = .80$).¹

Procedure and Stimuli

Participants were randomly assigned to one of four conditions when they arrived at the lab: Similar Sexualized Avatar ($n = 22$), Dissimilar Sexualized Avatar ($n = 20$), Similar

Nonsexualized Avatar ($n = 19$), or Dissimilar Nonsexualized Avatar ($n = 20$). For the Similarity manipulation, the avatars were modified by a research assistant to resemble or not resemble the participant in terms of skin color, hair color, and hair style. To maintain consistency with Study 1 and ensure the Sexualization manipulation was effective, the same avatar bodies and clothing were used (i.e., body type and clothing were not altered for similarity).

Participants engaged in the same procedure as Study 1 to “familiarize themselves with the virtual world,” including changing viewing angles, looking into a virtual mirror, and walking around the virtual rooms. In this study, we also added an additional objectifying factor of being looked at by a male avatar, given that male gaze or even anticipating male gaze has been shown to promote feelings of objectification in women (Calogero, 2004; Gervais, Vescio, & Allen, 2011). Participants were told that they would interact with a male participant in the virtual world. After entering another virtual room and approaching the male avatar, the research assistant told the participant that they would be taking a break to answer some questions about the experience before returning to interact with the male participant. The participant was left with the male avatar gazing at the female avatar. The participants then completed the TST (the state self-objectification measure) and some filler items about the virtual world on a paper survey.

After the TST was complete, the paper survey was removed. The research assistant then stepped outside of the room, presumably to check to see if the male participant was ready to continue. After the research assistant returned, she informed the participant that the virtual world had crashed, and that instead of completing the experiment, the participant would fill the remainder of the timeslot by completing a brief, unrelated task. Participants were moved to a separate computer and an online survey was loaded from a website. Participants were told this task was a series of questions that other researchers were testing for use in future studies. The

rape myth acceptance items were randomly administered among other filler items. Participants were debriefed at the end of the session.

Measures

State self-objectification. Consistent with Study 1, the TST was used to measure state self-objectification. Two research assistants blind to condition and study purpose coded each response ($M = 2.20$, $SD = 2.06$); intercoder reliability was Cohen's $\kappa = .89$.

Rape myth acceptance. Burt's (1980) Rape Myth Acceptance Scale was used to determine the endorsement of false beliefs about rape and rape victims. Participants responded to items on a 5-point scale (1 = *Strongly disagree*; 5 = *Strongly agree*) including "Women who get raped while hitchhiking get what they deserve" and "In the majority of rapes, the victim is promiscuous or has a bad reputation." Reliability for this scale ($M = 2.22$, $SD = .40$) was $\alpha = .76$.

Manipulation check. Participants were asked four items about the perceived similarity of the avatar to themselves derived from Nowak, Hamilton, and Hammond (2009). Those in the Similar conditions ($M = 2.45$, $SD = .61$) ranked the avatars as significantly more similar to themselves than those in the Dissimilar conditions ($M = 1.72$, $SD = .77$), $t(79) = 4.80$, $p < .0005$, Cohen's $d = 1.05$.

Results

H5 predicted that participants controlling a sexualized avatar (IV) would experience greater self-objectification (DV) than those controlling a nonsexualized avatar. An ANOVA revealed that participants controlling Sexualized avatars ($M = 2.76$, $SD = 2.35$) demonstrated significantly higher levels of self-objectification than participants controlling Nonsexualized avatars ($M = 1.59$, $SD = 1.52$), $F(1, 79) = 7.01$, $p = .01$, partial $\eta^2 = .08$. H5 was confirmed.

H6 predicted that similarity would moderate the relationship between sexualization (IV) and self-objectification (DV). A factorial ANOVA revealed that the interaction was not significant, $F(1, 77) = .12, p = .73, \text{partial } \eta^2 = .00$. H6 was not supported.

H7 predicted that self-objectification would mediate the relationship between sexualization and RMA. To test H7, a mediation analysis was run using PROCESS (Hayes, 2013). PROCESS enables the calculation of path analysis-based mediation. PROCESS estimates the coefficients of the direct and indirect effects using OLS regression models and allows for bootstrapping, which generates a bias-corrected 95% bootstrap confidence interval for the indirect effect.

Given Similarity had no relationship with self-objectification, it was not included in the model. Sexualization was entered as the independent variable, self-objectification as the mediating variable, and rape myth acceptance as the dependent variable in PROCESS model 4. Figure 2 depicts the mediation model. Direct and indirect effects can be viewed in Table 1. No direct effect of sexualization on RMA was observed; there was no difference between sexualized avatars ($M = 2.29, SD = .43$) and nonsexualized avatars ($M = 2.14, SD = .36$). Sexualized avatars led to higher levels of self-objectification, which then led to greater RMA, confirming H7.³

Discussion

This study demonstrated that there are psychological consequences associated with embodying sexualized avatars. In both studies, women exposed to sexualized avatars reported higher levels of self-objectification than those exposed to nonsexualized avatars. In the second study, women who controlled sexualized avatars experienced higher levels of self-objectification, which in turn led to higher levels of rape myth acceptance. These results suggest

that users of sexualized avatars may be at risk for developing negative attitudes toward the self and perhaps toward women in general outside of the virtual environment.

