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It's All Fun and Games Until . . . Exploring Immersion into Sexually Objectifying and Violent Video Games

Jessica M. LaCroix

University of Connecticut - Storrs, jessica.lacroix@uconn.edu

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It's All Fun and Games Until . . .

Exploring Immersion into Sexually Objectifying and Violent Video Games

Jessica M. LaCroix, PhD

University of Connecticut, 2015

Given the evidence linking violent video games with aggression, the proliferation of sexualized female video game characters, and the availability of commercial video games containing violence against women, there is a need to examine the effects of playing violent video games against sexualized female opponents. A total of 710 male undergraduates participated in five studies using lab-developed first-person-shooter games (Studies 1 and 2) and commercially available third-person-fighting games (Studies 3, 4, and 5). Psychological immersion was explored as a moderator in all studies, and sexual arousal was explored in Studies 4 and 5. Shooting sexualized female opponents, but not male opponents, led to increased hostile sexism to the extent that immersion was high (Study 1), even after controlling for pretest hostile sexism (Study 2). Shooting nonsexualized female opponents did not result in increased hostile sexism (Study 2). In general, hostile sexism was also greater after fighting sexualized female opponents than male opponents in commercially available games (Studies 3, 4, and 5). Further, fighting a sexualized female opponent led to increased willingness to have sex without a condom among participants reporting sexual arousal (Studies 4 and 5). Future research should focus on identifying mechanisms that contribute to increased hostile sexism and willingness to engage in sexual risk following violent video game play against sexualized female opponents.

It's All Fun and Games Until . . .

Exploring Immersion into Sexually Objectifying and Violent Video Games

Jessica M. LaCroix

B.A., Quinnipiac University, 2005

M. S., University of Idaho, 2008

A Dissertation

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Requirements for the Degree of

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APPROVAL PAGE

Doctor of Philosophy Dissertation

It's All Fun and Games Until . . .

Exploring Immersion into Sexually Objectifying and Violent Video Games

Presented by

Jessica M. LaCroix, B.A., M.S.

Major Advisor _____
Hart Blanton

Associate Advisor _____
Felicia Pratto

Associate Advisor _____
John Christensen

University of Connecticut
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It's All Fun and Games Until . . .**Exploring Immersion into Sexually Objectifying and Violent Video Games****INTRODUCTION**

The popularity of video games in general, and violent games in particular, has inspired an explosion of psychological inquiry into the effects of video game play. Prior research largely supports a causal link between violent video game play and aggression (Anderson, Shibuya, Ihori, Swing, Bushman, et al., 2010), and attention has turned to contextual features of games that might influence aggression outcomes. One such feature is character appearance; to date, several studies have been conducted testing the effects of exposure to sexualized representations of women in video games. Prior studies have tested the effects of mere exposure to sexualized characters (Dill, Brown, & Collins, 2008), playing as a sexualized female avatar (Behm-Morawitz & Mastro, 2009; Driesmans, Vandenbosch, & Eggermont, 2015), playing a game containing sexual content (Yao, Mahood, & Linz, 2010), and watching violence enacted against sexualized women in a video game context (Beck, Boys, Rose, & Beck, 2012). Thus far, exposure to sexualized female video game characters has been found to predict support for aggression toward women in the form of rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015) and support for sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010).

Given the commercial availability of violent video games containing sexualized female characters (e.g., the *Grand Theft Auto*, *Mortal Kombat*, *Soul Calibur*, and *Dead or Alive* series) and the hundreds of studies linking violent video game play with aggression (see Anderson et al., 2010), there is a need to explore the effects of enacting violence against women in video game contexts. This dissertation consists of five studies designed to test these effects. The main

outcome of interest was hostile sexism—adversarial beliefs regarding competition between women and men in terms of sexuality, competing gender roles, and male dominance (Glick & Fiske, 1996; 2011). This outcome was chosen based on prior studies linking hostile sexism with violence against women (e.g., Whitaker, 2003), sexual objectification (e.g., Cikara, Eberhardt, & Fiske, 2011), and punishing women who enact masculine roles (e.g., Masser & Abrams, 2004). The secondary outcome of interest was willingness to engage in sexual risk. This outcome emerged from ancillary analyses of filler items used in Study 1, but it was consistent with evidence that violent video game play increases risk behaviors (e.g., Hull, Brunelle, & Sargent, 2014) and therefore folded into later deductive tests. Finally, all studies investigated how psychological immersion or engagement in a virtual gaming environment moderated the above effects. Psychological immersion was explored as one such moderator in the prediction of hostile sexism in all studies, and sexual arousal was explored as a second moderator in the prediction of willingness to engage in sexual risk in Studies 4 and 5.

LITERATURE REVIEW

Violent Video Games and Aggression

Last year, Americans spent over 22 billion dollars on the video game industry (Entertainment Software Association, 2015). Over 150 million Americans play video games, and 80 percent of households own a device used for video game play. On average, players have tended to be male (56%), 35 years old, and have spent about 13 years playing video games. In one survey 99 percent of boys and 94 percent of girls ages 12-17 reported playing video games, and 50 percent reported playing “yesterday” (Lenhart, Kahne, Middaugh, Rankin Macgill, Evans, et al., 2008). Much of this play is oriented around games with themes that simulate violent or antisocial behaviors, with over half of all console games sold being categorized as

action (28 percent) or shooter (22 percent; Entertainment Software Association, 2015). When asked about their favorite games, 50 percent of teenage boys named a game with a “mature” or “adults only” rating as one of their top three favorite games (Lenhart et al., 2008).

The high level of exposure to violent and mature-themed games has concerned many social scientists who fear that it might promote aggressive and antisocial tendencies in gamers, particularly adolescents and young adults. Such concerns appear warranted. In a cross-cultural meta-analysis of 130 reports containing 381 studies, Anderson and colleagues (2010) found evidence for a causal link between violent video game play and aggressive behavior, cognition, and affect as well as desensitization, decreased empathy, and decreased pro-social behavior. Results held in experimental, cross-sectional, and longitudinal studies. Research has also shown evidence for a direct effect of violent video game play and expectations of hostility from others (Bushman & Anderson, 2002). The range of observed effects is relevant to the current studies as they show how video games not only influence behavior directly, but also appear to do so by influencing thoughts and motivations. Effects of gaming on sexism and sexual risk-taking have not been focal concerns in the video game literature, but the scope of documented aggression effects suggests that such beliefs could quite possibly be affected. The literature further suggests that any such effects will likely depend on other features of the game, at least to some extent, as research is increasingly mapping out the types of gaming experiences that promote violent and antisocial shifts.

Many studies working off the aggression framework have moved past simple comparisons between violent versus nonviolent games and have instead explored different features of games that might affect aggression outcomes. For instance, Eastin and Giffiths (2006) found that hostile expectancies were greater after playing a fighting game than a shooting or

driving game, suggesting that violent games do not act as simple “primes” but that type of violence influences outcomes. Some violent acts (e.g., fighting), are more common than others (e.g., shooting), and may be more likely to influence real-world thoughts and behaviors. Severity of violence can also affect outcomes; Farrar, Krcmar, and Nowak (2006) found that playing a violent game in a “blood-on” condition elicited greater aggressive intentions than playing the same game in a “blood-off” condition.

Characteristics of the violent content itself are not the only important features affecting the link between violent game play and aggression. There is evidence that greater similarity between the player and the player’s avatar increases aggressive thoughts, as does playing against a human opponent versus a computer opponent (Eastin, 2006). Opponent appearance has also been found to influence violent video game effects. Farrar, Krcmar, and McGloin (2013) had players battle human-looking or monster-looking opponents. Verbal aggression and aggressive cognitions were greater to the extent that players perceived their opponent as more human. Such findings suggest that players are more than simply passive recipients of violence; they also engage with specific details of the games that can contribute to more or less internalization of violent play.

Overall, the literature linking video game violence to aggression points to a psychological process that differs from simple priming or thought activation. Game content certainly affects outcomes (e.g., Eastin & Griffiths, 2006; Farrar et al., 2006), and players also key into specific features of games in ways that influence how video game violence later translates into real-world thoughts and behaviors. No research to date has examined how male players may be affected by the sex or sexualization of an opponent, but research reviewed above suggests these features are worthy of study. Just as players key into the specific actions they perform in games (e.g., Eastin

& Griffiths, 2006), as well as the appearance of their avatars (e.g., Eastin, 2006), so too might they tune into the features of targets of their simulated aggression (e.g., Farrar et al., 2013). Evidence suggests that target sex and sexualization might be as influential as other gaming features studied to date.

Sexualized Female Video Game Characters

In everyday life, most individuals will rarely or never engage in the violent acts they simulate in commercial video games. Games also differ from everyday life in the types of targets aggressed against. Whereas social norms limit or prohibit overt, explicit physical aggression by men against women—much less highly sexualized women—several commercial video games present players with female opponents who are hypersexualized. This point was driven home in the first content analysis of video game gender portrayals. Dietz (1998) analyzed the 33 most popular games for the Nintendo and Sega Genesis consoles at that time. Her results showed that when female characters were represented, they were most commonly portrayed as sex objects. Most video games in the sample included aggression or violence, five contained violence against a female character as part of the story narrative, and two incorporated violent game play directed at a sexualized female character. More recent analyses of female characters in popular video games have found that 20 percent were portrayed as having unrealistic body sizes (Heintz-Knowles & Henderson, 2001), and 41 percent were portrayed as “voluptuous” (Beasley & Standley, 2002). Female video game characters were also more likely than male characters to wear sexually revealing clothing (41 vs. 11 percent), be partially or totally nude (43 vs. 4 percent), have unrealistic body proportions (25 vs. 2 percent), and wear inappropriate attire (16 vs. 2 percent; Downs & Smith, 2010).

Female video game characters are not only more likely than male characters to be depicted as hypersexualized or scantily clad, they are also more likely to be portrayed as both sexual *and* aggressive (39 percent vs. 1 percent; Dill & Thill, 2007). This distinctive—and unrealistic—combination of sex and violence does not go unnoticed; teenagers asked to describe the typical female video game character used both sexual words (e.g., *slutty*, *sexy*) and aggressive words (e.g., *violent*, *bitchy*; Dill & Thill, 2007). Even teenagers who did not play video games were aware of such representations indicating that, in addition to game features discussed previously, character sex and sexualization likely influence video game effects. Researchers have thus begun to apply what we know from the violent video games and aggression literature to investigate how these representations may affect attitudes toward women.

In one of the first studies to experimentally test the effect of exposure to sexist and aggressive video games on attitudes, Dill et al. (2008) showed male and female participants PowerPoint slideshows containing images of hypersexualized female and hypermasculinized male video game characters or photos of current U.S. congress members. After viewing the slideshows, participants read and responded to questions about a real-life story of sexual harassment and rape supportive attitudes. Results indicated that males in the experimental group reported greater tolerance for sexual harassment compared to males in the control group and females in either group. The experimental manipulation did not affect rape supportive attitudes. Additionally, prior violent video game play was positively correlated with tolerance for sexual harassment and supportive attitudes toward rape.

More recently, Beck and colleagues (2012) tested the effects of exposure to violence against sexualized women on rape myth acceptance. Male and female participants watched a researcher play a segment of *Grand Theft Auto IV* depicting sexual objectification and violence

toward sexualized women or a baseball video game. Although there was not a main effect of condition on rape myth acceptance at posttest, watching the sexually objectifying and violent video game increased rape myth acceptance from pre- to posttest among male participants, but not female participants. Prior violent video game play was not significantly correlated with rape myth acceptance.

Although results of the two experiments described above provide evidence that exposure to sexualized female video game characters influences support for aggression toward women, these investigations have non-trivial limitations. For instance, both Dill et al. (2008) and Beck et al. (2012) utilized passive exposure to gaming content. Dill et al. used exposure to still images of sex-typed video game characters to draw inferences about the influence of character sexualization in video games, and Beck et al. had participants simply observe experimenters playing the games they studied. Both investigations thus utilized methodologies that involved more passive or observational interactions with video game material. Other researchers have conducted studies incorporating actual video game play, but features of these studies prevent strong conclusions about sexualized violence. For instance, Yao et al. (2010) had participants play a sexist game, *Leisure Suit Larry: Magna cum Laude* to see its effects on likelihood to sexually harass. This is a stronger method than used by Dill et al. (2008) and Beck et al. (2012), but this particular game is nonviolent in nature. Nevertheless, results were suggestive. Playing the sexist game led a greater likelihood to sexually harass as well as quicker reaction to sexual words and sexually objectifying descriptions of women compared with playing control games (*The Sims II* and *Pacman II*).

The last two studies I will review incorporated both active video game play and violent content to test the extent to which sexualization of female characters influenced attitudes toward

women. However, the topic of my dissertation is the sex and sexualization of the *opponent* in a violent video game, and both Behm-Morawitz and Mastro (2009) and Driesmans et al. (2015) varied the playable avatar's appearance rather than the opponent's. In Behm-Morawitz and Mastro's study, participants played as highly sexualized or less-sexualized versions of Lara Croft in *Tomb Raider: Legend*, or played no game at all. Overall, attitudes toward women's cognitive capabilities were lower following sexualized game play than no game play, and there were no significant differences involving the less-sexualized version of Lara Croft. Similarly, participants in Driesmans et al. (2015) played *Story of Arado* (available for free here: http://www.y8.com/games/story_of_arado) as either a sexualized female avatar or a nonsexualized avatar. Rape myth acceptance and tolerance of sexual harassment were higher following game play as the sexualized female avatar than the nonsexualized avatar. Although the violent acts in Behm-Morawitz and Mastro's and Driesmans et al.'s studies were not directed toward sexualized female opponents, participants still tuned into the sexualization of their avatar. Simultaneous exposure to sexualization and violence contributed to negative attitudes toward women and greater support for aggression toward women; therefore, it is likely that attitudes toward women would be just as hostile or more so following violent game play against sexualized female opponents.

In summary, some research has addressed the limitations in Dill et al. (2008) and Beck et al. (2012) by incorporating active video game play as opposed to passive exposure to game content. However, those studies are limited in other ways such as by testing the effects of playing sexist, but nonviolent games (Yao et al., 2010) or playing a violent game as a sexualized avatar rather than against sexualized opponents (Behm-Morawitz & Mastro, 2009; Driesmans et al., 2015). Nonetheless, taken as a whole, the studies reviewed above provide evidence that exposure

to the sexualized representations of women used in video games contributes to greater tolerance for sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010), greater rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015), easier accessibility to the “woman as sex objects” schema (Yao et al., 2010), and less positive attitudes toward women’s cognitive capacities (Behm-Morawitz & Mastro, 2009). My dissertation addresses the limitations of these studies by exploring the effect of violent game play by men against sexualized female opponents, as described next.

Rationale for Present Studies

The research reviewed thus far indicates that (1) there is strong evidence for a causal link between violent video game play and aggression, (2) players key into specific features of games, and (3) the sex and sexualization of video game characters is likely one such feature, which more specifically (4) can increase different forms of hostility directed toward women. Thus far, explicit links between violence, opponent sex and/or sexualization, and subsequent hostility towards women have not been made, nor are the effects of playing violent video games against female opponents— either sexualized or non-sexualized— currently unknown. There is an urgent need to fill this gap as violent video games are extremely popular, especially among young men (Lenhart et al., 2008), and can contain violence enacted against women. There is also a need to determine the extent to which sexualization matters, as some new violent video games have replaced formerly hypersexualized female opponents with less-sexualized versions (e.g., *Mortal Kombat X*), and what additional outcomes might be affected other than tolerance for sexual harassment and rape myth acceptance. For instance, does violence against sexualized or nonsexualized female opponents contribute to increased hostile sexism, often a precursor to sexual harassment, rape myth acceptance (e.g., Begany & Milburn, 2002), and real-world

enacted violence against women (e.g., Whitaker, 2003)? Further, to what extent does psychological immersion moderate effects? My dissertation aims to answer these questions using lab-created first-person-shooter games as well as commercial third-person fighting games.

THEORETICAL FRAMEWORK

At its core, this dissertation has a very applied research question: Does playing violent video games against sexualized female opponents affect subsequent attitudes toward women? Nonetheless, inspiration for this question, and subsequent methods, measures, and hypotheses, came from multiple theoretical frameworks. These frameworks include the general aggression model (Anderson & Bushman, 2002), widely used in the violent video game and aggression literature, the identity simulation explanation used to describe the process of identification with a video game character and subsequent deviance (Hull et al., 2012; 2014), sexual objectification theory (Fredrickson & Roberts, 1997; Bartky, 1990), and ambivalent sexism theory (Glick & Fiske, 1996). The theory of media imagery and social learning (Dill & Burgess, 2012) combines elements of the aforementioned frameworks, the stereotype content model (Fiske, Cuddy, Glick, & Xu, 2002), hegemonic masculinity theory (Connell, 1987), and incorporates the additional concept of narrative transportation (Green & Brock, 2000). Together, these theoretical frameworks help explain how playing violent video games against sexualized female opponents may increase hostile sexism and suggest psychological immersion as a moderator of effects. Next, I briefly review each framework individually and then integrate them as I tie them to my specific research questions.

The General Aggression Model

The general aggression model (Anderson & Bushman, 2002) is based in social-cognitive and social-learning theories (e.g., Bandura, 1977, Huesmann, 1982) and posits that behavior is

learned through the development and use of knowledge structures that affect early (e.g., perception) and downstream (e.g., behaviors) processes (Anderson et al., 2012). With repeated use, these schemas may become automatically activated by environmental stimuli. Chronic accessibility of aggressive schema contributes to an aggressive personality, but temporary accessibility can also lead to aggressive cognitions, emotions, and behaviors. For instance, playing violent video games increases the accessibility of aggressive schema, activated schemata increases the likelihood that ambiguous stimuli will be interpreted in a hostile manner, and hostile expectancy translates into subsequent real-world aggression (Anderson et al., 2010). Similarly, exposure to sexually objectifying media content (Dill & Burgess, 2010) can increase the accessibility of the “women as sexual objects” or “whore” schema, and both chronic and temporary schema accessibility has been found to contribute to negative attitudes and sexual behavior toward women (Rudman & Borgida, 1995). This model speaks to specificity in media effects. Evidence supporting this specificity comes from Yao et al. (2010), reviewed above, who found that playing a video game containing sexualized female characters led to increased accessibility of the women-as-sex-objects schema and increased likelihood to sexually harass.

Identity Simulation

A strength of the general aggression model (Anderson & Bushman, 2002) points to ways video games might make new aggression-promoting information cognitively available and, through repeated play, accessible to working memory where it might guide actions. It seems limited in certain respects, however, in that many features of video games are so far removed from reality that they are likely not meaningful “schema”—there are few real-world parallels to beating up sexualized women, but there is evidence such information nonetheless influences real-world outcomes (Beck et al., 2012). This may be because, even though aggressive

encounters in games are not “meaningful” in a real-world sense, they do simulate norm-violation (often to unrealistic extreme degrees). Research by Hull and colleagues (2012; 2014) focuses on norm-violating features of video games, and their *identity simulation* model provides a basis for predicting effects of unrealistic, norm-violating simulated aggression on real-world judgments and decisions. They describe Anderson and Bushman’s (2002) explanation of violent video game effects as *behavioral simulation*—video games provide the opportunity to try out aggressive behaviors, experience associated cognition and affect, and to the extent that aggressive thoughts and feelings are active, aggressive behaviors simulated within the game context cross over into the real-world. They contrast behavioral simulation with *identity simulation*, wherein norm-violating video games provide players with opportunities to “try out different selves” (Hull et al., 2014, p. 301). To the extent that players identify with the playable character in a violent game, the consequences of video game play generalize to other behaviors besides those specifically simulated in the game.

Importantly, however, Hull and colleagues do not assume that the identities explored in games need to map onto real-world roles; one does not need to “identify” with being a shooter in any meaningful sense. General identification with norm-violation and deviance is more important. According to their model, when players identify with a deviant video game character, they perceive themselves as deviant *in general*, and these self-perceptions then mediate the link between mature-rated and risk-glorifying video game play and multiple types of deviant behaviors, even when the specific behaviors are not modeled or rewarded in the video game (e.g., reckless driving, Hull et al., 2012; alcohol and cigarette use, delinquency, Hull et al. 2014). Violent game play does not just increase aggression; it increases risk behavior in general as “a

consequence of identification with deviant video game characters ... and self-perception of correspondent deviant personality characteristics and attitudes” (Hull et al., 2014, p. 320).

Perceptions of a playable violent video game character may vary based on game content. Indeed, Hull et al. (2014) found that playing as a hero in *Spiderman II* was less associated with subsequent deviance than playing as an antisocial character *Grand Theft Auto III* or a psychotic killer in *Manhunt*. Similarly, perceptions of a playable character may also vary based on opponent appearance. Because violence against women is less socially acceptable than violence against men, a character who fights a female opponent may be perceived as more antisocial or villainous than a character who fights a male opponent. Subsequent identification with the “bad guy” who fights a woman may then predict increased willingness to engage in risk behaviors than identification with the “good guy” who fights another man.

Sexual Objectification

Not only might mature-themed games give gamers a chance to rehearse and identify with deviance, generally, they might also give them opportunity to practice objectification of women, more specifically. Sexual objectification is viewing another person, usually a woman, primarily in terms of her sexual instrumentality, by focusing on her sexual body parts and functions as if they represented her whole person (Bartky, 1990; Nussbaum, 1995). Much early work on sexual objectification has focused on the negative consequences of self-objectification (Fredrickson & Roberts, 1997), but sexual objectification also has negative consequences for how other people are perceived and treated. Sexually objectifying others contributes to their being perceived as more violable and as having less subjectivity than non-objectified others. For instance, Loughnan and colleagues (2010) found that sexually objectified women were perceived as less deserving of moral treatment and were assigned fewer mental states than non-objectified women in that they

were rated as less perceptive, as experiencing fewer emotions, and as having fewer thoughts and intentions. Additionally, sexually objectified others were perceived as less competent and were allocated more pain in a pain-tablet allocation task than non-objectified others. Another study by Loughnan et al. (2013) presented a rape victim in either a sexually objectified or non-objectified manner; the sexually objectified victim was attributed more responsible for the rape and less suffering compared with the non-objectified victim. More relevant to the current studies, Fox and Bailenson (2009) found that exposure to a sexually objectified virtual woman elicited greater hostile sexism than exposure to a non-objectified virtual woman. In summary, research focusing on the sexual objectification suggests that in a video game context, violence against sexually objectified women will elicit more hostility toward women than violence against women who are not sexually objectified.

Hostile Sexism

Sexual objectification can be an antecedent or consequence to sexism, but sexism can take other forms that are not necessarily linked to objectification. Ambivalent sexism theory (Glick & Fiske, 1996; 2011) distinguishes between benevolent sexism and hostile sexism toward women. Benevolent sexism includes beliefs about protective paternalism (e.g., *Women should be cherished and protected by men*), complimentary gender differentiation (e.g., *Many women have a quality of purity that few men possess*), and heterosexual intimacy (e.g., *Every man ought to have a woman he adores*). Hostile sexism includes adversarial beliefs that women are trying to compete with men in terms of sexuality (e.g., *Once a woman gets a man to commit to her, she usually tries to put him on a tight leash*), gender roles (e.g., *Women exaggerate problems at work*), and male dominance (e.g., *Women seek to gain power by getting control over men*). This *Madonna-whore* dichotomy rewards women who conform to gender roles and punishes violators

as a means to maintain men's greater structural power. Thus, hostile sexism, but not benevolent sexism, has been found to predict punishment of gender atypical women (e.g., Masser & Abrams, 2004), sexual harassment and rape myth acceptance (e.g., Begany & Milburn, 2002), rape proclivity (e.g., Thomae & Viki, 2013), intimate partner violence (e.g., Whitaker, 2003), and sexual objectification (e.g., Cikara, Eberhardt, & Fiske, 2011). Given evidence of a causal link between exposure to sexualized female video characters and tolerance for sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010) and rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015), and prior studies linking hostile sexism with violence (Whitaker, 2003) and objectification (Cikara et al., 2011; Fox & Bailenson, 2009), it is reasonable to hypothesize that the act of playing a violent video game against a sexualized female opponent will increase hostile sexism in male gamers.

Media Imagery and Social Learning

The theory of media imagery and social learning (Dill & Burgess, 2012) draws upon the aforementioned general aggression model (Anderson & Bushman, 2002) and ambivalent sexism theory (Glick & Fiske, 1996), as well as the stereotype content model (Fiske, Cuddy, Glick, & Xu, 2002) and hegemonic masculinity theory (Connell, 1987) to explain how contemptible media portrayals of women—those that degrade, objectify, oversimplify, or make women seem dangerous—can lead perceivers to have more negative attitudes and behaviors toward women. Dill and Burgess posit that viewers do not process fictional representations of women in the media as fictional, but rather process such representations as confirmation of previously held stereotypes about women (e.g., Fiske et al., 2002); viewers accept what they see as true and only later label what they see as false provided they are willing and able to do so. The tendency for viewers to accept what they see as true (e.g., Gilbert, 1991; Gilbert, Tafarodi, & Malone, 1993)

combined with enhanced accessibility of the women-as-sex-objects schema (Rudman & Borgida, 1995) can contribute to subsequent hostility toward women. Viewing sexually objectified images of women in the media contributes to beliefs that women are sexual objects in real-life, and real-world sexual objectification has real-world implications (e.g., Loughnan et al., 2012; 2013). Dill and Burgess argue that eroticized violence in video games can have particularly negative consequences for women, and they reference the narrative transportation literature (e.g., Green & Brock, 2000) to draw parallels between the persuasive capabilities of fictional narratives and media images.

Transportation and Psychological Immersion

A limitation of the models covered thus far is that they each focus on general video game features or psychological processes that promote negative attitudes and orientations towards women, but they do not focus attention on individual differences in how people interact with and engage with games. There is strong reason to believe that the effects of playing a violent video game against sexualized female opponents will be stronger to the extent that players are more immersed in the game. Support for this prediction comes from two literatures: (1) *narrative transportation* (Green & Brock, 2000), and (2) research on *presence* in virtual reality environments (Witmer & Singer, 1998). First, the narrative transportation literature reveals how the tendency to be “transported” into a fictional narrative world enhances the persuasiveness of messages that are incorporated into the narrative (Green & Brock, 2000). Transported individuals may become less aware of real-world facts that contradict those within the narrative, experience narrative-congruent emotions and motivations, and change their real-world beliefs and attitudes as a result of the transportation experience. For example, greater transportation has been found to result in less awareness of false information presented in a story (Green & Brock, 2000).

Transportation facilitates acceptance of information as true in part due to low elaborative scrutiny (Green & Brock, 2004) and a desire to be entertained (Holland, 2007; 2009). Even after information is later labeled false, effects of exposure to that information may have already crossed the barrier between fantasy and reality (Dill & Burgess, 2012; Green & Brock, 2000). The narrative transportation literature supports the prediction that greater immersion into a video game will enhance effects; however, the transportation model is somewhat limited in that it focuses on the compelling narrative of a story. Although many video games have story lines, I am more concerned with the effects of violence against sexualized female opponents in a general sense, without the backdrop of a narrative. Another literature identifies a form of psychological immersion that likely overlaps with a state of “transportation” but that focuses attention on technological rather than narrative precursors to immersion.

The concept of transportation that has received considerable attention in the research on fictional and narrative processing of information bears a great deal of resemblance to *presence*, used to describe immersion into virtual worlds. Presence, “the subjective experience of being in one place or environment, even when one is physically situated in another” (p. 225, Witmer & Singer, 1998), is a measure of both *involvement* (“a psychological state experienced as a consequence of focusing one’s energy and attention on a coherent set of stimuli or meaningful related activities and events,” p. 227), and *immersion* (“a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment,” p. 227). The second factor, psychological immersion, is the component I’ll be focusing on, and the one that is most similar to the concept of transportation. For instance, items from Green and Brock’s (2000) transportation scale (e.g. “I could picture myself in the scene of the events

described in the narrative”) are similar to items on Lombard, Ditton, & Weinstein’s (2009) mental immersion scale (e.g., “To what extent did you experience a sensation of reality?”).

Research on psychological immersion has primarily focused on identifying features of virtual experiences that promote immersion. For example, studies show that immersion is heightened in first-person video games (Tamborini et al., 2004), and when players use more natural controllers (e.g., controllers imbedded in boxing gloves while playing a boxing game; McGloin, Farrar, & Krcmar, 2014). Somewhat less attention has been given to how a state of immersion might alter the influence of virtual experiences on the individual. However, research that has had such a focus is consistent with research on narrative transportation—suggesting that people move to a state of heightened influence when they experience virtual environments as if they are real, that is, to the extent that people are psychologically immersed in a virtual environment. Indeed, research on violent video games and aggression has shown that self-reported immersion during violent video game play predicts greater verbal and physical aggression, greater hostility, and more physically aggressive attentions in subsequent interactions (e.g., Farrar et al., 2006; McGloin et al., 2014; Nowak, Krcmar, & Farrar, 2008; Plante, Groves, & Lishner, 2014; but see Farrar et al., 2013; Tamborini et al., 2004 for null results).

In summary, two distinct literatures provide converging evidence that greater immersion into video games might enhance both overt and tacit influences of these games on players. I thus propose that immersion into the violent and sexually objectifying video games used in my studies will exert a moderating influence, such that those who report greater psychological immersion into games will show stronger effects of target sex and female sexualization on criterion outcomes suggestive of heightened hostility towards women.

Theoretical Integration

My dissertation studies were inspired by various components of the theoretical frameworks discussed above, each of which suggests that video game violence against sexualized female characters may contribute to hostility toward women. First, the general aggression model (Anderson & Bushman, 2002), based in social-cognitive and social-learning theories (e.g., Bandura, 1977, Huesmann, 1982), explains how violent video game play activates violent schemata, enhances hostile expectancies, and contributes to subsequent real-world hostility. This model predicts some degree of specificity in effects, consistent with how I predict specificity in the way violent game play against sexualized women will increase hostility toward women more than violent game play against men. However, this particular model is not well-suited for explaining how unrealistic features of games (i.e., killing or fighting hypersexualized women) come to affect real-world outcomes. In contrast, the identity simulation hypothesis posits that identification with non-normative video game characters (i.e., violent and anti-social) promotes general deviance and participation in risky behaviors (Hull et al., 2014), and so it easily accommodates such predictions. Whether adopting a general aggression or identity simulation model, evidence suggests that perceptions of video game characters can vary due to game context, and may similarly vary due to type of opponent, for instance, a character who beats up women may be more likely to be perceived as deviant or anti-social than one who aggresses against men.

Violence against hypersexualized female opponents in video games also provides players with the opportunity to sexually objectify women. Sexual objectification can have negative consequences for how women are perceived and treated, and it can be an antecedent or consequence of hostile sexism (Glick & Fiske, 1996). Violent games have been shown to

promote hostility (Anderson et al., 2010), and coupled with the specificity of effects predicted by the general aggression model—and particularly with the harmful effects of sexual objectification—simulated violence against sexualized women might promote real-world hostile sexism. This is consistent with the theory of media imagery and social learning (Dill & Burgess, 2012), which combines elements of the general aggression model (Anderson & Bushman, 2002), sexual objectification research, and ambivalent sexism (Glick & Fiske, 1996) to explain how media representations of sexualized women—particularly in video games—can elicit real-world hostility toward women.

Finally, not every game player will be equally affected by video game content. Evidence suggests that video game effects may not be due to simple priming; effects may be stronger to the extent that players are more psychologically immersed into the game. Video games are immersive media; players seek enjoyment and interact with the game as if it were real (e.g., Holland, 2007; 2009). Based on research showing that the persuasiveness of arguments is enhanced by transportation into fictional narratives (Green & Brock, 2000), and violent video game effects are stronger when players are more immersed (e.g., Farrar et al., 2006), effects of target gender and sexualization should be enhanced by increased psychological immersion into the video game.

In summary, although no specific theoretical model stands alone in predicting the effects of violence against sexualized representations of women in video games—and my research on this topic was not designed to pursue critical tests of any one model over the other—each framework provides a reason to be concerned about how a common feature of immersive video games, violence against sexualized female opponents—may affect male players. The various literatures reviewed suggest that violence against sexualized women in simulated combat likely

influences player cognitions and promotes greater norm-violating, objectifying, and hostile attitudes toward women, particularly when psychological immersion is high. Thus, based on the above theoretical frameworks, I hypothesize that playing a violent video game against sexualized female opponents, but not against nonsexualized female or male opponents, will increase hostile sexism (as measured by the ambivalent sexism inventory, Glick & Fiske, 1999) toward women. Further, I predict that psychological immersion will moderate these effects, such that increased immersion will predict greater hostile sexism after playing against sexualized female opponents.

THE PRESENT STUDIES

I designed and ran five studies to test the effects of violent video game play against sexualized female opponents on hostility toward women. Study 1 tested the effect of shooting sexualized female opponents in a first-person-shooter game on hostile sexism. The first-person-shooter game was designed for the purpose of the current research and allowed for the control of all aspects of game play save the appearance of the opponents. Study 2 added a nonsexualized female opponent condition and controlled for pretest hostile sexism. The next three studies used commercially available third-person-fighting games to test the generalizability of findings from Studies 1 and 2. Psychological immersion was explored as a moderator of effects in all studies.

Although designed to focus on hostile sexism, results of ancillary analyses of filler items used in Study 1 showed an interaction effect between condition and psychological immersion predicting willingness to have sex without a condom; willingness was greater following game play in the sexualized female conditions to the extent that participants were immersed. Based on these findings, and on the identity simulation research linking violent video game play with risk behaviors (Hull et al., 2014), willingness to engage in sexual risk was included as an outcome measure in Studies 3, 4, and 5. These studies keep the focus on psychological immersion as a

moderator, but additional moderators were tested with relevance to this outcome. Prior research has found that sexual arousal predicts reported likelihood to engage in unprotected sexual behavior (Skakoon-Sparling, Cramer, & Shuper, 2015), state arousal can influence video game effects (Anderson et al., 1995; Anderson & Dill, 2000), and identification with a violent video game character increases risk behaviors (e.g., Hull et al., 2014). Therefore, sexual arousal and identification with the playable character were examined as moderators of willingness to have sex without a condom in Studies 4 and 5.

Study 1

My first study tested the effects of playing a first-person-shooter video game containing sexualized female enemies or male enemies on hostile sexism. Benevolent sexism was included as an exploratory variable due to some evidence that sexist game play is correlated with benevolent sexism and not hostile sexism (Stermer & Burkey, 2010). Because there is some evidence linking violent video game play with subsequent risk behavior (e.g., Hull et al., 2012; 2104), filler items included willingness to engage in a variety of risk behaviors. Ancillary analyses focused on all risk behaviors found marginally significant results pertaining to willingness to have sex without a condom, so those results are presented, with their import elaborated in the Discussion.

Method

Participants

Ninety-two male undergraduate students ($M_{\text{age}} = 19.12$, $SD = 1.40$) participated for introductory psychology course credit. No prior history of video game experience was required, but 87% of participants reported playing action video games (i.e., first-person-shooter, fighting,

or adventure) for an average of 3.29 hours per week ($SD = 3.63$). Complete data were available for 90 participants.

Procedure

A male experimenter told participants the purpose of the study was to explore how video game environments affect physiological and psychological responses. Blood pressure monitors were worn to facilitate that cover story but were not used to collect any data. Participants were randomly assigned to play one of two versions of the same first-person-shooter video game—one targeting both fully-clothed male and sexualized female enemies (i.e., women wearing bikini tops and camouflage pants) or one targeting fully-clothed male enemies only—or a non-violent control game. Games were played on a computer using a Logitech F310 gamepad (for the first-person-shooter game) or the keyboard directional pad (for the non-violent control game). Following 3 minutes of training and 12 minutes of game play, participants completed measures of psychological immersion, hostile and benevolent sexism, willingness to engage in risk behaviors, trait aggression, prior experience with video games, and filler items. Data were collected using Qualtrics survey software on a computer. Participants were then thanked and debriefed.

Experimental Manipulation

The experimental video game was created for the purpose of the present research based on the Cryengine 3 video game engine. This game was a first-person-shooter game set in a three-dimensional environment. Participants played the game as a male police officer armed with a gun tasked with exploring an office building, shooting antagonists, and navigating obstacles along the way until they retrieved 10 explosives intended to destroy research facilities located in the building. In reality, there were only 9 explosives in the game to ensure that the game could

not be “won” before time expired. The appearance of the antagonists varied by experimental condition. In one condition, antagonists consisted of sexualized females wearing bikini tops and camouflage pants and fully-clothed males (Figure 1). The second condition included fully-clothed male antagonists only. Participants in the nonviolent comparison condition played *Pacman*, a game that involves navigating a yellow circle that opens its “mouth” through a two-dimensional maze while eating white dots and avoiding enemy ghosts.

Measures

Psychological Immersion Questionnaire. The 6-item Engagement (Mental Immersion) subscale of the Temple Presence Inventory (TPI; Lombard et al., 2009) measures psychological immersion into virtual worlds and includes items such as “To what extent did you feel mentally immersed in the experience?” and “To what extent did you experience a sensation of reality?” Responses are on a range from 0 *not at all* to 6 *extremely* ($\alpha = .85$). Following the immersion items, additional questions measured enjoyment of the study game, rating of the visual quality of the game environment, estimated average cost of a video game, estimated cost of a fully developed game similar to the study game, and demographics (i.e., age, ethnicity, college major).

Hostile and Benevolent Sexism. The Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996) consists of 22 items measuring hostile and benevolent sexism. Instructions read, “Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the degree to which you agree or disagree with each statement using the scale below.” Hostile sexism includes statements such as “Women seek to gain power by getting control over men,” and benevolent sexism includes statements such as “Women should be cherished and protected by men.” Responses range from 0 *disagree strongly* to 5 *agree strongly* (hostile subscale $\alpha = .82$, benevolent subscale $\alpha = .73$).

Willingness to Engage in Risk Behaviors. These items were created for the purpose of this study and measure willingness to have unprotected sex (1 item, “Have sex without a condom with a sexually attractive person you just met”), drink and drive (2 items, e.g., “Drive a car after you feel ‘slightly buzzed’ from alcohol”), engage in reckless driving (3 items, e.g., “Engage in an aggressive driving maneuver with someone who cut you off”), use drugs (2 items, e.g., “Smoke marijuana at an outdoor music festival”) and other risk behaviors on a scale ranging from 0 *not at all willing* to 6 *extremely willing*.

Aggression Questionnaire – Short Form. The short form of the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992) consists of 12 statements relating to trait physical and verbal aggression, anger, and hostility (e.g., “At times I feel I have gotten a raw deal out of life” and “I have trouble controlling my temper”). Respondents rate agreement with each statement on a scale from 0 *very unlike me* to 4 *very like me* ($\alpha = .84$).

Video Game Experience. These questions were created for the purpose of the study and contain items about hours per week of general and action game play, types of video games played most often, and playing mode preference (e.g., first-person, third-person).

Results

A summary of the main findings of all studies is provided in Table 1. In general, immersion was below the midpoint of the 0 to 6 scale ($M = 1.94$, $SD = 0.95$), but did not vary by experimental condition, $F(2, 86) = 0.09$, *ns*. Game enjoyment was higher for Pacman ($M = 3.00$, $SD = 1.52$) than the first-person-shooter games ($M = 2.34$, $SD = 1.24$), $t(86) = 2.16$, $p = .03$. Data were analyzed using hierarchical linear regression (Aiken & West, 1991; Jaccard & Turrisi, 2003). Dummy codes were created for experimental condition using the sexualized female condition as the reference group. To test for main effects, dependent variables were regressed on

the condition dummy codes and psychological immersion in the first block. To test for interactions, the multiplicative cross-products of condition and psychological immersion were entered into the second block. Inclusion of prior history of action game play, enjoyment of the study game, and trait aggression as control variables did not significantly change the results, so the simpler results (i.e., without those control variables) are presented.

Hostile and Benevolent Sexism. One problematic data point was identified after plotting the normalized squared residuals against leverage. Both Cook's D and the dfbeta were higher than the recommended cutoffs, and the outlier was removed from all analyses. There were no significant main effects of condition or immersion predicting hostile sexism, but there were significant condition X immersion interactions. Before describing these interactions, it is first worth noting that immersion was a significant predictor of hostile sexism in the sexualized female condition, $B = 0.46$, $t(83) = 2.77$, $p = .007$ (Table 2, Figure 2). Significant condition X immersion interactions indicated that the slope of the regression line in the sexualized female condition was significantly different from the slope in the male condition, $t(83) = 2.92$, $p = .005$, but was not significantly different from the slope in the Pacman condition, $t(83) = 1.50$, $p = .14$. Immersion was not a significant predictor of hostile sexism in the male condition, $B = -0.23$, $t(83) = 1.36$, $p = .18$, or the Pacman condition, $B = 0.07$, $t(83) = 0.38$, $p = .70$.

A test of expected values revealed that when immersion was high, hostile sexism was significantly greater in the sexualized female condition than in the male condition, $B = -1.38$, $t(83) = 2.62$, $p = .01$, but not the Pacman condition, $B = -0.85$, $t(83) = 1.47$, $p = .15$. When immersion was low, hostile sexism was significantly lower in the sexualized female condition than in the male condition, $B = 1.35$, $t(83) = 2.63$, $p = .007$, but not the Pacman condition, $B =$

0.68, $t(83) = 1.25$, $p = .21$. There were no significant main effects of condition or immersion or significant condition X immersion interactions predicting benevolent sexism.

Willingness to Have Sex Without a Condom. Data were first examined using the sexualized female condition as the reference group, and then by collapsing across the first-person-shooter conditions and using the Pacman condition as the reference group. There were no main effects of condition or immersion on reported willingness to have unprotected sex, but there was a marginally significant condition X immersion interaction. Although immersion was not a significant predictor of willingness to have sex without a condom in the sexualized female condition, $B = 0.29$, $t(84) = 0.91$, $p = .36$, a condition X immersion interaction indicated that immersion did predict willingness to a greater extent in the sexualized female condition than in the male condition, $t(84) = 1.88$, $p = .06$, but not when compared with the Pacman condition, $t(84) = 0.99$, $p = .14$ (Table 3, Figure 3). Immersion predicted somewhat less willingness to have sex without a condom in the male condition, $B = -0.58$, $t(84) = 1.72$, $p = .09$, and was not a significant predictor of willingness in the Pacman condition, $B = -0.21$, $t(84) = 0.53$, $p = .59$.

When immersion was high, willingness to have unprotected sex was marginally greater in the sexualized female condition than in the male condition, $B = -1.94$, $t(84) = 1.86$, $p = .07$, but not the Pacman condition, $B = -0.60$, $t(84) = 0.52$, $p = .61$. When immersion was low, willingness in the sexualized female condition did not significantly differ from the male condition, $B = 1.56$, $t(84) = 1.50$, $p = .14$, or the Pacman condition, $B = 1.42$, $t(84) = 1.30$, $p = .21$. After collapsing across the first-person-shooter conditions and using Pacman as a reference group, there were no main effects of violence or immersion or significant interactions. See ancillary analyses for results regarding other risk behaviors (Appendix A).