A major implication of this research is the carryover effects of avatars. Several studies have shown that avatars can influence users' attitudes and behaviors outside of virtual environments (Fox & Bailenson, 2009a; Hershfield et al., 2011; Yee & Bailenson, 2007). In these studies, exposure to a sexualized avatar caused participants to experience elevated levels of self-objectification consistent with levels caused by physically donning objectifying clothing (e.g., Fredrickson et al., 1998; Hebl, King, & Lin, 2004; Quinn, Kallen, & Cathey, 2006). Given self-objectification is linked to many other detrimental outcomes, including body shame, eating disorders, depression, and decreased cognitive performance, further research on the cumulative effects of using sexualized avatars is warranted.

The link found in Study 2 between self-objectification and rape myth acceptance is a disturbing addition to the self-objectification literature because of its normative implications. Not only has self-objectification been shown to negatively impact women's psychological and behavioral well-being, but these negative effects also appear to generalize to perceptions of other women in the perpetuation of rape myths. As objectification theorists note, self-objectification is not created in isolation but through socialization processes and messages from others, both subtle and overt, that females internalize about themselves and their bodies throughout the lifespan. Repeated exposure to objectifying messages including "virtually unavoidable" sexualized media imagery (Fredrickson & Roberts, 1997, p. 177) ultimately results in the perception that these negative attitudes toward the self and women are chosen or "even natural" (p. 179). Viewed from this perspective, the finding that higher levels of self-objectification predict greater rape myth acceptance is not surprising: the more a woman self-objectifies, the more she projects the

negative implications of objectification onto other women, even rape victims (see Hinck & Thomas, 1999). Further research needs to deconstruct this process and investigate other related variables such as gender role ideology and ambivalent sexism (Glick & Fiske, 1996).

Another consideration is how long the effects of state self-objectification last. One shortcoming of this study was that measures of state self-objectification were collected in the same experimental session as the proposed subsequent outcome (RMA), similar to existing experimental research on the effects of self-objectification (e.g., Fredrickson et al., 1997; Quinn, Kallen, & Cathey, 2006; Quinn, Kallen, Twenge et al., 2006). The duration of this experience has significant implications for the study of its effects from both a practical and methodological standpoint. Other research on interactive media has shown that effects can linger well after exposure (Ahn et al., 2013; Fox & Bailenson, 2009a), and thus it is important to assess how long state self-objectification lasts after experiencing sexually objectifying media.

In summary, this study has forged ground into an important new realm: investigating the psychological impact of sexualized avatars. Results lend support to objectification theory as well as research indicating that interacting with objectified virtual representations can have detrimental effects for women (Behm-Morawitz & Mastro, 2009; Fox & Bailenson, 2009b; Fox et al., 2013). Due to the increasing popularity of video games among women it is essential to investigate the cumulative and long-term effects of such exposure. Video games are dominated by sexualized representations (Downs & Smith, 2010), and in most, the avatar is always visible on screen so that the user can control it effectively. Not only are users exposed to the character, it is their proxy and representation within the world. Girls and women who embody these avatars may be subjecting themselves to an ongoing process of self-objectification during what they may consider harmless play. Female game players' internalization of these attitudes over time may

result in decreased self-esteem, depressive symptoms, eating disorders, or diminished cognitive performance (Moradi & Huang, 2008), as well as perpetuation of negative attitudes toward other women.

Limitations and Future Directions

Given the limitations of previous studies in terms of external validity, these two studies attempted to extend previous research by examining women's self-objectification through an accessible online virtual world, and further, in the context of social interaction in a virtual world. In Study 2, it is important to note that the presence of a male avatar across conditions may have promoted self-objectification, although self-objectification was observed independent of social context in Study 1. Given studies have found that male interactants promote greater self-objectification than female interactants (Calogero, 2004; Gervais et al., 2011), future studies should also compare the effects of the presence of male and female avatars. Future studies may also employ different measures of self-objectification than the TST (Calogero, 2011).

In Study 1, interactivity was not found to significantly moderate the relationship between sexualization and self-objectification, although findings were trending in the supported direction ($p = .12$). Given the relatively small sample size, this null effect may be due to a lack of power and is worth further investigation. It is also worth noting that to maximize internal validity and the equivalence of the two conditions, participants in the controlling condition were instructed on every move in the virtual environment; although they were pushing the buttons, they may not have felt they were actually "controlling" the avatar as the researcher was directing every action. If participants were allowed to move freely, the effect of interactivity may emerge.

Additionally, although controlling an avatar led to greater self-reported identification than watching an avatar, identification was not related to self-objectification in this study.

Klimmt and colleagues (2010) argued that, as an automatic process, identification may not be effectively measured through self-report measures, however; rather, implicit tests of cognitive association may be more effective. Several studies have found that embodying aggressive or violent avatars yield stronger cognitive associations with related concepts (Blake, Hefner, Roth, Klimmt, & Vorderer, 2012; Klimmt et al., 2010; Uhlmann & Swanson, 2004). In this study, users of sexualized avatars experienced a cognitive shift in their self-perception such that women focused on their appearance. Future studies should examine if there are shifts in other cognitive associations as a result of embodying sexualized avatars.