Discussion

Psychological immersion was an important moderator of Study 1 results; hostile sexism was greater in the sexualized female condition than the male condition, but only when immersion was high. When immersion was low, hostile sexism was greater in the male condition than in the female condition. The pattern of results in the male condition was unexpected. One possibility is that higher levels of baseline hostile sexism may predict greater immersion into the sexualized female condition than the male condition. A second possibility is that violence against male enemies may somehow dampen gendered hostility toward women, resulting in a protective effect. A third explanation is that low immersion in the sexualized female condition may be akin to a “boomerang” effect; players who were not immersed in the sexualized female condition may have engaged in greater critical elaboration of the game content, lowering hostile sexism.

Results of ancillary analyses conducted on willingness to engage in risky behaviors (see Appendix A) indicated that willingness to have sex without a condom was somewhat greater in the sexualized female condition than the male condition, but only when immersion was high. When immersion was low, there was no difference between conditions on willingness to have sex without a condom. The identity simulation logic links violent video game play with general risk behavior (Hull et al., 2014), but few significant results were found for other risk behaviors (see ancillary analyses). Hull et al. would argue that effects would apply across risk behaviors, but the pattern of effects for willingness to have unprotected sex is similar to the hostile sexism results. It’s possible that playing a violent video game against a sexualized female opponent elicits specific *sexual* risk based on game features (i.e., consistent with the general aggression model, Anderson & Bushman, 2002) rather than general risk. This prediction is also consistent with sexual objectification research showing that objectified others are perceived as more violable and elicit lower moral concern than non-objectified others (e.g., Loughnan et al., 2010;

2012). Nonetheless, willingness to have sex without a condom was only used as a filler item in Study 1, and was not included in Study 2. I will re-address this variable in the General Discussion of Studies 1 and 2 before including it as a main variable of interest in Studies 3, 4, and 5.

Results of Study 1 were somewhat consistent with predictions regarding hostile sexism, but it is unclear whether prior levels of hostile sexism influenced immersion in the sexualized female condition, and whether the link between immersion and hostile sexism in the sexualized female condition was due to shooting female enemies in general or sexualized female enemies in particular. Study 2 addresses this limitation by including a nonsexualized female condition. Given that hostile sexism addresses both power and sexuality (Glick & Fiske, 2001), and prior research showing that sexual objectification in a virtual world can elicit greater scores on hostile sexism (Fox & Bailenson, 2009), I expect higher levels of hostile sexism following violent game play against sexualized, but not nonsexualized, female enemies.

Study 2

I conducted Study 2 to test the robustness of Study 1 results regarding hostile sexism, and to determine whether results were due to shooting female enemies in general or shooting sexualized female enemies in particular. The first-person-shooter video game was similar to that used in Study 1, but included a larger terrain area designed to be more immersive and included a version incorporating nonsexualized female enemies. Additionally, participants completed the hostile sexism measure (Glick & Fiske, 1996) at the beginning of the academic semester allowing for the control of baseline hostile sexism scores. As previous research has been inconsistent regarding the link between exposure to sexualized female video game characters and rape myth acceptance (support found by Beck et al., 2012; Driesmans et al., 2015; support not

found by Dill et al., 2008; Fox & Bailenson, 2009), additional exploratory dependent measures included attitudes toward assuming sexual consent and rape tolerance, described below.

Method

Participants

A total of 236 male undergraduate students participated for introductory psychology course credit; 198 participants ($M_{\text{age}} = 18.66$, $SD = 0.96$) had available pretest data. No prior history of video game experience was required, but in general, participants reported enjoying action video games ($M = 2.63$, $SD = 0.93$, median = 3 on a scale from 1 to 4) and played video games for an average of 5.22 hours per week ($SD = 6.66$, range = 0 – 60).

Procedure

Procedures for Study 2 were similar to Study 1, with some minor deviations. First, hostile sexism data were collected at the beginning of the academic semester as part of mass testing. Second, we tested three versions of the same first-person-shooter video game targeting (1) sexualized female enemies (i.e., wearing bikini tops and camouflage pants), (2) nonsexualized female enemies (i.e., fully-clothed), or (3) male enemies, and instead of a multi-story building, players navigated through a large wooded area containing abandoned buildings (Figure 4). Pacman was the nonviolent comparison game. Psychological immersion was measured following game play. The experimenter then told participants that they would be completing a 10-minute Stroop task with a second experimenter as a distraction prior to completing the final questionnaire. At this point a female confederate interrupted the experiment to explain that the second experimenter was sick and that the professor in charge of the research wanted participants to complete a paper-and-pencil survey for her senior project in place of the Stroop task. The survey contained items measuring attitudes toward assuming sexual consent, willingness to

engage alcohol-related risk behaviors, hostile and benevolent sexism, and rape tolerance. After completing the paper-and-pencil survey, participants completed the video game experience items and were debriefed.

Measures

Psychological Immersion Questionnaire. Psychological immersion was measured by adapting 10 items from Green and Brock's (2000) transportation scale (e.g., "I was mentally involved in the video game while playing it" and "I could picture myself in the scene of the events shown in the video game"). Responses ranged from 0 *strongly disagree* to 6 *strongly agree* ($\alpha = .75$). Additional questions presented after the transportation items measured enjoyment of the study game, rating of the visual quality of the game environment, estimated average cost of a video game, estimated cost of a fully developed game similar to the study game, and demographics (i.e., age, ethnicity, college major).

Hostile and Benevolent Sexism. The hostile sexism subscale of the ASI ($\alpha = .86$, Glick & Fiske, 1996) was administered at the beginning of the academic semester as part of mass testing. The confederate's survey included a subset of 6 benevolent sexism and 5 hostile sexism items. Responses range from 0 *disagree strongly* to 5 *agree strongly* ($\alpha = .67$ for the benevolent and $\alpha = .81$ for the hostile sexism items).

Attitudes toward Assuming Sexual Consent. The (pro) assuming consent subscale of the Sexual Consent Scale, Revised (SCS-R; Humphreys, 2011) contains 7 items measuring beliefs about assuming sexual consent (e.g., "I think it is okay to assume consent and proceed sexually until the partner indicates 'no.'" and "Not asking for consent is not really a big deal.>"). Responses range from 0 *strongly disagree* to 6 *strongly agree*, and higher scores indicate a

greater tendency to assume sexual consent without actually asking for or receiving it verbally ($\alpha = .81$).

Rape Tolerance. Rape tolerance was measured by administering questions regarding a sexual assault vignette based on an NBC Dateline episode about sexual assault on college campuses (Kotb, 2005). Names have been changed and the name of the university has been removed from the original story for the vignette. The vignette contains an interview with a college woman, “Ashley”, who reported being raped by a fellow college student, “Michael.” Seven items were created for the purpose of this study, and were modeled after those used to measure perceptions of a real-life sexual harassment case in a prior study testing the effects of exposure to sex-typed video game characters (Dill et al., 2008). Items included perceptions of guilt, punishment, responsibility, and seriousness of the event as well as empathy for the victim. Responses were coded such that higher values indicated greater tolerance for rape ($\alpha = .83$).

Video Game Experience. These questions were created for the purpose of the study and contain items about hours per week of general, first-person-shooter, and role-playing game play, video games played most often, and playing mode preference (e.g., first-person, third-person).

Results

The mean level of Study 2 immersion was at the midpoint of the 7-point scale ($M = 2.99$, $SD = 0.98$). Immersion did not differ between the first-person-shooter conditions, $F(2, 141) = 0.57$, ns , but was higher in the first-person-shooter conditions ($M = 3.11$, $SD = 0.90$) than in Pacman ($M = 2.66$, $SD = 1.14$), $t(194) = 2.91$, $p = .004$. Enjoyment did not differ between the first-person-shooter conditions, $F(2, 143) = 1.14$, ns , but was higher in the first-person-shooter conditions ($M = 3.13$, $SD = 1.46$) than in Pacman ($M = 2.54$, $SD = 1.50$), $t(194) = 2.49$, $p = .01$.

Data were analyzed following the analytic procedures used in Study 1. Dummy codes were created for experimental condition using the sexualized female condition as the reference group. To test for main effects, dependent variables were first regressed on the dummy coded conditions and psychological immersion in the first block. Pretest hostile sexism was included as a covariate. Next, the multiplicative cross-products of the condition dummy codes and psychological immersion were entered to test for interactions in the second block. Inclusion of pretest enjoyment of action video games and enjoyment of the study game did not significantly change the results, so the results are presented without covariates.

Hostile and Benevolent Sexism. Outliers were identified following the procedures used in Study 1. Two observations were identified as problematic and removed prior to analyses. There were no significant main effects of condition or immersion predicting hostile sexism in the first block; however, immersion interacted with the experimental conditions in the second block (Table 4). Before describing these interactions, it is worth noting that after controlling for pretest hostile sexism, immersion was a significant predictor of posttest hostile sexism in the sexualized female condition, $B = 0.27$, $t(187) = 2.39$, $p = .02$ (Figure 5). Significant condition X immersion interactions indicated that the slope of the regression line in the sexualized female condition was significantly different from the slope in the male condition, $t(187) = 2.98$, $p = .003$, and the nonsexualized female condition, $t(187) = 2.11$, $p = .04$, and was marginally different from the slope in the Pacman condition, $t(187) = 1.80$, $p = .07$. Greater immersion predicted somewhat lower posttest hostile sexism in the male condition, $B = -0.19$, $t(187) = 1.79$, $p = .08$, but did not significantly predict posttest hostile sexism in the nonsexualized female condition, $B = -0.05$, $t(187) = 0.48$, $p = .63$, or in the Pacman condition, $B = 0.02$, $t(187) = 0.28$, $p = .78$.

When immersion was high, posttest hostile sexism was significantly greater in the sexualized female condition compared with the male condition, $B = -0.93$, $t(187) = 2.43$, $p = .02$, and the nonsexualized female condition, $B = -0.82$, $t(187) = 2.12$, $p = .04$, but was not significantly different from the Pacman condition, $B = -0.48$, $t(187) = 1.29$, $p = .20$. When immersion was low, posttest hostile sexism was *lower* in the sexualized female condition compared with the male condition, $B = 1.36$, $t(187) = 3.15$, $p = .002$, Pacman condition, $B = 0.75$, $t(187) = 2.07$, $p = .04$, and nonsexualized female condition, $B = 0.76$, $t(187) = 2.07$, $p = .06$, although this last difference was only marginally significant. There were no significant main effects or interactions predicting benevolent sexism.

Attitudes toward Assuming Consent. There were no significant main effects of condition, immersion, or immersion X condition interactions predicting (pro) attitudes toward assuming consent either before or after controlling for pretest hostile sexism. Pretest hostile sexism was a significant predictor of attitudes toward assuming consent, $B = 0.38$, $t(189) = 4.41$, $p < .001$.

Rape Tolerance. There were no significant main effects of condition, immersion, or immersion X condition interactions predicting rape tolerance either before or after controlling for pretest hostile sexism. Pretest hostile sexism was a significant predictor of rape tolerance, $B = 0.38$, $t(189) = 2.68$, $p = .008$.

Discussion

Study 2 replicated and extended the results of Study 1. After controlling for pretest hostile sexism, posttest hostile sexism was greater in the sexualized female condition than in both the male condition and the nonsexualized female condition, but only when psychological immersion was high. When immersion was low, posttest hostile sexism was greater in both the

male condition and the nonsexualized female condition than in the sexualized female condition, even after controlling for pretest hostile sexism. The pattern on the high end of immersion was consistent with predictions. The pattern on the low end of immersion was unexpected, but is consistent with Study 1 and will be discussed in more detail below. There were no significant main effects or condition X immersion interactions predicting benevolent sexism, attitudes toward assuming consent, or rape tolerance. Results regarding rape tolerance are inconsistent with prior studies finding a link between exposure to sexualized video game characters and rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015; Fox & Bailenson, 2009), but other researchers have also found null results (Dill et al., 2008).

General Discussion: Studies 1 and 2

Psychological immersion was an important moderator of violent video game effects in Studies 1 and 2. When immersion was high, hostile sexism was greater following violent game play against sexualized female enemies than male enemies, even after controlling for pretest hostile sexism. Further, the effect was limited to sexualized female enemies in particular rather than female enemies in general, consistent with ambivalent sexism theory's conceptualization of hostile sexism (Glick & Fiske, 2001) and prior research (e.g., Fox & Bailenson, 2009). These results are also congruent with research identifying immersion as a moderator of violent video game effects (Farrar et al., 2006) and linking exposure to sexualized female video game characters with more negative attitudes toward women (Beck et al., 2012; Behm-Morawitz & Mastro, 2009; Dill et al., 2008; Driesmans et al., 2015; Fox & Bailenson, 2009; Yao et al., 2010).

Unexpectedly, when immersion was low, hostile sexism was lower in the sexualized female condition than all other conditions, and immersion into the male enemies condition predicted somewhat decreased hostile sexism. As previously mentioned, it's possible that

violence against male enemies may dampen gendered hostility toward women. It's also possible that low immersion in the sexualized female condition may be akin to a "boomerang" effect; players who were not immersed in the sexualized female condition may have engaged in greater critical elaboration of the game content, lowering hostile sexism. Ultimately, however, the high immersion effects have greater real-world implications; from a commercial standpoint, people are more likely to buy and play video games that they find immersive.

Finally, results of ancillary analyses of Study 1 filler items indicated that willingness to have unprotected sex (i.e., *Have sex without a condom with a sexually attractive person you just met*) was higher in the sexualized female condition than the male condition to the extent that participants were immersed. The identity simulation explanation of violent video game effects (Hull et al., 2012; 2014) predicts a link between violent video game play and increased willingness to engage in risk; however, effects of the game should not be limited to sexual risk specifically, but should generalize to additional risk behaviors. Results of ancillary analyses of willingness to engage in additional risk behaviors were mixed, but greater immersion into a violent and sexually objectifying video game appears to elicit willingness to engage in unprotected sex (Study 1) and some alcohol risk (i.e., drink and drive in Study 2, see ancillary analyses), but not other risk (e.g., reckless driving, drug use, cigarette smoking). As alcohol use is linked with greater reported likelihood to have unprotected sex (Conner et al., 2008; Ebel-Lam, et al., 2009; George et al., 2008), violent game play against a sexualized female opponent may increase specific risks associated with sex (i.e., unprotected sex and alcohol use), but not other general risk behaviors. Willingness to engage in risk behaviors, particularly sexual risk behaviors, was explored in further detail in Studies 3, 4, and 5.

Limitations. Studies 1 and 2 used lab-designed video games wherein all aspects of the games were identical save the appearance of the opponents. This allowed for the control of many confounds, but results are limited in that the video game used does not actually exist for consumer purchase. Second, only bikini tops were used to sexualize female opponents. In contrast, in commercial video games, female characters often wear sexually revealing clothing and have hypersexualized, unrealistic body proportions (Downs & Smith, 2010). Third, the first-person-shooter game allowed players to shoot enemies from a distance, and enemies were easily killed, effectively limiting the amount of violence allowed by the game. The next three studies test commercially available video games that (1) are available for consumer purchase, (2) include female opponents with sexually revealing clothing and hypersexualized body types, and (3) involve prolonged hand-to-hand fighting with opponents.

Study 3

I conducted Study 3 to (1) test the feasibility of using a commercial third-person fighting game, (2) try to replicate the condition X immersion interactions found in Studies 1 and 2 linking immersion with greater hostile sexism in the sexualized female conditions, and (3) to further explore willingness to engage in sexual risk as a dependent measure (i.e., used as a filler item in Study 1). Study 3 also included a previously existing measure of rape victim empathy in place of the rape tolerance measure created for Study 2 based on prior evidence that exposure to violent video games can decrease empathy (e.g., Anderson et al., 2010) and increase rape myth acceptance (Beck et al., 2012).

Method

Participants

Sixty-five male undergraduate students ($M_{\text{age}} = 19.57$, $SD = 1.95$) participated for introductory psychology course credit. No prior history of video game experience was required, but 88% of participants reported playing action video games (i.e., first-person-shooter, fighting, or adventure) for an average of 5.22 hours per week ($SD = 9.81$).

Procedure

The procedure for Study 3 was similar to Study 2, but instead of the first-person-shooter game, I used a third-person commercially available fighting game. Study 3 was intended to be a small pilot test of the third-person fighting game format, so I included a sexualized female opponent condition and a male opponent condition, but did not include the *Pacman* game. Games were played on a computer using a Logitech F310 gamepad. Psychological immersion was measured following 10 minutes of game play. As in Study 2, the experimenter then directed participants to click the desktop link labeled “STROOP,” acted surprised when the link didn’t work, and instead administered a paper-and-pencil survey containing items measuring hostile sexism, willingness to engage in risk behaviors, attitudes toward assuming sexual consent, and rape victim empathy. After completing the paper-and-pencil survey, participants completed the video game experience items, trait aggression, and were debriefed.

Experimental Manipulation

The experimental video game was *Mortal Kombat: Komplete Edition*. This game is a two-dimensional, third-person perspective fighting game. Participants played the game as a male police officer and fought either a sexualized female opponent or a male opponent (Figure 6). The goals of the game are to either “knockout” the opponent or perform a “fatality” and kill the opponent. However, participants played on training mode to prevent them from winning before time was up. The game was played on a computer using a Logitech F310 gamepad.

Measures

Psychological Immersion Questionnaire. The psychological immersion questionnaire contained 7 items from the Engagement (Mental Immersion) subscale of the Temple Presence Inventory (TPI; Lombard et al., 2009). Responses are on a range from 0 *not at all* to 6 *extremely* ($\alpha = .78$). After the immersion items were presented, additional questions measured frustration (“How frustrating was the experience?”), perceived difficulty level (“Do you think you played on easy, medium, or hard mode?”) enjoyment of the study game, rating of the visual quality of the game environment, estimated average cost of a video game, estimated cost of a fully developed game similar to the study game, and demographics (i.e., age, ethnicity, college major).

Hostile Sexism. Six items from the hostile sexism subscale of the ASI were administered as part of the confederate survey ($\alpha = .76$, Glick & Fiske, 1996).

Willingness to Engage in Risk Behaviors. Two items measured willingness to have sex with a stranger (“Having sex with an attractive person you just met” and “Going home with an attractive person you just met at a party,” $\alpha = .81$), one item measured willingness to drink and drive, and one item measured willingness to drink to the point of intoxication.

Attitudes toward Assuming Sexual Consent. The (pro) assuming consent subscale of the Sexual Consent Scale, Revised (SCS-R; Humphreys, 2011) contains 7 items measuring beliefs about assuming sexual consent (e.g., “I think it is okay to assume consent and proceed sexually until the partner indicates ‘no.’”). Responses range from 0 *strongly disagree* to 6 *strongly agree*, and higher scores indicate a greater tendency to assume sexual consent without actually asking for or receiving it verbally ($\alpha = .81$).

Rape Victim Empathy. Six items were adapted from the Rape Empathy Scale (RES; Deitz, Blackwell, & Daley, 1982). The RES measures rape victim empathy by presenting a series

of paired statements. First, participants choose one of the two the statements they agree with more then rate their preference for the chosen statement using a 7-point Likert scale. Higher scores indicate more rape victim empathy ($\alpha = .63$).

Video Game Experience. Participants also answered questions about how many hours per week they played games in general, and action games specifically, the types of video games played most often, and their playing mode preferences.

Aggression Questionnaire – Short Form. The short form of the BPAQ (Buss & Perry, 1992) consists of 12 statements relating to trait physical and verbal aggression, anger, and hostility (e.g., “At times I feel I have gotten a raw deal out of life”). Respondents rate agreement with each statement on a scale from 0 *very unlike me* to 4 *very like me* ($\alpha = .84$).

Results

Immersion was slightly above the midpoint of the 7-point scale ($M = 3.53$, $SD = 0.76$) and did not differ between the conditions, $t(63) = 1.32$, ns , but was slightly higher in the sexualized female condition ($M = 3.65$, $SD = 0.64$) than the male condition ($M = 3.41$, $SD = 0.86$). Enjoyment and frustration did not significantly differ between conditions, but the sexualized female opponent was perceived as significantly more difficult ($M = 2.16$, $SD = 0.64$) than the male opponent ($M = 1.82$, $SD = 0.58$), $t(62) = 2.25$, $p = .03$.

Data were analyzed following the analytic procedures used in Studies 1 and 2. A dummy code was created for the experimental condition using the sexualized female condition as the reference group (i.e., coding this condition as 0 and the male condition as 1). The dependent variables were regressed in the first block on the dummy coded condition and psychological immersion to obtain main effects, with the multiplicative cross-products of condition and psychological immersion entered in the second block to test for interactions. The patterns of

results did not change after controlling for perceived difficulty level or prior experience with action games in any analyses, so results are presented without including the covariates.

Hostile Sexism. There was no condition X immersion interaction in the prediction of hostile sexism. However, there was a significant main effect of immersion, with participants reporting more hostile sexism to the extent that they were immersed, $B = 0.27$, $t(62) = 2.00$, $p = .05$, and a main effect of condition, $t(62) = 1.56$, $p = .06$, with greater hostile sexism reported in the sexualized female condition ($M = 2.63$, $SD = 0.78$) than the male condition ($M = 2.31$, $SD = 0.87$). The additive influence of these two effects is illustrated in Figure 7. Pretest hostile sexism data were only available for 34 of the 64 total participants, so this analysis did not control for pretest hostile sexism.

Willingness to Have Sex With a Stranger. There was a marginally significant main effect of immersion, $B = 0.47$, $t(62) = 1.65$, $p = .10$, and a significant condition X immersion interaction, $B = -1.15$, $t(61) = 1.97$, $p = .05$. The latter effect indicated that immersion was a stronger predictor of willingness to have sex with a stranger in the sexualized female condition than the male condition. Immersion significantly predicted willingness in the sexualized female condition, $B = 1.21$, $t(61) = 2.59$, $p = .01$, but not in the male condition, $B = 0.06$, $t(61) = 0.19$, $p = .85$ (Table 5, Figure 8). When immersion was low, willingness to have sex with a stranger was lower in the sexualized female condition than the male condition, $B = 1.78$, $t(61) = 1.77$, $p = .08$, and when immersion was high, willingness to have sex with a stranger was greater in the sexualized female condition than the male condition, $B = -1.82$, $t(61) = 1.81$, $p = .08$, although these differences did not quite reach statistical significance. The interaction term remained significant after controlling for hostile sexism, and the R^2 increased from 0.10 to 0.28. See ancillary analyses for additional risk items.

Attitudes toward Assuming Consent. There were no significant main effects of condition or immersion, but there was a trending condition X immersion interaction predicting (pro) attitudes toward assuming consent, $B = -0.61$, $t(61) = 1.62$, $p = .11$. The direction of this effect was such that immersion predicted somewhat stronger attitudes toward assuming consent in the sexualized female condition, $B = 0.46$, $t(61) = 1.51$, $p = .14$, than the male condition, $B = -0.15$, $t(61) = 0.68$, $p = .50$ (Figure 9). A comparison of expected values revealed that when immersion was high, attitudes toward assuming consent were somewhat stronger after fighting the sexualized female opponent than the male opponent, $B = -0.98$, $t(61) = 1.50$, $p = .14$, and when immersion was low, attitudes toward assuming consent were somewhat weaker after fighting the sexualized female opponent than the male opponent, $B = 0.94$, $t(61) = 1.44$, $p = .16$. The condition X immersion interaction became significant after controlling for hostile sexism, $B = -0.66$, $t(59) = 2.00$, $p = .05$ (Table 6), but the significant difference was on the low end of immersion. When immersion was low, attitudes toward assuming consent were significantly weaker after fighting the sexualized female opponent than the male opponent, $B = 1.19$, $t(59) = 2.10$, $p = .04$. When immersion was high, attitudes toward assuming consent remained somewhat stronger after fighting the sexualized female opponent than the male opponent, $B = -0.88$, $t(59) = 1.52$, $p = .13$.

Rape Victim Empathy. There were no significant main effects of condition or immersion on rape victim empathy, but there was a significant condition X immersion interaction, $B = 1.27$, $t(61) = 2.23$, $p = .030$, indicating that immersion was a stronger predictor of lower rape victim empathy in the sexualized female condition than the male condition (Table 7, Figure 10). Immersion predicted somewhat lower rape victim empathy in the sexualized female condition, $B = -0.81$, $t(61) = 1.77$, $p = .08$, and did not significantly predict rape victim empathy in the male

condition, $B = 0.46$, $t(61) = 1.35$, $p = .18$. Based on a test of expected values, participants who were highly immersed reported significantly less rape victim empathy in the sexualized female condition than the male condition, $B = 2.42$, $t(61) = 2.45$, $p = .02$. There was no significant difference among participants who were low in immersion, $B = -1.57$, $t(61) = 1.59$, $p = .12$. The interaction remained significant after controlling for hostile sexism, and the R^2 increased from 0.05 to 0.16.

Discussion

Study 3 did not replicate Study 1 and Study 2 results regarding hostile sexism; rather than interacting with condition, immersion predicted hostile sexism regardless of opponent, although hostile sexism was somewhat higher in the sexualized female than the male condition. It was not possible to control for prior hostile sexism; pretest hostile sexism was not available for nearly half the participants.

Whereas Study 2 did not find evidence that immersion into a sexually objectifying and violent game increased rape tolerance, results of Study 3 showed that immersion predicted less rape victim empathy in the sexualized female condition but not the male condition. This is consistent with prior studies finding links between violent video game play and decreased empathy (e.g., Anderson et al., 2010) and increased rape myth acceptance (e.g., Beck et al., 2012). Results regarding attitudes toward assuming consent followed the same pattern, but the difference was only on the low end of immersion. When immersion was low, attitudes toward assuming consent were weaker after fighting the sexualized female opponent than the male opponent than the sexualized female opponent. There was not a significant difference between conditions on the high end of immersion, although attitudes were somewhat stronger after fighting the sexualized female opponent than the male opponent.

Similar to Study 1, immersion predicted increased willingness to engage in sexual risk—operationalized as willingness to have sex with a stranger—but only in the sexualized female condition. This is consistent with research on sexual objectification showing that sexualized women are perceived as more violable and as lacking subjectivity to the extent that unprotected sex or sex with a stranger can be thought of as putting women at risk (e.g., Loughnan et al., 2010; 2012). This is also consistent with Hull and colleagues' (2014) identity simulation work linking violent video game play with unprotected sex. Nonetheless, the extent to which players identified with their character in the present studies—an important piece of the identity simulation hypothesis—is unknown, and there may be critical differences in how players view their own character when the game requires them to fight men versus women.

The theories that inspired the current studies all focused on how players might identify with, internalize, or in some way “learn from” the act of aggressing against a woman. Missing from this analysis was any consideration of how the player might change his view of *himself* when he aggresses against male versus female characters. Even though violent games by their nature involve simulated antisocial actions, it might be relevant to consider that these actions can be viewed in a positive light, from the perspective of the game (e.g., when playing as a hero in *Spiderman II*; Hull et al., 2014). As players are highly likely to tune into target sex and sexualization (Dill & Thill, 2007), the perceived pro- or antisocial nature of their simulated actions may vary depending on target sex. In the present studies, shooting (Study 1) or fighting (Study 3) male enemies may have led players to perceive their character as pro-social or the “hero” of the game more so than shooting or fighting female enemies, as violence against men is more socially acceptable than violence against women. Identification with this “heroic” character may have been greater when psychological immersion was high, resulting in lower willingness to

engage in sexual risk behavior. When immersion was low, identification may have been lower resulting in greater willingness to engage in sexual risk. In contrast, when shooting (Study 1) or fighting (Study 3) female enemies, players may have been more likely to perceive their character as antisocial or the “villain” of the game. Identification with this “villainous” character may have been greater when psychological immersion was high, resulting in greater willingness to engage in sexual risk, and lower when immersion was low, resulting in lower willingness to engage in sexual risk. Although my dissertation studies were not originally conducted to explore how identification with one’s character may influence outcomes of violent video game play against sexualized female opponents, this idea is relevant in my next study as I rely more on the identity simulation hypothesis (Hull et al., 2014) to explore willingness to engage in sexual risk in further detail.

Study 4

My goals in Study 4 were to (1) replicate the condition X immersion interaction predicting hostile sexism from Studies 1 and 2 using a commercially-available, three-dimensional third-person fighting game, (2) replicate the condition X immersion interaction predicting increased willingness to engage in sexual risk found in Studies 1 and 3, and (3) examine identification with character and sexual arousal as possible mediators or moderators of willingness to engage in sexual risk. Identification with an antisocial video game character is hypothesized to mediate the link between violent video game play and risk behaviors (Hull et al., 2014). As violence against women is less socially acceptable than violence against men, identification with the playable character in the sexualized female condition may have increased willingness to engage in sexual risk in Studies 1 and 3 per Hull et al.’s identity simulation logic. Additionally, state arousal has been found to mediate video game effects (Anderson et al., 1995;

Anderson & Dill, 2000), so, too, might sexual arousal mediate or moderate the effect of violent video game play against a sexualized female opponent on sexual risk outcomes. Immersion into the sexually objectifying condition may have increased sexual arousal in Studies 1 and 3, thus increasing willingness to engage in sexual behavior.

Study 4 addressed several limitations of Study 3—the new fighting game was three-dimensional rather than two-dimensional and included a sexualized female opponent and a fully clothed, nonsexualized male opponent. Additionally, Study 4 had a larger sample size, included a nonviolent comparison group, and hostile sexism was measured at baseline for all participants. Study 4 also included items measuring sexual arousal and identification with the playable character.

Method

Participants

Male undergraduate students ($N = 179$, $M_{\text{age}} = 18.87$, $SD = 1.08$) participated for introductory psychology course credit. No prior history of video game experience was required, but 87% of participants reported playing action video games (i.e., first-person-shooter, fighting, or adventure) for an average of 6.48 hours per week ($SD = 8.37$). Pretest hostile sexism data was available for 166 participants (93%).

Procedure

Participants were randomly assigned to fight a sexualized female opponent or a nonsexualized male opponent in a three-dimensional, third-person commercial fighting game, or play a nonviolent comparison game at a 2:2:1 ratio. Psychological immersion was measured following 10 minutes of game play. Next, the experimenter directed participants to click on the link for the Stroop task, the link failed, and participants completed paper-and-pencil surveys in

its place. As in Study 3, the survey contained items measuring hostile sexism, willingness to engage in risk behaviors, attitudes toward assuming sexual consent, and rape victim empathy. After completing the paper-and-pencil survey, participants completed an arousal measure, trait hostility, video game experience items, and were debriefed.

Experimental Manipulation

The experimental video game was *Dead or Alive 5 Ultimate*, a three-dimensional, third-person commercial fighting game. Participants played the game as a male avatar and fought either a sexualized female opponent or a nonsexualized male opponent (Figure 11). The goal of the game is to “knockout” the opponent; however, as in Study 3, participants played on training mode to prevent them from winning before time was up. The game was played on a Sony PlayStation 3 console using a Sony DualShock 3 controller. Difficulty level was set to 3 on a scale of 1 to 9, and participants were unaware of the difficulty setting. The nonviolent comparison game was Pacman.

Measures

Psychological Immersion Questionnaire. The psychological immersion questionnaire contained 7 items from the Engagement (Mental Immersion) subscale of the Temple Presence Inventory (TPI; Lombard et al., 2009). Responses are on a range from 0 *not at all* to 6 *extremely* ($\alpha = .85$). Following the immersion items, additional questions measured frustration (“It was a very frustrating experience” and “I experienced very little frustration”, $\alpha = .66$; Lin, 2013), perceived difficulty level (“Do you think you played on easy, medium, or hard mode?”), and demographics (i.e., age, ethnicity, college major).

Identification with Character. Items measuring identification with character included a 3-item measure of general identification with character (e.g., “I had the feeling I was the game

character more so than myself,” $\alpha = .68$) and a 3-item measure of wishful identification (e.g., “I wish I could be more like my character,” $\alpha = .69$) adapted from prior research ($\alpha = .75$ for all 6 items, Eyal & Rubin, 2003; Hefner, Klimmt, & Vorderer, 2007).

Hostile Sexism. As in Study 3, 6 items from the hostile sexism subscale of the ASI were administered as part of the paper-and-pencil survey ($\alpha = .76$, Glick & Fiske, 1996).

Willingness to Engage in Risk Behaviors. Three items measured willingness to have risky sex (“Having unprotected sex with someone you have been seeing for a few weeks,” “Having sex without a condom with an attractive person you just met at a party,” and “Going home with an attractive person you just met at a party,” $\alpha = .67$), one item measured willingness to drink to the point of intoxication, and 3 items measured willingness to drink and drive ($\alpha = .65$).

Attitudes toward Assuming Sexual Consent. As in Study 3, the 7-item (pro) assuming consent subscale of the Sexual Consent Scale, Revised was administered as part of the pencil-and-paper survey ($\alpha = .81$; Humphreys, 2011).

Rape Victim Empathy. As in Study 3, 6 items adapted from the Rape Empathy Scale were included in the paper-and-pencil survey ($\alpha = .63$; Deitz et al., 1982).

State Arousal Task. The state arousal task consisted of 26 items used in previous research (e.g., *active, energetic, lively*, Anderson et al., 1995) plus two sexual arousal items—“sexual” and “sexually aroused” ($\alpha = .87$). Participants were instructed to “indicate how well each of the words on the next screen describes how you feel right now” on a 4-point scale from 0 *not at all* to 3 *extremely*.

Trait Hostility. Three items from the hostility subscale of the Buss and Perry (1992) aggression questionnaire – short form measured trait hostility (e.g., “Other people always seem to get the breaks”) on a 5-point scale from 1 *very unlike me* to 5 *very like me* ($\alpha = .72$).

Video Game Experience. These questions were created for the purpose of the study and contain items about hours per week of general and action game play, types of video games played most often, playing mode preference, enjoyment of the study game, ratings of the visual quality of the environment and characters, ratings of the controls, estimated average cost of a video game, and estimated cost of a fully developed game similar to the study game.

Results

The mean level of immersion was slightly above the midpoint of the 7-point scale ($M = 3.14$, $SD = 1.01$). Immersion did not differ between conditions, $F(2, 173) = 0.89$, ns . Game enjoyment varied by condition, $F(2, 173) = 5.59$, $p = .004$, and was significantly greater in the sexualized female condition ($M = 3.96$, $SD = 1.53$) than the male condition ($M = 3.15$, $SD = 1.35$), $t(173) = 3.34$, $p = .001$. Pacman was not more or less enjoyable than the other two conditions ($M = 3.53$, $SD = 1.31$), $ps > .05$. An unanticipated complication was that conditions were not perceived equally with regard to difficulty level, $X^2 = 50.55$, $p < .001$. The video game was most likely to be perceived as “easy” when fighting against a sexualized female opponent (63%) rather than a male opponent (12%) or playing Pacman (28%), and was least likely to be perceived as “hard” when fighting against a sexualized female opponent (6%) rather than a male opponent (32%) or playing Pacman (8%). Frustration varied by condition, $F(2, 176) = 3.10$, $p = .05$; the male opponent elicited significant more frustration ($M = 3.00$, $SD = 1.45$) than the female opponent ($M = 2.38$, $SD = 1.56$), but Pacman did not elicit significantly more or less frustration than the other two conditions ($M = 2.79$, $SD = 1.42$).

Data were analyzed following the analytic procedures used in prior studies. Dummy codes were created for experimental condition using the female condition as the reference group, and dependent measures were first regressed on the dummy coded condition and psychological immersion. Next, the multiplicative cross-products of condition and psychological immersion were entered to test for interactions in the second step. Inclusion of prior enjoyment of action game play, enjoyment of the study game, and trait hostility as control variables did not significantly change any results, so the simpler results are presented.

Hostile Sexism. There was a marginally significant main effect of condition indicating that after controlling for pretest hostile sexism, posttest hostile sexism was somewhat greater in the sexualized female condition than the male condition, $B = -0.20$, $t(161) = 1.73$, $p = .09$, and Pacman, $B = -0.18$, $t(161) = 1.36$, $p = .18$. There was also a significant condition X immersion interaction, but not as predicted. The nature of this interaction was such that immersion was a stronger predictor of posttest hostile sexism in the *male* condition than in the sexualized female condition, $B = 0.24$, $t(159) = 2.21$, $p = .03$ (Table 7). The slope of the regression line in the male condition indicated that immersion was a moderately significant predictor of posttest hostile sexism, $B = 0.15$, $t(159) = 1.84$, $p = .07$. Immersion did not significantly predict posttest hostile sexism in the sexualized female condition, $B = -0.09$, $t(159) = 1.24$, $p = .22$, or Pacman, $B = 0.01$, $t(159) = 0.07$, $p = .95$. The difference was on the low end of immersion; when immersion was low, posttest hostile sexism was significantly greater in the sexualized female condition than the male condition, $B = -0.90$, $t(159) = 2.67$, $p = .008$, but not Pacman, $B = -0.47$, $t(159) = 1.09$, $p = .28$. When immersion was high, posttest hostile sexism did not significantly differ between conditions. It is worth noting that conditions were not perceived equally with regard to difficulty level, as reported earlier. After controlling for perceived difficulty level, the condition

X immersion interaction reported above was no longer significant, $B = 0.17$, $t(157) = 1.53$, $p = .13$.

The two-step hierarchical multiple regression predicting hostile sexism was re-run using only those data collected for participants who perceived the difficulty level as “medium” ($n = 23$ in the sexualized female condition, $n = 38$ in the male condition, $n = 25$ in the Pacman condition). There was again only a trending main effect of condition indicating that posttest hostile sexism was somewhat greater in the sexualized female condition than the male condition, $B = -0.26$, $t(77) = 1.57$, $p = .12$, and Pacman, $B = -0.26$, $t(77) = 1.41$, $p = .16$. There was no significant condition X immersion interaction.

Attitudes toward Assuming Consent. There were no significant main effects of condition, immersion, or condition X immersion interactions predicting (pro) attitudes toward assuming consent either before or after controlling for pretest hostile sexism. Pretest hostile sexism was a significant predictor of attitudes toward assuming consent, $B = 0.53$, $t(159) = 5.45$, $p < .001$.

Rape Victim Empathy. There were no significant main effects of condition, immersion, or condition X immersion interactions predicting rape victim empathy either before or after controlling for pretest hostile sexism. Greater pretest hostile sexism predicted significantly lower rape victim empathy, $B = -0.29$, $t(159) = 2.14$, $p = .03$.

Willingness to Have Risky Sex. There were no significant main effects of condition or immersion or condition X immersion interactions predicting willingness to have risky sex. However, we hypothesized that the condition X immersion interaction predicting willingness to have risky sex in Studies 1 and 3 might be due to increased sexual arousal among highly immersed participants in the sexualized female conditions. Sexual arousal was regressed on the

dummy coded conditions (sexualized female as the reference group) and immersion in the first block followed by the multiplicative cross-products of the dummy codes and immersion in the second block. There was a significant main effect of immersion predicting sexual arousal in the first block, $B = 0.13$, $t(174) = 2.97$, $p = .003$, and a trending condition X immersion interaction in the second block. Immersion was a significant predictor of sexual arousal in the sexualized female condition, $B = 0.22$, $t(172) = 3.36$, $p = .001$. The slope of the regression line in the sexualized female condition was marginally different from the slope in the male condition, $t(172) = 1.86$, $p = .06$, but not from the slope in the Pacman condition, $t(172) = 0.87$, $p = .39$. A test of expected values revealed that when immersion was high, sexual arousal was somewhat greater in the sexualized female condition than the male condition, $B = -0.44$, $t(172) = 1.81$, $p = .07$, and when immersion was low, sexual arousal was somewhat greater in the male condition than the sexualized female condition, $B = 0.50$, $t(172) = 1.66$, $p = .10$.

Willingness to have risky sex was regressed on dummy coded condition (sexualized female as the reference group) and sexual arousal in step 1, and the condition X sexual arousal interaction was added in step 2. There were no significant main effects in step 1, but there were significant condition X sexual arousal interactions in step 2 (Table 9). First, sexual arousal was a significant predictor of willingness to have unprotected sex in the sexualized female condition, $B = 0.78$, $t(172) = 3.01$, $p = .003$. The slope of this regression line was significantly different from the slope in the male condition, $t(172) = 3.27$, $p < .001$, and Pacman, $t(172) = 2.33$, $p = .02$. Sexual arousal predicted somewhat lower willingness to engage in sexual risk in the male condition, $B = -0.39$, $t(172) = 1.58$, $p = .12$, but did not significantly predict willingness in the Pacman condition, $B = -0.39$, $t(172) = 0.91$, $p = .37$. When sexual arousal was high, willingness was greater in the sexualized female condition than the male condition, $B = -3.01$, $t(172) = 3.06$,

$p = .003$, and Pacman, $B = -3.20$, $t(172) = 2.30$, $p = .02$. When sexual arousal was low, willingness was somewhat lower in the sexualized female condition than the male condition, $B = 0.49$, $t(172) = 1.92$, $p = .06$, but not Pacman, $B = 0.29$, $t(172) = 0.97$, $p = .33$. Inclusion of perceived difficulty level as a control variable did not change the pattern of any results, so the simpler results are presented. The R^2 for this model was only 0.07 but increased to 0.22 when controlling for hostile sexism. Immersion was not a significant predictor of willingness to have risky sex in any model.

Reported sexual arousal was low ($M = 0.30$, $SD = 0.62$, range = 0 – 3) and did not significantly differ by condition, $F(2, 175) = 0.19$, *ns*. Only 47 of 178 participants reported *any* sexual arousal, with no significant differences by condition, $\chi^2 = 0.19$, *ns*. Due to the small number of participants reporting any sexual arousal, and the possibility that the above effect may be due to outliers, sexual arousal was recoded as a dichotomous variable, 0 indicating no sexual arousal, and 1 indicating any sexual arousal. Willingness to have unprotected sex was regressed on the dummy coded condition and the dummy coded sexual arousal variables in step 1, and the interaction was added in step 2. There was not a significant main effect of condition or sexual arousal, but there was a significant condition X sexual arousal interaction. The nature of this interaction was such that when participants reported any sexual arousal, willingness to engage in sexual risk was higher in the sexualized female condition ($M = 3.05$, $SD = 1.25$) than in the male condition ($M = 1.94$, $SD = 1.00$), $t(44) = 2.81$, $p = .007$, or Pacman ($M = 2.30$, $SD = 1.33$), $t(44) = 1.67$, $p = .10$, although the latter did not reach statistical significance (Figure 12). When participants reported no sexual arousal, willingness was significantly lower in the sexualized female condition ($M = 2.04$, $SD = 1.30$) than in the male condition ($M = 2.60$, $SD = 1.47$), $t(128)$

= 2.01, $p = .05$, but not Pacman ($M = 2.25$, $SD = 1.47$), $t(128) = 0.62$, $p = .53$. There were no significant results regarding any other risk behaviors (see ancillary analyses).

Identification with Character. A total of 6 items measured wishful identification with the playable character (e.g., “I’d like to do the kinds of things my character did in the game”) and general identification with the playable character (e.g., “When I played the game, I imagined myself in the character’s place”). The two subscales were significantly correlated with one another, $r = 0.52$, $p < .001$, and with immersion, $r = 0.37$, $p < .001$, and $r = 0.52$, $p < .001$, respectively. Identification items were not asked in the Pacman condition.

Identification with an antisocial video game character is hypothesized to predict risky behaviors (Hull et al., 2012; 2014). To test this link, willingness to engage in sexual risk was regressed on opponent (sexualized female was coded as 0, male was coded as 1), wishful identification, and general identification with character. Wishful identification was a significant predictor of willingness to engage in sexual risk, $B = 0.28$, $t(135) = 2.81$, $p = .006$, but opponent and general identification were not significant predictors. There were no significant two- or three-way interactions between opponent, wishful identification, and general identification with character.