Another limitation of the first study is that it did not account for wishful identification. Identification determines the degree to which the user feels similar to and relates to the avatar, whereas wishful identification determines how much the user desires to be like the avatar (Konijn et al., 2007). Van Looy, Courtois, De Vocht, and De Marez (2012) confirmed these as distinct factors describing users' experiences with avatars in an online game. In the current study, participants might not have related to their sexualized avatars, but their desire to look like them may explain why participants self-objectified after exposure.

In addition to sexuality, other features of the avatar or the virtual context should be investigated in future research. Although similarity did not have an effect in Study 2, the manipulation may have not been strong enough as features such as body type could not be altered to match the participant. Given previous findings on the power of self-similar avatars (Fox & Bailenson, 2009a), this variable merits further investigation. Previous research has also observed differences in self-objectification across ethnoracial groups (Grabe & Jackson, 2009). Going forward, comparing participants based on ethnoracial groups may identify differences in the degree to which avatars trigger self-objectification. Further, manipulating the apparent race

or ethnicity of the avatar may yield different experiences for users. Other participant or avatar variables are also in need of investigation, including age, gender identity, or sexual orientation.

Another notable facet is how sexuality is often depicted in the context of video games. Sexualized avatars often vary in their purported strength or power (e.g., whether they are merely sex objects used as background decoration or an enemy the player must battle) and thus this intersection may have interesting effects (Royse et al., 2007). Other features of the gaming context, such as the inclusion of violence, may influence the magnitude of effects (Anderson & Bushman, 2001; Royse et al., 2007).

Future studies should also consider how frequently women select sexualized avatars for interaction and play. Starr and Ferguson (2012) presented young girls with a sexualized doll and a nonsexualized doll and asked them to choose which they wished to look like and which they thought would be more popular; in both cases, girls overwhelmingly chose the sexualized doll. In virtual worlds and video games, girls and women may be inclined to select sexualized avatars as well. The findings of the current studies indicate such a choice may trigger the experience of self-objectification. Aubrey (2006a), however, found that men and women with higher levels of trait self-objectification may avoid objectifying media over time; thus, self-objectifying users of video games and virtual worlds may avoid sexualized avatars. Other personality factors, such as neuroticism or self-esteem, may predict the likelihood of selecting a sexualized or nonsexualized avatar or moderate the effects of avatar embodiment (Dunn & Guadagno, 2012). Longitudinal research involving repeated exposure is needed, as well as research on women who are heavy game players or identify as gamers.

Another possibility is to implement avatars for positive attitude or behavior changes. Previous research has found that avatars' appearance and behavior can be manipulated to

encourage exercise (Fox & Bailenson, 2009a), enhance women's self-efficacy and interest in STEM fields (Baylor & Plant, 2005; Rosenberg-Kima, Baylor, Plant, & Doerr, 2008), and promote prudent financial decisions (Hershfield et al., 2011). Hoyt and Blascovich (2007) have explored the use of virtual environments to promote women's performance in leadership roles. Other researchers are investigating the use of avatars to treat body dysmorphia and eating disorders (Riva, 2011). Given these prosocial applications, researchers should investigate the ways in which avatars may be used to decrease self-objectification or counteract rape myths and sexism.

Going forward, it is clear that further research is needed to determine the short- and long-term effects of sexualized representations as well as what may mitigate negative effects. With video games and online virtual environments becoming an increasingly popular pastime, and women continuing to be portrayed as interactive sex objects within them, we need a greater understanding of these experiences before we possibly subjugate women and girls to objectifying and detrimental imagery in another, and possibly more powerful, medium.

Notes

¹ This variable was examined as a covariate in both studies. It was not a significant covariate in any analysis, nor are any of the findings affected by its inclusion in analyses, and thus it is not discussed further.

² These analyses are significant with or without the covariate included.

³ Given the data collection occurred in one session, a reviewer requested analysis of this model using RMA as a mediator and self-objectification as the dependent variable instead. There is no direct relationship between sexualization and RMA, only an indirect effect via self-objectification, and thus this model is not viable.

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Table 1

Model for Effect of Avatar Sexualization on Rape Myth Acceptance Mediated by Self-Objectification

	Self-Objectification					Rape Myth Acceptance				
	Coeff	SE	<i>p</i>	LLCI	ULCI	Coeff	SE	<i>p</i>	LLCI	ULCI
Sexualiz.	1.17	.44	.01	.29	2.05	.09	.09	.32	-.09	.27
Self-Object.	--	--	--	--	--	.05	.02	.04	.01	.09
Constant	1.59	.32	< .0005	.96	2.22	2.07	.07	< .0005	1.93	2.21
	$R^2 = .08$					$R^2 = .08$				
	$F(1, 79) = 7.01, p = .01$					$F(2, 78) = 3.46, p = .036$				

Figure 1. Examples of the sexualized (L) and nonsexualized (R) avatar stimuli.



Figure 2. The mediation model proposed in Hypothesis 7.