Because willingness to engage in sexual risk behavior was higher in the sexualized female condition than in the male condition only when participants reported any sexual arousal, willingness to engage in sexual risk was regressed on opponent (sexualized female was coded as 0, male was coded as 1), sexual arousal (any sexual arousal was coded as 1, no sexual arousal was coded as 0), and wishful identification in step 1, the first order interactions in step 2, and finally the three-way interaction term in step 3. Consistent with previously reported analyses, there was a significant main effect of wishful identification in the first block, $B = 0.25$, $t(135) =$

2.95, $p = .004$, and a significant opponent X sexual arousal interaction in the second block such that willingness was greater in the sexualized female condition than the male condition when participants reported any sexual arousal, $B = -1.39$, $t(132) = 2.67$, $p = .009$. The three-way opponent X any sexual arousal X wishful identification interaction was marginally significant, $B = -0.75$, $t(131) = 1.94$, $p = .055$ (Table 10). The nature of this three-way interaction was such that when participants reported any sexual arousal, there was a significant opponent X wishful identification interaction indicating that wishful identification was a stronger predictor of willingness to have risky sex in the sexualized female condition than the male condition, $B = -0.61$, $t(32) = 2.38$, $p = .02$ (Figure 13). Wishful identification significantly predicted willingness in the sexualized female condition, $B = 0.49$, $t(32) = 3.21$, $p = .003$, but did not predict willingness in the male condition, $B = -0.12$, $t(32) = 0.59$, $p = .56$. When participants reported no sexual arousal, there was no significant opponent X wishful identification interaction.

Discussion

It's difficult to draw inferences from Study 4 regarding hostile sexism. Despite setting equal difficulty levels for the sexualized female and the male opponents, participants perceived the male opponent as more difficult. Hostile sexism was somewhat, but not significantly, greater in the sexualized female condition than in the male condition and the Pacman condition, and the interaction between condition and immersion was not as expected—immersion was a stronger predictor of hostile sexism in the male condition than the sexualized female condition. The interaction became nonsignificant after controlling for perceived difficulty level, and the trending main effect of condition held after including only those participants who perceived the difficulty level to be “medium.” There were no significant interactions after including only those participants who perceived the difficulty level to be “medium,” but the sample size was small.

Immersion was expected to predict increased willingness to engage in sexual risk in the sexualized female condition, as it did in Studies 1 and 3. This was not the case in Study 4, but immersion did predict sexual arousal in the sexualized female condition. When participants reported any sexual arousal, willingness to engage in sexual risk was highest in the sexualized female condition, consistent with Studies 1 and 3. This is also somewhat consistent with prior studies finding that increased arousal accounts for some of the effects of violent video game play (Anderson et al., 1995; Anderson & Dill, 2000). Additionally, wishful identification with character was a significant predictor of willingness to engage in sexual risk, but upon further investigation, only when coupled with sexual arousal and only in the sexualized female condition. These findings provide support for the identity simulation account of violent video game effects (Hull et al., 2012; 2014) with the caveat that it might matter whether or not the playable character is perceived as antisocial (character perceptions were not measured in Study 4). Hull and colleagues (2014) hypothesized that the link between identification with characters in violent games and behavioral risk may only apply to identification with antisocial characters (e.g., in *Manhunt*) rather than pro-social characters (e.g., in *Spiderman II*). As in discussed following Study 3, fighting a male opponent may increase perceptions of the playable character as more pro-social than fighting a female opponent, and wanting to identify with a pro-social character may have a protective factor against willingness to engage in sexual risk. In contrast, fighting a female opponent may increase perceptions of the character as more antisocial, and wanting to identify with an antisocial character may contribute to increased willingness to engage in sexual risk. Study 4 results showed that wanting to be more like a character who fought a sexualized female opponent predicted increased willingness to engage in sexual risk to the extent that players were sexually aroused, but it is unclear whether or not opponent gender

influenced perceptions of the playable character. There were also no significant results regarding any other risk behaviors, arguing for risk specificity (i.e., sexual) as opposed to generality.

Study 4 results are limited in that (1) the male opponent was perceived as more difficult than the sexualized female opponent, (2) willingness to engage in unprotected sex and potentially harm a female sex partner was measured (e.g., perceiving women as more violable, Nussbaum, 1995), but willingness to sexually objectify was not (e.g., discounting women's subjectivity, Bartky, 1990; Nussbaum, 1995), and (3) it is unclear how type of opponent may affect perceptions of the playable character, e.g., whether players felt more antisocial when fighting the sexualized female opponent than the male opponent. Study 5 attempts to address these limitations.

Study 5

The purpose of Study 5 was to improve upon and extend Study 4. *Dead or Alive 5 Ultimate* was used again, but the difficulty level for the sexualized female opponent was slightly increased to try to prevent participants from perceiving the male opponent condition as harder than the female opponent condition. Willingness to engage in sexual risk was split into two constructs: willingness to engage in sex without a condom and willingness to engage in objectifying sex (e.g., willingness to have casual sex when "the other individual has feelings for you that you do not share"). These two constructs are consistent with Nussbaum's (1995) perceptions of violability (i.e., exposing to harm via unprotected sex) and erasure of subjectivity (i.e., the other's feelings don't matter) attributed to sexually objectified others. It was expected that as in Study 4, sexual arousal might moderate the effects of playing a violent game against a sexualized female opponent on willingness to engage in sexual risk behavior. These items, as well as hostile sexism, were measured before and after game play. Items measuring perceptions

of the participants' character as antisocial (e.g., "*To what extent did you feel like your character was the 'bad guy?'*") and beliefs that women like sexual force (i.e., from the Sexual Beliefs Scale; Muehlenhard & Felts, 1998) were also added to Study 5. Finally, a measure of state anger was included to test the specificity of effects, i.e., that violence against a sexualized female opponent would contribute to increased hostile sexism in particular and not to greater hostility in general.

Method

Participants

Male undergraduate students ($N = 138$, $M_{\text{age}} = 19.12$, $SD = 1.09$) participated for introductory psychology course credit. Seventy-seven percent of participants reported playing action video games (i.e., first-person-shooter, fighting, or adventure) for an average of 5.13 hours per week ($SD = 5.65$).

Procedure

The procedure in Study 5 was identical to Study 4, but without the inclusion of a nonviolent comparison game. Participants were randomly assigned to fight a sexualized female opponent or a nonsexualized male opponent in *Dead or Alive 5 Ultimate* (Figure 13), psychological immersion was measured following 10 minutes of game play, and a paper-and-pencil survey was administered in place of the "failed" Stroop task as in Studies 1 through 4. The pencil-and-paper survey contained items measuring willingness to engage in risk behaviors, including unprotected sex and objectifying sex, beliefs that women like force, and hostile sexism. After completing the paper-and-pencil survey, participants completed an arousal measure, perceptions of their character, video game experience items, and were debriefed.

Measures

Psychological Immersion Questionnaire. The psychological immersion questionnaire contained 7 items from the Engagement (Mental Immersion) subscale of the Temple Presence Inventory (TPI; Lombard et al., 2009). Following the immersion items, additional questions measured perceived difficulty level ranging from *level 1* to *level 5*, frustration (2 items, $\alpha = .67$; Lin, 2013), the six items measuring identification with character used in Study 4 (wishful identification, $\alpha = .72$; general identification, $\alpha = .75$; Eyal & Rubin, 2003; Hefner, Klimmt, & Vorderer, 2007), and demographics (i.e., age, ethnicity, college major).

Hostile Sexism. As in prior studies, 6 items from the hostile sexism subscale of the ASI were administered as part of the paper-and-pencil survey ($\alpha = .76$, Glick & Fiske, 1996).

Willingness to Engage in Risk Behaviors. Sexual risk items included 4 items measuring willingness to have sex without a condom ($\alpha = .94$) and 4 items measuring willingness to have objectifying sex (e.g., have sex when “the other individual has feelings for you that you do not share,” $\alpha = .90$) on a 9-point scale from *completely unwilling* to *completely willing*. Alcohol-related risk items included willingness to drink and drive (3 items) and willingness to drink to the point of intoxication (1 item).

Women Like Force. Three items were included from the “women like force” subscale of the Sexual Beliefs Scale (e.g., “Girls like it when guys are a little rough with them,” $\alpha = .96$, Muehlenhard & Felts, 1998). Responses were on a scale from -4 *completely disagree* to +4 *completely agree*.

State Arousal Task. The state arousal task consisted of items used in previous research including items measuring state-trait anger (*angry, mad, irritated*, $\alpha = .85$, Kroner & Reddon, 1992), positive affect (*active, proud, excited, alert, attentive, strong*, $\alpha = .88$) and negative affect (*jittery, upset, guilty, hostile, nervous, irritable*, $\alpha = .76$) from the PANAS-X (Watson & Clark,

1994), and 3 sexual arousal items (*sexual*, *sexually aroused*, and *sensual*, $\alpha = .82$). Participants were instructed to “indicate how well each of the words on the next screen describes how you feel right now” on a 6-point scale from *not at all* to *extremely*.

Character Perceptions. To measure perceptions of the playable character as a “good guy” or “bad guy”, participants rated the extent to which they felt *strong*, *competent*, *skilled*, *successful*, *dominant*, *forceful*, *violent*, and *competitive* while playing on a 6-point scale from *not at all* to *extremely*. These and similar characteristics have been used by Leach, Minescu, Poppe, and Hagendoorn (2008) to measure power that is either benevolent (e.g., *competent*) or nonbenevolent (e.g., *forceful*). Ratings were also made on a 6-point bipolar scale for *good guy/bad guy*, *immoral/moral*, *pro-social/antisocial*, and *villainous/heroic* (e.g., *extremely villainous*, *quite villainous*, *slightly villainous*, *slightly heroic*, *quite heroic*, *extremely heroic*).

Video Game Experience. Items included hours per week of general and action game play, types of video games played most often, playing mode preference, enjoyment of the study game, ratings of the visual quality of the environment and characters, ratings of the controls, estimated average cost of a video game, and estimated cost of a fully developed game similar to the study game

Results

Immersion and game enjoyment did not vary by experimental condition, $t(133) = 0.06$, *ns*, and $t(133) = 1.29$, *ns*. However, the male opponent was perceived as more frustrating ($M = 2.98$, $SD = 1.49$) than the female opponent ($M = 2.26$, $SD = 1.55$), $t(133) = 2.76$, $p = .007$, and the male opponent was also perceived as more difficult ($M = 3.32$, $SD = 0.95$) than the female opponent ($M = 2.99$, $SD = 0.90$), $t(133) = 2.09$, $p = .04$. Because of these differences, difficulty and frustration levels were entered as covariates in some analyses, as described below.

Data were analyzed following the analytic procedures used in prior studies. Dummy codes were created for experimental condition using the female condition as the reference group, and dependent variables were first regressed on the dummy coded condition and psychological immersion. Next, the multiplicative cross-products of condition and psychological immersion were entered to test for interactions.

Hostile Sexism. Results indicated a significant main effect of condition; controlling for pretest hostile sexism, posttest hostile sexism was greater following game play against the sexualized female opponent than the male opponent, $B = -0.33$, $t(125) = 2.84$, $p = .005$ (see Table 11). This effect remained significant after controlling for prior enjoyment of action video games, enjoyment of study, frustration, and perceived difficulty level, so the simpler results are presented. There were no other significant main effects or interactions.

State Anger. There was a main effect of condition predicting state anger, the male opponent elicited more anger than the sexualized female opponent, $B = 0.56$, $t(132) = 3.10$, $p = .002$. There was also a main effect of immersion; greater immersion predicted greater state anger, $B = 0.30$, $t(132) = 3.10$, $p = .002$. The condition X immersion interaction was not significant. The main effects remained significant after controlling for prior enjoyment of action video games, enjoyment of study, frustration, and perceived difficulty level, so the simpler results are presented. More detailed analyses regarding a significant condition X frustration interaction can be found in ancillary analyses.

Women Like Force. There was a significant main effect of immersion on the belief that women like sexual force, greater immersion predicted stronger beliefs, $B = 0.33$, $t(132) = 2.11$, $p = .04$, but there was no significant condition X immersion interaction. The main effect held after controlling for frustration and perceived difficulty level, but not after adding prior

enjoyment of action video games and enjoyment of study. No control variable was a significant predictor of the belief that women like force.

Willingness to Have Unprotected Sex. After controlling for pretest willingness to have unprotected sex, there were no significant main effects of condition or immersion or condition X immersion interactions predicting willingness to have sex without a condom. Results did not change after controlling for prior enjoyment of action video games, enjoyment of study, frustration, and perceived difficulty level. As in Study 4, I hypothesized that the condition X immersion interaction predicting willingness to have risky sex in Studies 1 and 3 might be due to increased sexual arousal among highly immersed participants in the sexualized female conditions. There was a significant main effect of immersion predicting sexual arousal, $B = 0.22$, $t(133) = 2.37$, $p = .03$, but no significant condition X immersion interaction.

Willingness to have risky sex was regressed on dummy coded condition (sexualized female as the reference group) and sexual arousal in step 1, and the condition X sexual arousal interaction was added in step 2. There were no significant main effects or interactions. However, as in Study 4, reported sexual arousal was low ($M = 0.66$, $SD = 1.07$, range = 0 – 4.5) and did not significantly differ by condition, $t(133) = 0.74$, *ns*. Only 68 of 138 participants reported *any* sexual arousal, with no significant differences by condition, $X^2 = 0.03$, *ns*. Because of this, sexual arousal was recoded as a dichotomous variable, 0 indicating no sexual arousal, and 1 indicating any sexual arousal. Willingness to engage in sexual risk was regressed on the dummy coded condition and the dummy coded sexual arousal variables in step 1, and the interaction was added in step 2. After controlling for pretest willingness, there was no significant main effect of condition or sexual arousal, but there was a significant condition X sexual arousal interaction, $B = -1.03$, $t(123) = 2.04$, $p = .04$ (Table 12 Figure 14). When participants reported any sexual

arousal, willingness to engage in sexual risk was higher in the sexualized female condition ($M = 4.96$, $SD = 1.75$) than in the male condition ($M = 4.02$, $SD = 1.97$), $t(66) = 2.08$, $p = .02$, even after adjusting for pretest willingness. There was no significant difference due to condition when participants reported no sexual arousal.

Willingness to Engage in Objectifying Sex. There were no significant main effects of condition or immersion or condition X immersion interactions predicting willingness to engage in objectifying sex after controlling for pretest willingness to objectify. As with willingness to have sex without a condom, willingness to engage in objectifying sex was regressed on the dummy coded condition and the dummy coded sexual arousal variables in step 1, and the interaction was added in step 2. There was a significant main effect of sexual arousal, $B = 0.65$, $t(124) = 2.54$, $p = .01$, but the condition X sexual arousal interaction was only trending, $B = -0.62$, $t(123) = 1.25$, $p = .21$. Results did not change after controlling for prior enjoyment of action video games, enjoyment of study, frustration, and perceived difficulty level.

Perceptions of Character. To test the identity simulation account of violent video game effects (Hull et al., 2012; 2014), it was necessary to determine whether perceptions of the playable character varied due to type of opponent. I hypothesized that participants would perceive their character as more antisocial after fighting the sexualized female opponent than the male opponent due to proscriptive social norms regarding violence against women. I tested this hypothesis using two sets of items. The first set measured perceptions of power that is either benevolent (e.g., *competent, skilled*) or nonbenevolent (e.g., *forceful, violent*); there were few significant differences between conditions for these items (see ancillary analyses). The second set used forced-choice bipolar items (i.e., *good guy/bad guy, immoral/moral, pro-social/antisocial*, and *villainous/heroic*). When measured by the forced-choice bipolar items,

participants in the sexualized female condition rated their character as significantly more bad, less moral, more antisocial, and less heroic than participants in the male condition, consistent with my predictions (see Table 13).

Identification with Character. As in Study 4, willingness to have unprotected sex was regressed on opponent, wishful identification, and general identification with character. Pretest willingness was added as a control variable. Neither opponent, wishful identification, nor general identification significantly predicted willingness to have unprotected sex after controlling for pretest willingness. There were no significant opponent X wishful identification or opponent X general identification interactions.

Willingness to engage in objectifying sex was regressed on opponent, wishful identification, and general identification with character. Pretest willingness was added as a control variable. Only wishful identification significantly predicted willingness to engage in objectifying sex, $B = 0.23$, $t(121) = 2.04$, $p = .04$. There were no significant opponent X wishful identification or opponent X general identification interactions.

As in Study 4, willingness to have unprotected sex was regressed on opponent, any sexual arousal, and wishful identification in step 1, the first order interactions in step 2, and finally the three-way interaction term in step 3. Pretest willingness was included as a control variable. There were no significant main effects or interactions. The procedure was repeated for willingness to engage in objectifying sex, and again, there were no significant interactions. There was no significant three-way opponent X any sexual arousal X wishful identification interaction predicting either willingness to have unprotected sex or willingness to engage in objectifying sex.

Discussion

Unlike in Studies 1 through 4, results of Study 5 showed a main effect of condition on hostile sexism; hostile sexism was greater following violent video game play against a sexualized female opponent than against a male opponent. Importantly, state anger was *not* greater following violent video game play against a sexualized female opponent. This speaks to the specificity of effects of playing violent and sexually objectifying video games as fighting a sexualized female opponent increased hostile sexism in particular and not anger in general. The hostile sexism result is consistent with prior research finding main effects of exposure to sexualized female characters in violent video games on hostile attitudes toward women (e.g., Dill et al., 2008; Yao et al., 2012). Psychological immersion did not interact with condition in Study 5 to predict increased hostile sexism. There were also no main effects of condition or immersion or significant condition by immersion interactions predicting the belief that women like force. This is inconsistent with prior research finding a link between exposure to sexualized female characters and sexual beliefs (e.g., rape myth acceptance, Beck et al., 2012; Driesmans et al., 2015), but similar to my other dissertation studies finding no link between violence against sexualized female opponents and rape tolerance (Study 2) or attitudes toward assuming consent (Studies 2, 3, and 4).

As predicted, willingness to have unprotected sex was greater after fighting the sexualized female opponent to the extent that there was any reported sexual arousal. This is consistent with Study 4 results, even after controlling for pretest willingness to have unprotected sex in Study 5. Willingness to engage in objectifying sex was greater when there was any reported sexual arousal, but sexual arousal did not interact with condition. Also as predicted, players who fought the sexualized female opponent perceived their character as more bad, less moral, more antisocial, and less heroic than players who fought the male opponent. However,

Study 5 failed to replicate the three-way condition by sexual arousal by wishful identification predicting willingness to engage in sexual risk behavior found in Study 5.

General Discussion: All Studies

The purpose of this dissertation was to determine the extent to which playing violent video games against sexualized female opponents affected subsequent hostility toward women. This goal was chosen based on prior research linking violent video game play with aggression (e.g., Anderson et al., 2010), the extreme sexual objectification of female video game characters (e.g., Downs & Smith, 2010), evidence that mere exposure to sexualized female characters has negative outcomes for women (e.g., Dill et al., 2010), and the availability of commercial video games wherein violence may be enacted directly against female opponents. In general, my dissertation studies provide evidence that playing violent video games against sexualized female opponents increases hostile sexism with the caveat that psychological immersion may influence this link (Studies 1 and 2). Despite prior studies linking exposure to sexualized female game characters with rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015) the present studies found no strong evidence that playing violent video games against sexualized female opponents influences beliefs regarding sexual consent, rape tolerance, rape victim empathy, or beliefs that women enjoy sexual force. Results of my studies do provide evidence that playing violent video games against sexualized female opponents increases willingness to engage in sexual risk behaviors to the extent that players are psychologically immersed (Studies 1 and 3) or experience sexual arousal (Studies 4 and 5).

Hostile Sexism

I tested two different types of violent video games. Studies 1 and 2 used lab-created first-person-shooter games and varied the appearance of the enemies. Studies 3, 4, and 5 used

commercial third-person-fighting games. Results of Studies 1 and 2 showed that when psychological immersion into the first-person-shooter game was high, hostile sexism was greater following play against sexualized female enemies than male enemies or nonsexualized female enemies, even after controlling for pretest hostile sexism. However, when psychological immersion was low, hostile sexism was lowest following play against sexualized female enemies. The pattern was unexpected and did not fit within previously reviewed theories. As previously mentioned, one possible explanation is that low immersion in the sexualized female condition may have elicited a “boomerang” effect; players who were not immersed in the sexualized female condition may have engaged in greater critical elaboration of the game content, lowering hostile sexism. Further support for this explanation comes from Study 3 results regarding rape victim empathy and attitudes toward assuming consent; when immersion was high, fighting a sexualized female opponent elicited less rape victim empathy and stronger attitudes toward assuming consent than fighting a male opponent. In contrast, when immersion was low, fighting a sexualized female opponent elicited *more* rape victim empathy and *weaker* attitudes toward assuming consent than fighting a male opponent, consistent with the boomerang effect described above. Thus, it is likely that the pattern of results for hostile sexism on the low end of immersion in Studies 1 and 2 were due to low immersion producing a boomerang effect in the sexualized female condition.

In general, results of Studies 3, 4, and 5 testing commercial third-person-fighting games indicated that hostile sexism was greater following game play against sexualized female opponents than against male opponents, although the difference between conditions was only marginally significant in Studies 3 and 4. Study 3 was limited by a small sample size, and the sexualized female opponent was perceived as less difficult than the male opponent in Study 4.

After correcting for both of these issues in Study 5, hostile sexism, but not anger in general, was significantly greater after fighting the sexualized female than the male opponent. Psychological immersion was not a significant moderator of hostile sexism outcomes in the commercial games, possibly due to the higher quality graphics and the greater sexualization of female characters in the commercial games vs. the lab-created games. Players might not have needed to be immersed in the commercial games in order to be affected by their content—mere exposure to the sexualized female character may have been enough to impact hostile sexism, consistent with prior research (Dill et al., 2008). Future research could vary the difficulty level of the opponents to determine whether or not game difficulty interacts with opponent type to predict hostile sexism. Performance may also matter in this context—perhaps playing poorly against a more challenging sexualized female opponent results in greater hostile sexism than playing well. Prior research has found that poorer performing men are more hostile toward a presumably female opponent than higher performing men (Kasumovic & Kuznekoff, 2015).

The current studies did not find any strong evidence that violence against sexualized women in video games contributes to increased rape tolerance or decreased rape victim empathy, inconsistent with prior research linking exposure to sexualized female characters with greater rape myth acceptance (Beck et al., 2012; Driesmans et al., 2015). Nonetheless, I did find evidence for increased hostile sexism, and prior studies have linked hostile sexism with rape myth acceptance (e.g., Chapleau, Oswald, & Russell, 2007) and violence against women (e.g., Whitaker, 2003). As such, effects of playing violent video games against sexualized female opponents may extend beyond increased hostile sexism and have real-world implications. Future research should test whether or not playing violent video games against female opponents increases aggressive behavior toward female targets (e.g., noise blast duration).

Willingness to Engage in Sexual Risk

Willingness to engage in sexual risk behavior was originally included in Study 1 as a filler item. Results of ancillary analyses demonstrated that willingness was somewhat greater after shooting sexualized female enemies to the extent that psychological immersion was high. Based on this outcome and prior research hypothesizing a link between violent video game play and subsequent risk behaviors (Hull et al., 2012; 2014), willingness to engage in sexual risk was included in Studies 3 and 4, and was explored more in depth in Study 5 after controlling for pretest willingness. First psychological immersion (Studies 1 and 3) and later sexual arousal (Studies 4 and 5) were important moderators of effects. Compared with male opponents, willingness to have risky sex was greater following violent video game play against sexualized female opponents to the extent that immersion was high (Studies 1 and 3) and players reported any sexual arousal (Studies 4 and 5), even after controlling for pretest willingness to have unprotected sex (Study 5). There was also some evidence that, among players reporting at least some degree of sexual arousal, wishful identification with the playable character interacted with condition to predict greater willingness to have risky sex after fighting the sexualized female opponent (Study 4). However, this effect was not replicated in Study 5.

Greater willingness to engage in sexual risk following violent game play against sexualized female, but not male, opponents is consistent with prior research showing that sexually objectified targets are perceived as more violable (e.g., Loughnan et al., 2010; 2012). However, it was also predicted that violent game play against sexualized women would elicit greater willingness to engage in objectifying sex, i.e., without regard for the other's subjective experience (Bartky, 1990; Nussbaum, 1995), but there was no supporting evidence for this hypothesis. Thus, it may be more likely that willingness to have unprotected sex is indicative of

willingness to engage in risk potentially affecting the self, not willingness to put a partner at risk. Results regarding most other risk behaviors were nonsignificant, but there was some evidence linking violent video game play against sexualized opponents with increased willingness to drink alcohol, consistent with prior research (Hull et al., 2014). Future research should explore how to use video games to promote responsible sex and alcohol behaviors, as there is some evidence that video games can be used to effectively deliver health behavior change messages (Burrows & Blanton, in press).

Limitations

My dissertation consisted of five experiments and found evidence that violence against sexualized female opponents in video games contributes to increased hostile sexism and greater willingness to engage in sexual risk behavior with the caveat that psychological immersion and sexual arousal can moderate results. Nonetheless, these results are limited by the exogenous nature of the moderators, limited attention paid to potential mechanisms, and of course, the laboratory setting.

First, psychological immersion was an important moderator of Study 1 and 2 effects on hostile sexism, and sexual arousal was an important moderator of Study 4 and 5 effects on willingness to engage in sexual risk. Both variables may have varied due to game content or individual-level differences. Future research could manipulate immersion by making the game controls more or less intuitive (e.g., inverting the directional pad) or requiring participants to engage in cognitive distraction (e.g., count backwards from 1,000 by threes). Sexual arousal may also be manipulated prior to game play (e.g., via video clips).

Second, other than psychological immersion and sexual arousal, the present studies did not test for potential mechanisms leading to increased hostile sexism or willingness to engage in

sexual risk. Prior studies have found that exposure to sexualized video game content increases the accessibility of the women-as-sex-objects schema and that increased accessibility might account for video game effects (Yao et al., 2010). Psychological immersion may contribute to effects via increased acceptance of media imagery as true (e.g., Dill & Burgess, 2012) or by reduced counter-arguing (e.g., Green & Brock, 2000). Future research should explore other possible mechanisms whereby sexualized and violent video game content may contribute to hostile sexism or risky sex willingness.

Finally, all data were collected in a lab setting. Participants played against the computer and wore headsets; there was no talking. Participants were also assigned their character and opponents and were prevented from “winning” or “losing” by in-game mechanisms (Study 1 and 2) or by playing on training mode (Studies 3, 4, and 5). While a number of confounding factors were controlled for using these techniques, results may not fully generalize to real-world settings where people play games with their friends either in-person or online, choose and customize their character, and select opponents. Recent research has been conducted outside of the laboratory setting; Kasumovic and Kuznekoff (2015) played *Halo 3* online against real people using either a male or female voice. When the voice was female, poor performing male players gave more negative, hostile, and sexist comments than high performing male players, who were generally friendly. Kasumovic and Kuznekoff’s research has real-world implications for women who play video games in that they may find themselves the targets of harassment.

Implications

My dissertation studies are the first to test the effects of enacting violence against women in a video game context. The video game industry is creating contexts in which any player—but boys and men in particular—get the opportunity to simulate violence against women, violence

that is often coupled with hypersexualization. Additionally, technological innovation and market competition allow for the development of video games that are increasingly immersive. Based on multiple theoretical frameworks and the results of prior video game studies, it seemed highly likely that violent game play against sexualized female opponents would contribute to greater hostility toward women. As hostile sexism has negative implications for real-world women, I pursued my research as a means to explore the effects of violent and sexualized video game play.

Results of my studies were not always consistent, but do reinforce several themes. First, when significant results were found, they were such that greater engagement with the game (variously measured) contributed to more negative outcomes across both lab-created shooting games and commercially available fighting games. For instance, psychological immersion predicted greater hostile sexism after shooting sexualized female enemies in Studies 1 and 2 and greater hostile sexism after fighting both sexualized female and male enemies in Study 3. Sexual arousal predicted greater willingness to engage in sexual risk after fighting sexualized female enemies in Studies 4 and 5, but not after fighting male enemies. The link between greater engagement and more negative outcomes held even after controlling for pretest hostile sexism (Study 2) and willingness to engage in sexual risk (Study 5).

A second theme is that when players were not psychologically immersed, outcomes tended to be more positive after playing against sexualized female opponents, indicating that failing to become immersed in a violent and sexualized video game may contribute to more positive outcomes (e.g., less hostile sexism in Studies 1 and 2, greater rape victim empathy in Study 3). On the other hand, disengagement with fighting male opponents seemed to contribute to more negative outcomes (e.g., greater hostile sexism in Studies 1 and 2, less rape victim empathy in Study 3). These patterns suggest a need to consider “boomerang” effects in how

norm-violating content might actually move individuals into more pro-social territory, and to consider the implications of game features that facilitate or inhibit psychological immersion. Across the studies, the failing of the models to account for the low end of immersion effects is striking and perhaps something that requires greater consideration.

Of the two themes discussed above, the second has fewer real-world implications. First, people play video games for their immersive properties; games that are not immersive are unlikely to be enjoyed and so are unlikely to be played. Greater emphasis should be placed on the effects of playing highly immersive games; these are the ones with commercial relevance, and although there was variability in my findings, the patterns that emerged when players were engaged are concerning. Second, and perhaps just as importantly, there are likely effects of playing sexualized and violent video games that I can never investigate in a laboratory setting. It is perhaps saying something about the strength of these effects that I was able to identify any patterns at all without participants cluing into the true purpose of my research. Stronger effects, with more serious implications, might be found for example, among young men who *choose* to play sexually objectifying and violent video games on a regular basis or who harass women gamers online. Future research could work to identify those players who are most likely to be negatively affected by violence against women in video games, and determine how to best to utilize game content to challenge stereotypical representations of women.

Conclusions

The present studies add to a growing body of literature exploring the implications of the sexualization of female video game characters. Video game violence against sexualized women can contribute to increased hostile sexism and willingness to engage in sexual risk, potentially hurting both women and men. Future research should explore potential mechanisms of effects

and examine video games as a medium to improve attitudes toward women and reduce risk behaviors.

Figure 1

Figure 1. Screenshot of male and sexualized female opponents in the first-person-shooter game used in Study 1.

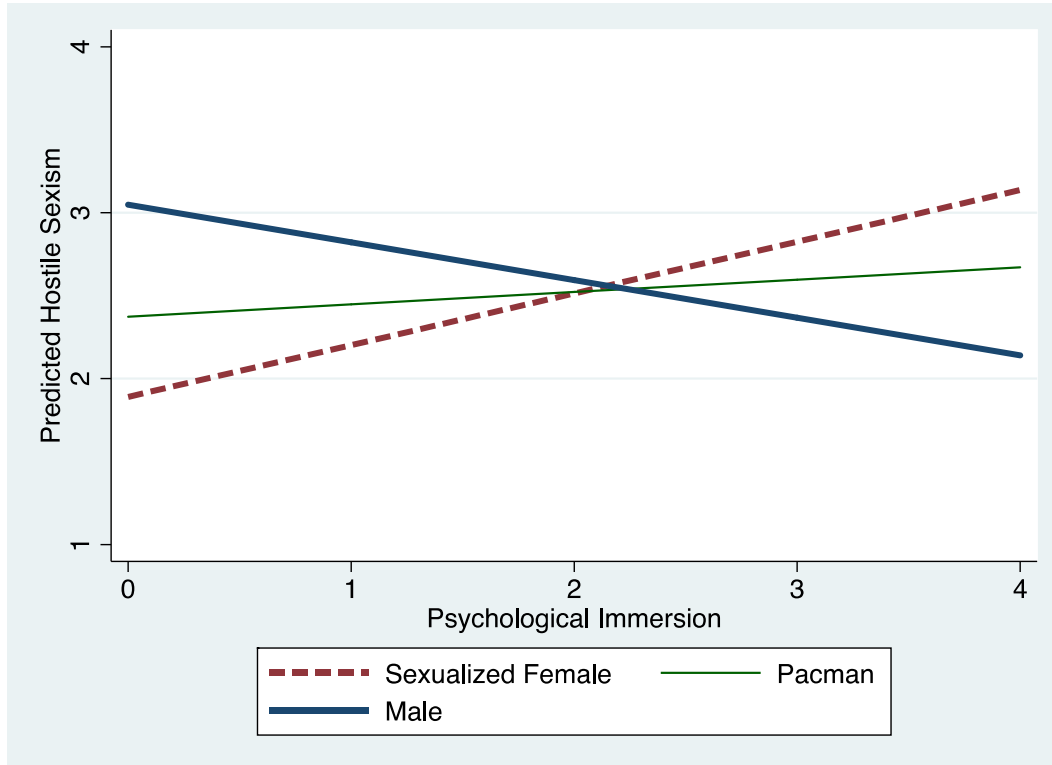
Figure 2

Figure 2. Study 1 Condition X Immersion Interaction Predicting Hostile Sexism

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.46$, $t(83) = 2.77$, $p = .007$, male condition, $B = -0.23$, $t(83) = 1.36$, $p = .18$, and Pacman, $B = 0.07$, $t(83) = 0.38$, $p = .70$.

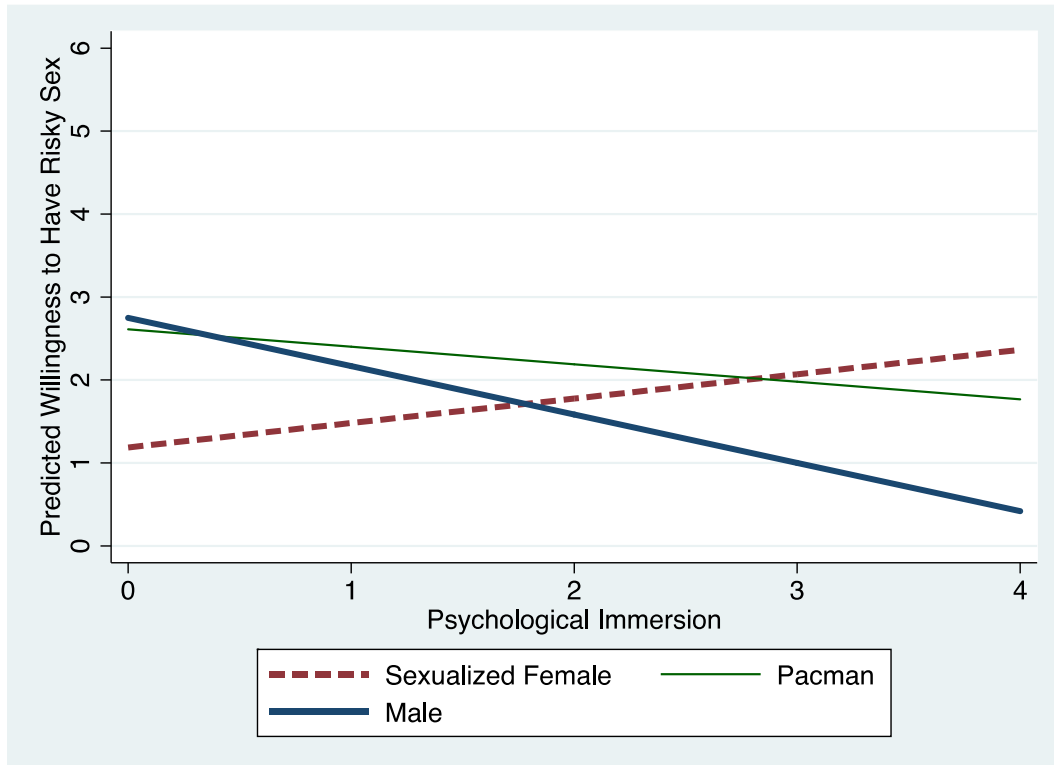
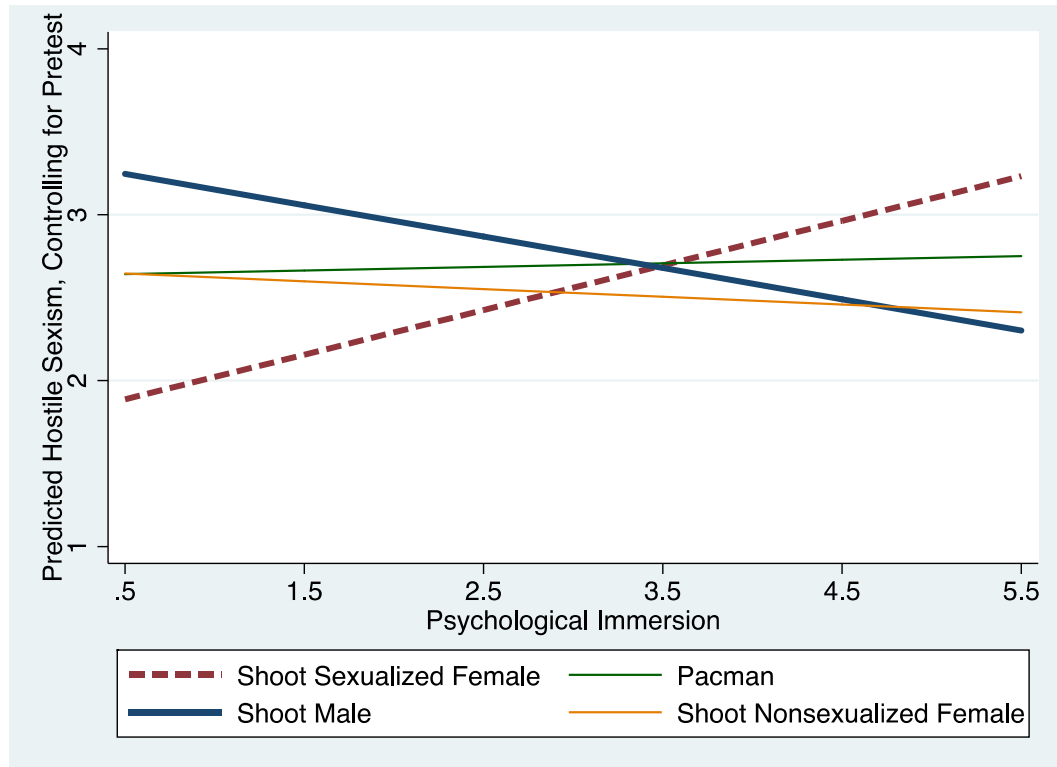
Figure 3

Figure 3. Study 1 Condition X Immersion Interaction Predicting Willingness to Have Sex Without a Condom

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.29$, $t(84) = 0.91$, $p = .36$, male condition, $B = -0.58$, $t(84) = 1.72$, $p = .09$, and Pacman, $B = -0.21$, $t(84) = 0.53$, $p = .59$.

Figure 4

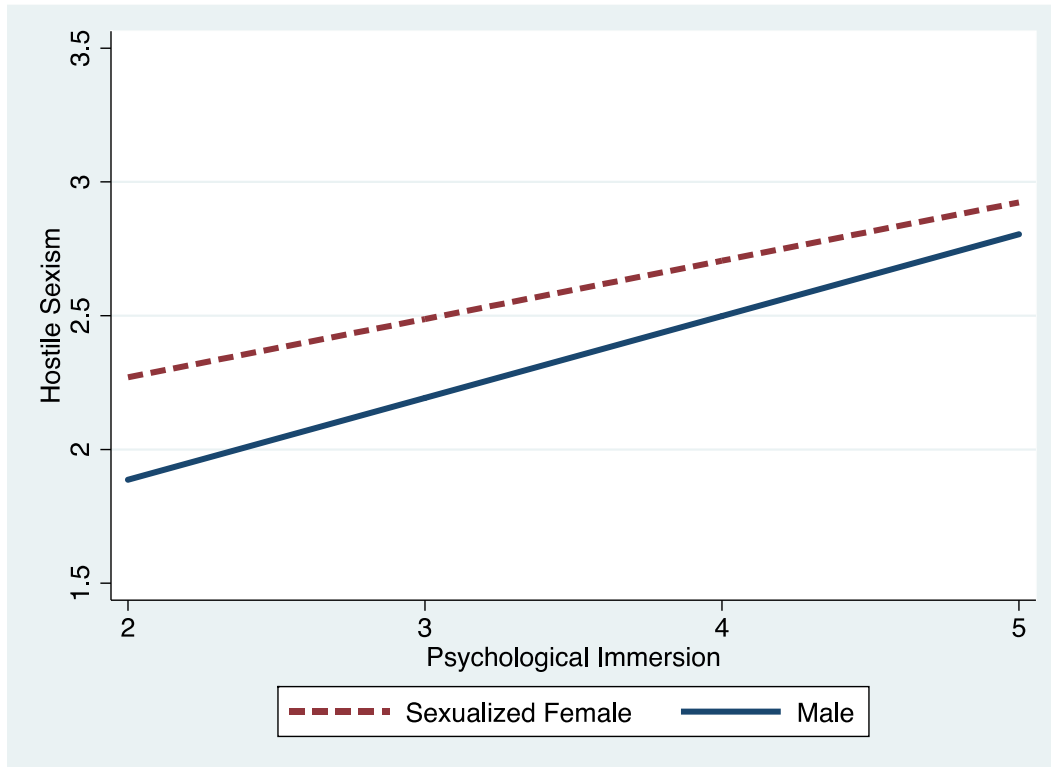
Figure 4. Screenshot of a sexualized female opponent in the first-person-shooter game used in Study 2.

Figure 5**Figure 5. Study 2 Condition X Immersion Interaction Predicting Hostile Sexism**

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.27$, $t(187) = 2.39$, $p = .02$, male condition, $B = -0.19$, $t(187) = 1.79$, $p = .08$, Pacman, $B = 0.02$, $t(187) = 0.28$, $p = .78$, and nonsexualized female condition, $B = -0.05$, $t(187) = 0.48$, $p = .63$.

Figure 6

Figure 6. Player Character (Left) and Opponents (Center and Right) in *Mortal Kombat: Complete Edition*, used in Study 3

Figure 7**Figure 7. Study 3 Hostile Sexism By Condition and Immersion**

Note. There was a significant main effect of immersion, $B = 0.27$, $t(62) = 2.00$, $p = .05$, and a main effect of condition, $t(62) = 1.56$, $p = .06$. The condition X immersion interaction was not significant but is pictured above. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.22$, $t(60) = 0.95$, $p = .35$, and male condition, $B = 0.31$, $t(60) = 1.77$, $p = .09$.

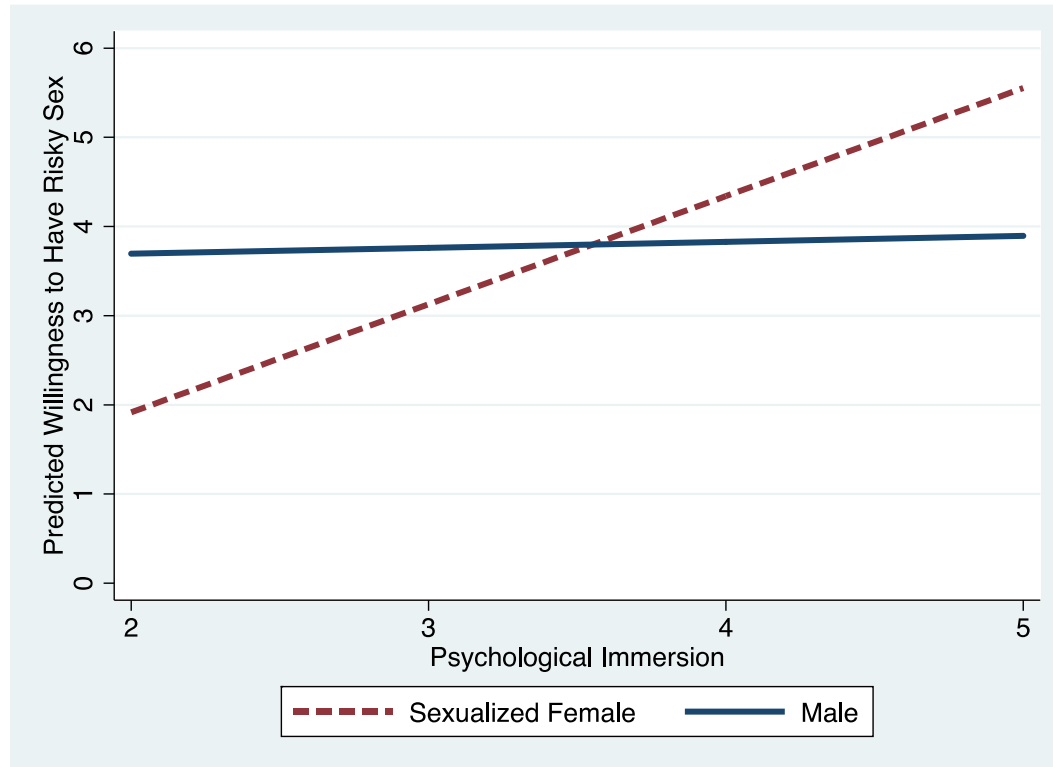
Figure 8

Figure 8. Study 3 Condition X Immersion Interaction Predicting Willingness to Have Sex With a Stranger

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 1.21$, $t(61) = 2.59$, $p = .01$, and male condition, $B = 0.06$, $t(61) = 0.19$, $p = .85$.

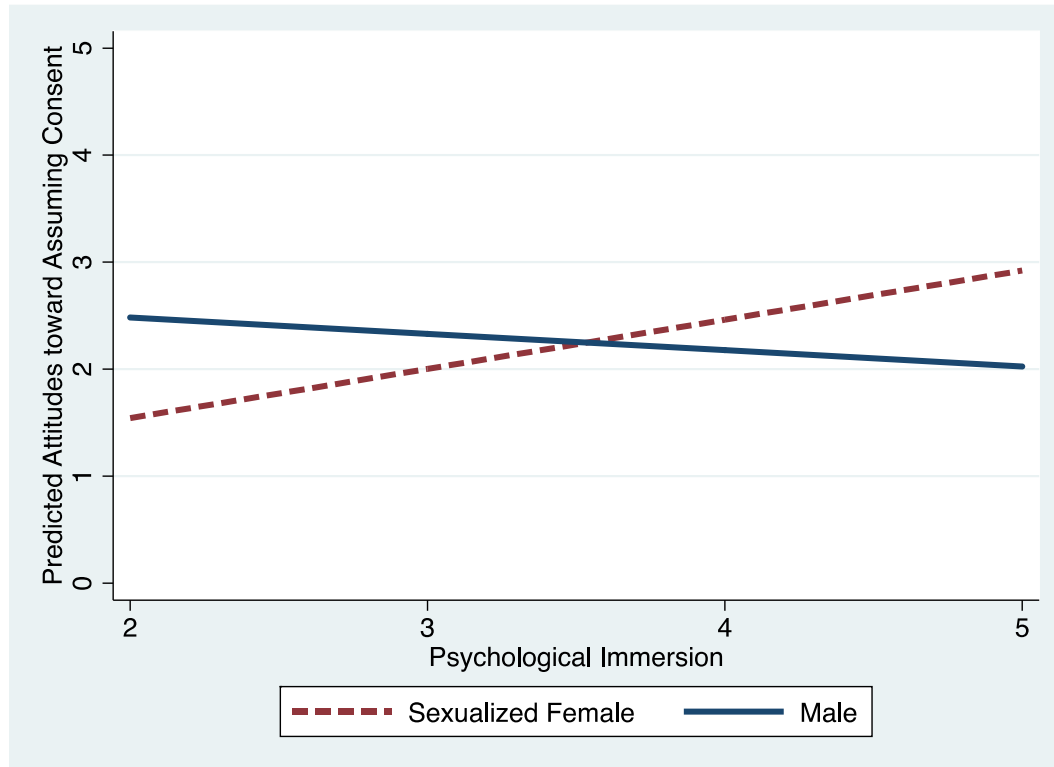
Figure 9

Figure 9. Study 3 Condition X Immersion Interaction Predicting Attitudes toward Assuming Consent

Note. Hostile sexism is included as a control variable. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.46$, $t(61) = 1.51$, $p = .14$, and male condition, $B = -0.15$, $t(59) = 0.68$, $p = .50$.

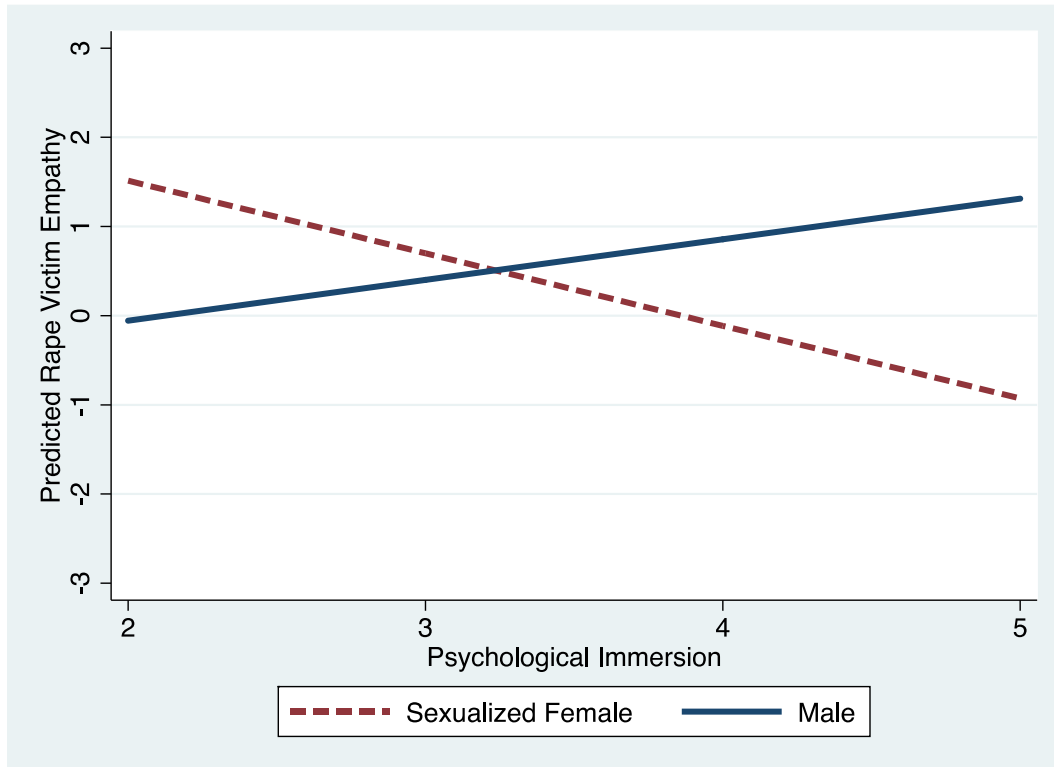
Figure 10

Figure 10. Study 3 Condition X Immersion Interaction Predicting Rape Victim Empathy
Note. Slopes for the regression lines are as follows: sexualized female condition, $B = -0.81$, $t(61) = 1.77$, $p = .08$, and male condition, $B = 0.46$, $t(61) = 1.35$, $p = .18$.

Figure 11

Figure 11. Player Character (Left) and Opponents (Center and Right) in *Dead or Alive 5: Ultimate*, used in Studies 4 and 5.

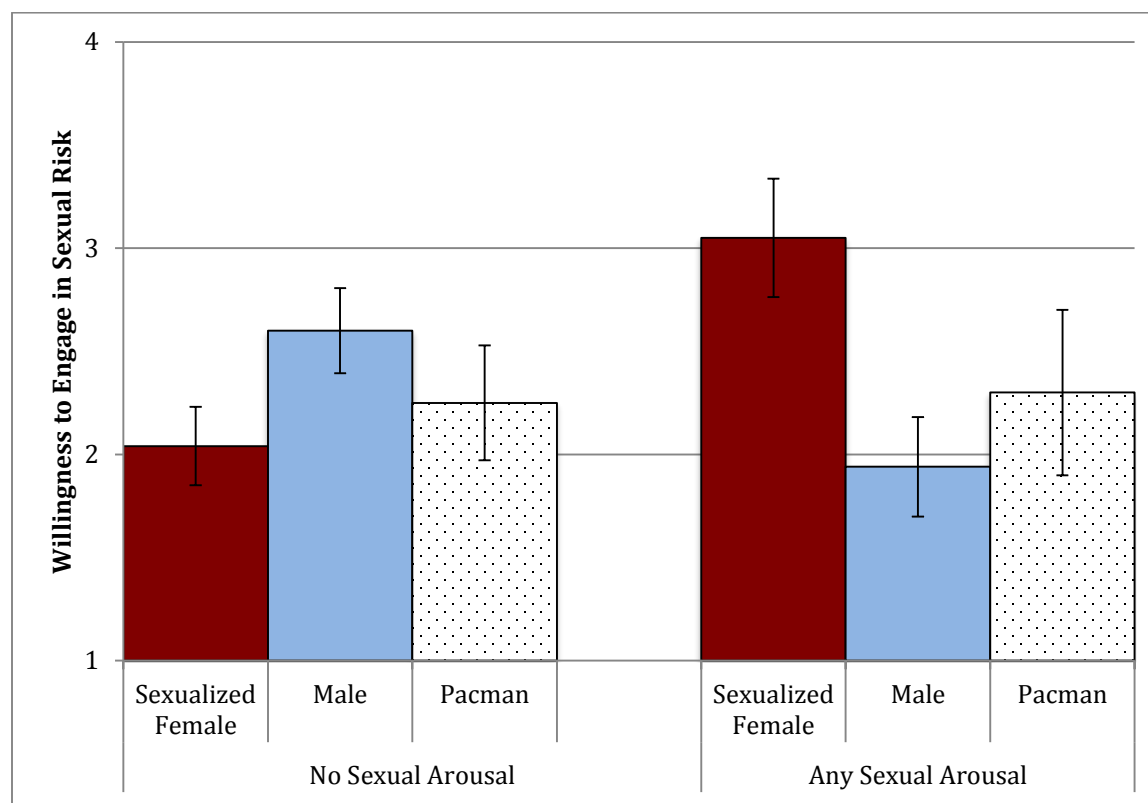
Figure 12

Figure 12. Study 4 Condition X Any Sexual Arousal Interaction Predicting Willingness to Have Risky Sex.

Note. Error bars reflect the standard error of the mean.

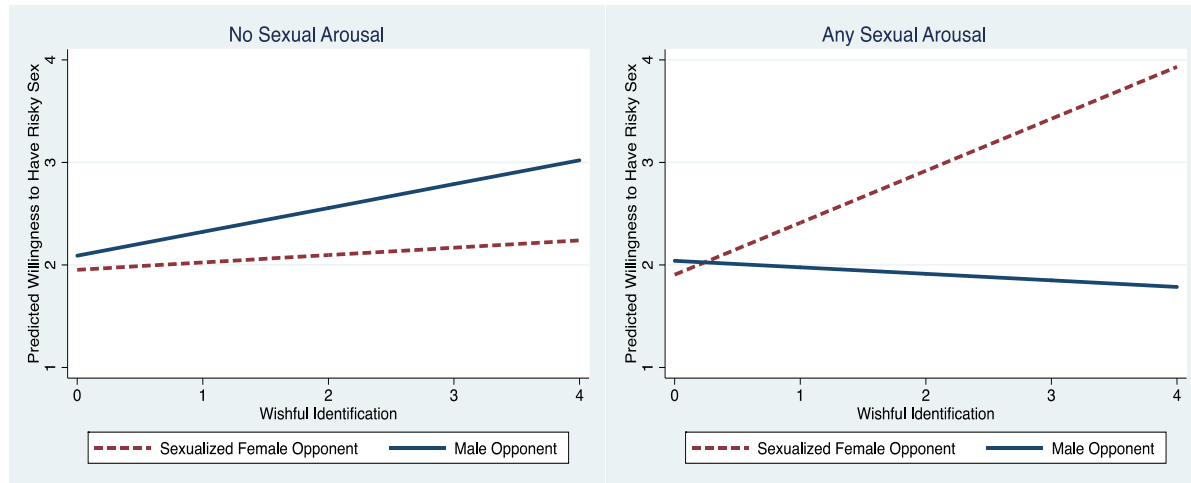
Figure 13

Figure 13. Study 4 Opponent X Any Sexual Arousal X Wishful Identification Interaction Predicting Willingness to Have Risky Sex

Note. When there was no sexual arousal, the slope of the regression lines were as follows: sexualized female condition, $B = 0.11$, $t(99) = 0.75$, $p = .45$, and male condition, $B = 0.25$, $t(99) = 1.60$, $p = .11$. When there was any sexual arousal, the slopes were: sexualized female, $B = 0.49$, $t(32) = 3.21$, $p = .003$, and male, $B = -0.12$, $t(32) = 0.59$, $p = .56$.

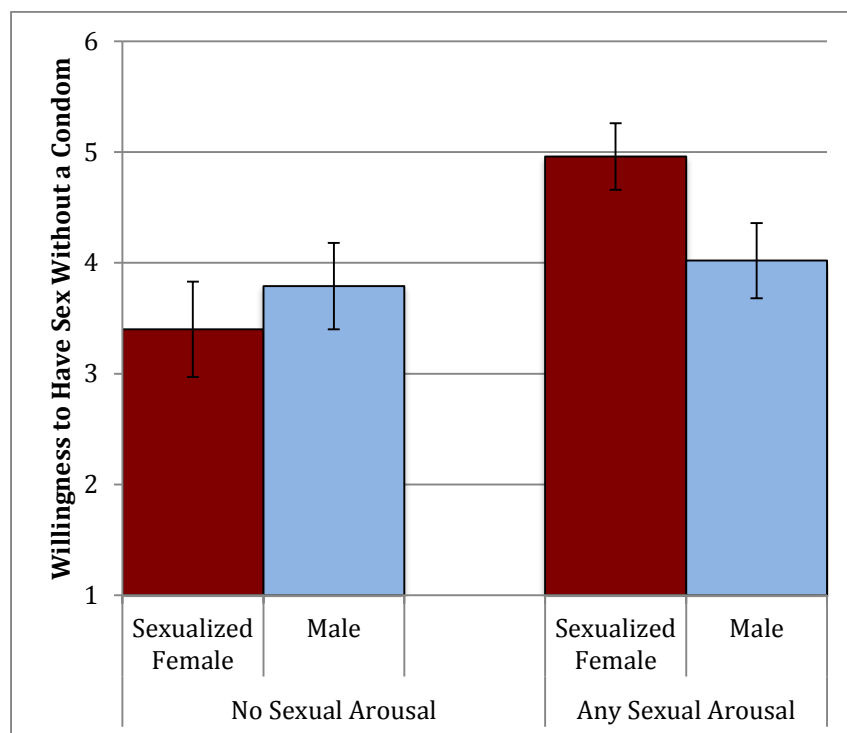
Figure 14

Figure 14. Study 5 Condition X Any Sexual Arousal Interaction Predicting Willingness to Have Sex Without A Condom

Note. Error bars reflect the standard error of the mean.

Table 1. Summary of Main Results, All Studies

	Hostile Sexism	Willingness to Engage in Sexual Risk
Study 1	Condition X immersion interaction: immersion was a stronger predictor of hostile sexism in the sexualized female condition than the male condition, $t(83) = 2.92, p = .005$, or Pacman, $t(83) = 1.50, p = .14$ High immersion SF > M: $B = -1.38, t(83) = 2.62, p = .01$ SF > P: $B = -0.85, t(83) = 1.47, p = .15$ Low immersion SF < M: $B = 1.35, t(83) = 2.63, p = .007$ SF < P: $B = 0.68, t(83) = 1.25, p = .21$	Condition X immersion interaction: immersion was a stronger predictor of willingness in the sexualized female condition than the male condition, $t(84) = 1.88, p = .06$, or Pacman, $t(84) = 0.99, p = .14$ High immersion SF > M: $B = -1.94, t(84) = 1.86, p = .07$ SF > P: $B = -0.60, t(84) = 0.52, p = .61$ Low immersion SF < M: $B = 1.56, t(84) = 1.50, p = .14$ SF < P: $B = 1.42, t(84) = 1.30, p = .21$
Study 2	Condition X immersion interaction: immersion was a stronger predictor of hostile sexism in the sexualized female condition than the male condition, $t(187) = 2.98, p = .003$, the nonsexualized female condition, $t(187) = 2.11, p = .04$, or Pacman, $t(187) = 1.80, p = .07$ High immersion SF > M: $B = -0.93, t(187) = 2.43, p = .02$, SF > NSF: $B = -0.82, t(187) = 2.12, p = .04$ SF > P: $B = -0.48, t(187) = 1.29, p = .20$ Low immersion SF < M: $B = 1.36, t(187) = 3.15, p = .002$ SF < NSF: $B = 0.76, t(187) = 2.07, p = .06$ SF < P: $B = 0.75, t(187) = 2.07, p = .04$	NA
Study 3	Main effect of immersion: $B = 0.27, t(62) = 2.00, p = .05$ Main effect of condition, hostile sexism was greater in the sexualized female condition than the male condition, $t(62) = 1.56, p = .06$	Condition X immersion interaction: immersion was a stronger predictor of willingness in the sexualized female condition than the male condition, $t(61) = 1.97, p = .05$ High immersion SF > M: $B = -1.82, t(61) = 1.81, p = .08$ Low immersion SF < M: $B = 1.78, t(61) = 1.77, p = .08$
Study 4	Main effect of condition, hostile sexism was greater in the female condition than the male condition, $t(161) = 1.73, p = .09$, or Pacman, $t(161) = 1.36, p = .18$ Condition X sexual arousal interaction+, immersion was a weaker predictor of hostile sexism in the sexualized female condition than the male condition, $t(159) = 2.21, p = .03$, or Pacman, $t(159) = 0.67, p = .51$ High immersion SF < M: $B = 0.34, t(159) = 1.25, p = .21$ SF < P: $B = 0.05, t(159) = 0.13, p = .90$ Low immersion SF > M: $B = -0.90, t(159) = 2.67, p = .008$ SF > P: $B = -0.47, t(159) = 1.09, p = .28$	Condition X sexual arousal interaction, $B = -1.67, t(172) = 3.18, p = .002$ Any sexual arousal SF > M: $t(44) = 2.81, p = .007$ SF > P: $t(44) = 1.67, p = .10$ No sexual arousal SF < M: $t(128) = 2.01, p = .05$ SF < P: $t(128) = 0.62, p = .53$
Study 5	Main effect of condition, hostile sexism was greater following play in the sexualized female condition than the male condition, $B = -0.33, t(125) = 2.84, p = .005$	Condition X sexual arousal interaction, $B = -1.03, t(123) = 2.04, p = .04$ Any sexual arousal SF > M: $t(66) = 2.08, p = .02$ No sexual arousal SF < M: $t(68) = 0.67, p = .25$

Note. SF = sexualized female opponent, M = male opponent, P = Pacman, NSF = nonsexualized female opponent. +In Study 4, after controlling for perceived difficulty level, the condition X immersion interaction was no longer significant, $B = 0.17, t(157) = 1.53, p = .13$.

Table 2. Study 1 Results of Hierarchical Multiple Regression Predicting Hostile Sexism

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Condition						
Pacman	-0.07	0.24	0.30	0.68	0.54	1.25
Male Target	0.01	0.24	0.02	1.35*	0.52	2.63
Immersion	0.11	0.10	1.03	0.46**	0.16	2.77
Immersion x Condition						
Immersion x Pacman				-0.38	0.25	1.50
Immersion x Male Target				-0.68**	0.23	2.92
Constant	2.38	0.26	1.03	1.69***	0.36	4.67
R ²	0.01			1.97+		
F for regression	0.41			0.11		

Note. N = 89 after removal of one outlier. Sexualized female condition is the reference group. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Study 1 Results of Hierarchical Multiple Regression Predicting Willingness to Have Sex Without a Condom

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Condition						
Pacman	0.41	0.47	0.87	1.42	1.09	1.30
Shoot Male	-0.19	0.46	0.41	1.56	1.04	1.50
Immersion	-0.15	0.20	0.72	0.29	0.32	0.91
Immersion x Condition						
Immersion x Pacman				-0.51	0.51	0.99
Immersion x Shoot Male				-0.88 ⁺	0.47	1.88
Constant	2.07***	0.52	3.98	1.19	0.73	1.64
R ²	0.03			0.07		
F for regression	0.74			1.17		

Note. N = 90. Sexualized female condition is the reference group. ⁺ $p = .064$, * $p < .05$, *** $p < .001$.

Table 4. Study 2 Results of Hierarchical Multiple Regression Predicting Hostile Sexism

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Pretest hostile sexism	0.85***	0.06	14.51	0.85***	0.06	14.60
Condition						
Pacman	0.10	0.13	0.75	0.88*	0.43	2.05
Nonsexualized Female Target	-0.06	0.13	0.46	0.92+	0.48	1.92
Male Target	0.14	0.13	1.04	1.59**	0.50	3.15
Immersion	0.01	0.05	0.13	0.27*	0.11	2.39
Immersion x Condition						
Immersion x Pacman				-0.25+	0.14	1.80
Immersion x Nonsexualized Female				-0.32*	0.15	2.11
Immersion x Male				-0.46**	0.15	2.98
Constant	0.42+	0.23	1.86	-0.39	0.38	1.03
R ²	0.54			0.56		
F for regression	43.76***			29.41***		

Note. Sexualized female condition is the reference group. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. N = 196 after removal of two outliers.

Table 5. Study 3 Results of Hierarchical Multiple Regression Predicting Willingness to Have Sex With a Stranger

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Male Opponent	-0.02	0.43	0.00	4.07	2.11	1.93
Immersion	0.47+	0.28	1.65	1.21*	0.48	2.59
Immersion x Male Opponent				-1.15±	0.58	-1.97
Constant	2.21*	1.08	2.05	-0.51	1.74	0.29
R ²	0.04			0.10		
F for regression	1.41			2.28		

Note. N = 65. Female opponent is the reference group. +*p* = .104, ±*p* = .053, **p* < .05, ***p* < .01.

Table 6. Study 3 Results of Hierarchical Multiple Regression Predicting Attitudes toward Assuming Consent

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Hostile Sexism	0.68	0.15	4.50	0.70	0.15	4.68
Male Opponent	0.17	0.25	0.68	2.52*	1.20	2.10
Immersion	-0.11	0.17	0.66	0.31	0.27	1.16
Immersion x Male Opponent				-0.66*	0.33	2.00
Constant	0.91	0.67	1.37	-0.65	1.02	0.64
R ²	0.25			0.30		
F for regression	6.82***			6.37***		

Note. N = 64. Female opponent is the reference group. Hostile sexism is included as a control variable. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7. Study 3 Results of Hierarchical Multiple Regression Predicting Rape Victim Empathy

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Female Opponent	0.42	0.42	1.00	-4.11 ⁺	2.08	1.98
Immersion	0.01	0.28	0.04	-0.81 ⁺	0.46	1.77
Immersion x Female Opponent				1.27 [*]	0.57	2.23
Constant	0.55	1.00		3.14	1.70	
R ²	0.02			0.09		
F for regression	0.50			2.01		

Note. Female opponent is the reference group. ⁺ $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$. N = 65.

Table 8. Study 4 Results of Hierarchical Multiple Regression Predicting Hostile Sexism

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Pretest Hostile Sexism	0.84***	0.06	13.63	0.84***	0.06	13.75
Condition						
Pacman	-0.18	0.14	1.36	-0.50	0.47	1.06
Male Opponent	-0.20 ⁺	0.12	1.73	-0.96**	0.36	2.64
Immersion	0.02	0.05	0.33	-0.09	0.74	1.24
Immersion x Condition						
Immersion x Pacman				0.10	0.15	0.67
Immersion x Male Opponent				0.24*	0.11	2.21
Constant	0.38 ⁺	0.21	1.76	0.72**		
R ²	0.54			0.56		
F for regression	47.90***			33.31***		

Note. N = 166. Sexualized female condition is the reference group. ⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9. Study 4 Results of Hierarchical Multiple Regression Predicting Willingness to Engage in Sexual Risk

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Condition						
Pacman	-0.04	0.28	0.16	1.46*	0.69	2.12
Male Opponent	0.12	0.23	0.52	1.65**	0.52	3.17
Sexual Arousal	0.08	0.17	0.49	0.78**	0.26	3.01
Sexual Arousal x Condition						
Sexual Arousal x Pacman				-1.17*	0.50	2.33
Sexual Arousal x Male Opponent				-1.17***	0.36	3.27
Constant	2.21	0.28	7.97	1.29***	0.38	3.43
R ²	0.00			0.07		
F for regression	0.23			2.57*		

Note. N = 178. Sexualized female condition is the reference group. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 10. Study 4 Results of Hierarchical Multiple Regression Predicting Willingness to Engage in Sexual Risk

Variable	Block 1			Block 2			Block 3		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Male Opponent	0.04	0.23	0.19	0.64	0.56	1.15	0.06	0.63	0.10
Sexual Arousal	0.16	0.26	0.61	0.64	0.53	1.22	0.06	0.60	0.10
Wishful Identification	0.25**	0.09	2.95	0.21	0.13	1.60	0.11	0.14	0.80
Sex Arous X Male				-1.39**	0.52	2.67	0.01	0.89	0.01
Wish X Male				-0.07	0.17	0.40	0.14	0.20	0.67
Sex Arous X Wish				0.09	0.19	0.47	0.38	0.24	1.58
Sex Arous X Wish X Male							-0.75 ⁺	0.38	1.94
Constant	1.84***	0.22	8.27	1.73***	0.27	6.48	1.88***	0.27	6.83
R ²	0.07			0.12			0.15		
F for regression	3.21*			2.98**			3.14**		

Note. N = 139. Sexualized female condition is the reference group. ⁺*p* = .055, **p* < .05, ***p* < .01, ****p* < .001.

Table 11. Study 5 Results of Hierarchical Multiple Regression Predicting Hostile Sexism

Variable	Block 1			Block 2		
	B	SE	<i>t</i>	B	SE	<i>t</i>
Pretest hostile sexism	0.96***	0.07	13.16	0.96***	0.07	13.09
Male opponent condition	-0.33**	0.12	2.84	-0.20	0.37	0.54
Immersion	0.06	0.06	0.99	0.09	0.10	0.90
Immersion X male opponent condition				-0.04	0.12	0.36
Constant	-0.17	0.26	0.65	-0.25	0.35	0.72
R ²	0.59			0.59		
F for regression	57.91***			43.15***		

Note. N = 125. Sexualized female condition is the reference group. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 12. Study 5 Results of Hierarchical Multiple Regression Predicting Willingness to Have Sex Without a Condom

Variable	Block 1			Block 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Pretest Willingness	1.24***	0.10	12.93	1.23***	0.10	12.92
Male Opponent Condition	0.08	0.26	0.32	0.56	0.35	1.63
Any Sexual Arousal	0.22	0.26	0.85	0.74*	0.36	2.05
Any Sexual Arousal x Male Opponent				-1.03*	0.50	2.04
Constant	1.62***	0.27	6.02	1.41***	0.29	4.89
R ²	0.59			0.61		
F for regression	60.38***			47.49***		

Note. N = 178. Sexualized female condition is the reference group. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 13. Study 5 Perceived Playable Character Traits

Trait	<u>Opponent</u>		<i>t</i>	<i>p</i>
	Sexualized Female M (SD)	Male M (SD)		
High Benevolence				
Strong	3.57 (1.42)	3.14 (1.24)	1.87	.064
Competent	3.52 (1.45)	3.24 (1.15)	1.23	.220
Skilled	3.42 (1.55)	2.95 (1.21)	1.94	.054
Successful	3.28 (1.46)	2.64 (1.21)	2.76	.007**
Average High Benevolence	3.45 (1.27)	2.99 (1.00)	2.33	.022*
Low Benevolence				
Dominant	3.48 (1.54)	2.82 (1.30)	2.69	.008**
Forceful	3.16 (1.50)	2.98 (1.20)	0.75	.458
Violent	3.52 (1.72)	3.29 (1.53)	0.83	.410
Competent	4.13 (1.40)	3.61 (1.53)	2.08	.040*
Average Low Benevolence	3.57 (1.29)	3.17 (1.07)	1.94	.054
Forced-Choice Bipolar				
Good vs. Bad	3.28 (1.15)	2.76 (1.00)	2.80	.006**
Immoral vs. Moral	2.07 (1.18)	2.79 (1.28)	3.37	.001**
Pro-social vs. Antisocial	3.75 (1.10)	3.36 (1.15)	2.01	.046*
Heroic vs. Villainous	2.55 (1.06)	3.06 (1.00)	2.88	.005**

Note. N = 133, *p* values are for two-tailed *t*-tests.

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Appendix A

Willingness to Engage in Risk Behaviors – Ancillary Analyses

Each item measuring willingness to engage in a risk behavior was regressed on dummy-coded condition (sexualized female as reference group) and immersion in step 1 and the multiplicative cross-product between condition and immersion in step 2. Then, each willingness item was regressed on dummy-coded violent game condition (collapsing across violent conditions with Pacman game as reference group) and immersion in step 1 and the multiplicative cross-product in step 2.

Study 1. Study 1 included filler items measuring willingness to engage in reckless driving (4 items), drug use (2 items), drinking and driving (2 items), drinking to intoxication (1 item), smoking cigarettes (1 item), riding on the back of a motorcycle without a helmet (1 item), swimming while intoxicated from alcohol (1 item), and willingness to engage in academic cheating (2 items). Responses ranged from 0 *not at all willing* to 6 *extremely willing*. There were no significant main effects of condition or immersion or significant condition X immersion interactions for the majority of items. There was a trending main effect of condition on willingness to swim while intoxicated such that willingness was greater in the Pacman condition than the sexualized female condition, $B = 1.00$, $t(86) = 2.04$, $p = .04$. There was a trending main effect of condition on willingness to ride on the back of a motorcycle without a helmet such that willingness was again greater in the Pacman condition than the sexualized female condition, $B = 0.87$, $t(86) = 2.06$, $p = .04$. There was also significant main effect of condition on willingness to engage in academic cheating such that willingness was greater in the male condition than the sexualized female condition, $B = 0.70$, $t(86) = 2.34$, $p = .02$. There were no significant

interactions. There were no significant main effects of violent game or immersion or violent game X immersion interactions for any item.

Study 2. Study 2 included items measuring willingness to drink to intoxication (2 items), and willingness to drink and drive (2 items). Study 2 also included 9 items measuring perceptions of academic cheating behavior as either cheating, unethical but not cheating, or neither. Higher scores indicated more permissive attitudes toward academic cheating. There was no significant main effect of condition or immersion or condition X immersion interaction predicting permissive attitudes toward cheating. There was also no significant main effect of violent game or immersion or violent game X immersion interaction predicting permissive attitudes toward cheating. There was a significant main effect of condition on willingness to drink, $B = -0.78$, $t(231) = 2.55$, $p = .01$, willingness was greater in the sexualized female condition than Pacman. There was no significant condition X immersion interaction. There was a main effect of violent game on willingness to drink, $B = 0.75$, $t(234) = 2.96$, $p = .003$, willingness to drink was greater in the first-person-shooter conditions than in Pacman. There was no significant violent game X immersion interaction.

For willingness to drink and drive, there were no significant main effects of condition or immersion using the sexualized female condition as the reference group, but there was a significant condition X immersion interaction (Table A1, Figure A1). First, immersion was a significant predictor of greater willingness in the sexualized female condition, $B = 0.30$, $t(128) = 2.32$, $p = .02$. A test of slopes revealed that immersion predicted willingness to drink and drive to a greater extent in the sexualized female condition than the male condition, $t(128) = 2.07$, $p = .04$, the nonsexualized female condition, $t(228) = 2.11$, $p = .04$, and Pacman, $t(128) = 1.69$, $p = .09$, although the last difference did not reach statistical significance. Immersion did not predict

willingness in the male condition, $B = -0.10$, $t(228) = 0.70$, $p = .48$, the nonsexualized female condition, $B = -0.10$, $t(228) = 0.71$, $p = .48$, or the Pacman condition, $B = 0.00$, $t(228) = 0.04$, $p = .97$. A test of intercepts revealed that when immersion was low, willingness to drink and drive was somewhat lower in the sexualized female condition compared with the male condition, $B = 0.87$, $t(228) = 1.60$, $p = .11$, and Pacman condition, $B = 0.82$, $t(228) = 1.76$, $p = .08$, and significantly lower compared with the nonsexualized female condition, $t(228) = 2.19$, $p = .03$. When immersion was high, willingness to drink and drive was significantly greater in the sexualized female condition compared with the male condition, $B = -1.17$, $t(228) = 2.32$, $p = .02$, but not significantly different from the nonsexualized female condition, $B = -0.87$, $t(228) = 1.75$, $p = .08$, or Pacman condition, $B = -0.69$, $t(228) = 1.38$, $p = .17$. There was no significant main effect of violent game or immersion or violent game X immersion interactions.

Study 3. One item measured willingness to drink to the point of intoxication, and one item measured willingness to drink and drive. There was a significant main effect of condition on willingness to drink to intoxication indicating that participants were more willing to drink after fighting the sexualized female opponent compared with the male opponent, $B = -0.97$, $t(62) = 2.04$, $p = .05$. The condition X immersion interaction was trending indicating that immersion predicted willingness to a greater extent in the female condition than the male condition, $B = -1.03$, $t(61) = 1.57$, $p = .12$ (Table A2, Figure A2). There was no difference among participants who reported low immersion, but when immersion was high willingness was significantly lower in the male condition than the sexualized female condition, $B = -2.60$, $t(61) = 2.29$, $p = .03$. There were no significant main effects of condition or immersion or their interaction predicting willingness to drink and drive. There were no significant main effects of violent game or

immersion or violent game X immersion interactions predicting willingness to drink or willingness to drink and drive.

Study 4. One item measured willingness to drink to the point of intoxication, 3 items measured willingness to drink and drive, 2 items measured willingness to engage in drug use, and 2 items measured willingness to engage in academic cheating. There were no significant main effects of condition or immersion or significant condition X immersion interactions for willingness to drink and drive, engage in drug use, or engage in academic cheating. There were no significant main effects of violent game or immersion or violent game X immersion interactions predicting any willingness item. There was a trending main effect of condition on willingness to drink to intoxication, such that willingness was somewhat greater after playing against the sexualized female opponent than the male opponent, $B = -0.63$, $t(172) = 1.76$, $p = .08$, but not Pacman, $B = -0.54$, $t(172) = 1.76$, $p = .20$. There was no significant condition X immersion interaction.

There is some evidence linking identification with a violent video game character with risk behavior (Hull et al., 2014), so willingness to drink to intoxication was regressed on opponent (sexualized female coded as 0, male coded as 1), wishful identification, and general identification with character. Opponent was a marginally significant predictor of willingness to drink to intoxication, willingness was greater in the sexualized female condition than the male condition, $B = -0.62$, $t(135) = 1.75$, $p = .08$. Wishful identification and general identification did not significantly predict willingness to drink to intoxication, and there were no significant interactions. For willingness to drink and drive, there were no main effects of opponent, wishful identification, or general identification. However, there was a significant interaction between opponent and wishful identification indicating that wishful identification predicted willingness to

drink and drive to a greater extent in the sexualized female condition than the male condition, $B = -0.25$, $t(134) = 2.05$, $p = .04$ (Table A3, Figure A3). A test of intercepts indicated that when wishful identification was low, willingness to drink and drive was lower in the sexualized female condition than the male condition, $B = 0.60$, $t(134) = 2.15$, $p = .03$, and when wishful identification was high, willingness to drink and drive was somewhat greater in the sexualized female condition than the male condition, $B = -0.57$, $t(134) = 1.50$, $p = .14$.

Study 5. Willingness to engage in risk items included willingness to drink to intoxication (1 item), drink and drive (2 items), engage in reckless driving (2 items), drug use (2 items), and cigarette smoking (1 item). There was a significant main effect of condition on willingness to drink to intoxication, $B = -0.71$, $t(133) = 2.09$, $p = .04$, indicating that willingness to drink to intoxication was greater after playing against the sexualized female opponent than the male opponent. There was no significant condition X immersion interaction. There were no significant main effects of condition or immersion or significant condition X immersion interactions for any other risk behavior.

After controlling for pretest likelihood to drink to intoxication (“How likely is it that you will have three or more drinks in one sitting during the next month?” and “How likely is it that you will get drunk during the next month?”), the main effect of condition predicting willingness to drink was no longer significant. However, as prior research has linked sexual arousal with risk taking (e.g., Skakoon-Sparling, Cramer, & Shuper, 2015), willingness to drink to intoxication was examined among participants reporting any sexual arousal. After controlling for pretest willingness to drink, there was a main effect of condition, $B = -0.86$, $t(56) = 2.04$, $p = .05$, indicating that willingness to drink to intoxication was significantly greater in the sexualized

female condition than the male condition. There were no main effects or interactions among participants reporting no sexual arousal.

Willingness to drink and drive was also examined among participants reporting any sexual arousal. After controlling for pretest willingness to drink and drive (“I feel ____ about driving a motor vehicle under the influence of alcohol,” “I ____ of someone who would drive a motor vehicle under the influence of alcohol,” and “If I was feeling a “slight buzz” from drinking alcohol and a friend wanted me to drive, I would be ____ to drive”), there was a marginally significant main effect of condition, $B = -0.48$, $t(53) = 1.72$, $p = .09$, indicating that willingness to drink and drive was somewhat greater in the sexualized female condition than the male condition among participants reporting any sexual arousal. There were no main effects or interactions among participants reporting no sexual arousal.

Neither wishful identification nor identification with character was a significant predictor of willingness to drink to intoxication or willingness to drink and drive either before or after controlling for pretest likelihood to drink and attitudes toward drinking and driving, respectively.

Summary of Willingness to Engage in Risk Behaviors

There was some evidence that playing a violent game against a sexualized female opponent increased willingness to drink to intoxication. Willingness to drink was significantly greater in the sexualized female condition than Pacman in Study 2 and the male condition in Studies 3 and 5. Willingness to drink was also somewhat greater in the sexualized female condition than the male condition in Study 4. There was no consistent evidence that playing against a sexualized female opponent increased willingness to engage in any other risk behavior or that playing a violent game in general as opposed to a nonviolent game increased willingness to engage in risk behaviors. Alcohol use has been linked with greater reported likelihood to have

risky sex (Conner et al., 2008; Ebel-Lam, et al., 2009; George et al., 2008), so violent game play against a sexualized female opponent may increase specific risks associated with sex (i.e., risky sexual behavior and alcohol use), but not other general risk behaviors. Results are limited in that willingness to drink to intoxication was only measured using one item.

Study 5 Positive and Negative Affect, State Anger – Ancillary Analyses

To test the specificity of effects of violent game play against sexualized female opponents, both hostile sexism and state anger were measured in Study 5. I expected that hostile sexism, but not state anger, would be greater after fighting a sexualized female opponent than a male opponent.

State Arousal. The state arousal task used in Study 5 consisted of items used in previous research including items measuring state-trait anger (*angry, mad, irritated*, $\alpha = .85$, Kroner & Reddon, 1992), as well as positive affect (*active, proud, excited, alert, attentive, strong*, $\alpha = .88$) and negative affect (*jittery, upset, guilty, hostile, nervous, irritable*, $\alpha = .76$) from the PANAS-X (Watson & Clark, 1994). Participants were instructed to “indicate how well each of the words on the next screen describes how you feel right now” on a 6-point scale from *not at all* to *extremely*. Data were analyzed by regressing the dependent variable on dummy coded condition (sexualized female as the reference group) and psychological immersion in step one and the multiplicative cross-product in step two.

For positive affect, there was a main effect of immersion, $B = 0.69$, $t(132) = 7.39$, $p < .001$, greater immersion predicted greater positive affect. The condition X immersion interaction was not significant. There was also a main effect of immersion predicting negative affect, $B =$

0.27, $t(132) = 3.70$, $p < .001$, greater immersion predicted greater negative affect. There was no significant condition X immersion interaction for positive or negative affect.

There was a main effect of condition predicting state anger, the male opponent elicited more anger than the sexualized female opponent, $B = 0.56$, $t(132) = 3.10$, $p = .002$. There was also a main effect of immersion, greater immersion predicted greater state anger, $B = 0.30$, $t(132) = 3.10$, $p = .002$. The condition X immersion interaction was not significant.

There is some evidence that greater frustration, and not violent content per se, predicts aggression following video game play (Przybylski et al., 2013). State anger was regressed on dummy coded condition (sexualized female as the reference group) and frustration in step one and the condition X frustration interaction term in step two. Immersion was included as a control variable. There were significant main effects of opponent, frustration, and immersion. State anger was greater after fighting a male opponent, $B = 0.34$, $t(131) = 2.04$, $p = .04$, and to the extent that players were frustrated, $B = 0.31$, $t(131) = 5.59$, $p < .001$, and immersed, $B = 0.24$, $t(131) = 2.77$, $p = .007$. There was a significant condition X frustration interaction. First, frustration was a significant predictor of state anger in the sexualized female opponent condition, $B = 0.19$, $t(131) = 2.59$, $p = .01$, but the condition X frustration interaction indicated that immersion was a stronger predictor of state anger in the male opponent condition than the female opponent condition, $t(130) = 2.39$, $p = .02$. The slope of the regression line in the male opponent condition was steeper than the female condition, $B = 0.44$, $t(131) = 5.57$, $p < .001$. (Figure A4). The difference was on the high end of frustration. When frustration was high, state anger was significantly lower in the sexualized female condition than the male condition, $B = -1.16$, $t(131) = 5.57$, $p < .001$. There was no significant difference due to condition when frustration was low. I also conducted a three-step analysis including main effects of opponent, frustration, and

immersion in the first block, the two-way interaction terms in the second block, and the three-way condition X immersion X frustration term in the third block. The three-way interaction term was not significant (see Table A4). The pattern of results did not change after controlling for perceived difficulty level, so the simpler results are presented.

Psychological Immersion by Study and Condition – Ancillary Analyses

There were no significant differences in psychological immersion between conditions in any study, although difference between conditions were marginally significant in Study 2, $F(3, 232) = 2.56, p = .06$ (Table A5). Psychological immersion varied between studies within the sexualized female condition, $F(4, 261) = 13.02, p < .001$; immersion was lower in Study 1 than in all other conditions, $ps < .001$, and higher in Study 3 than all other conditions, $ps < .05$. Immersion also varied between studies within the male condition, $F(4, 250) = 11.48, p < .001$; immersion was lowest in Study 1, $ps < .001$. Immersion also varied between studies within the Pacman condition, $F(2, 120) = 11.00, p < .001$, and was again lowest in Study 1, $ps < .001$.

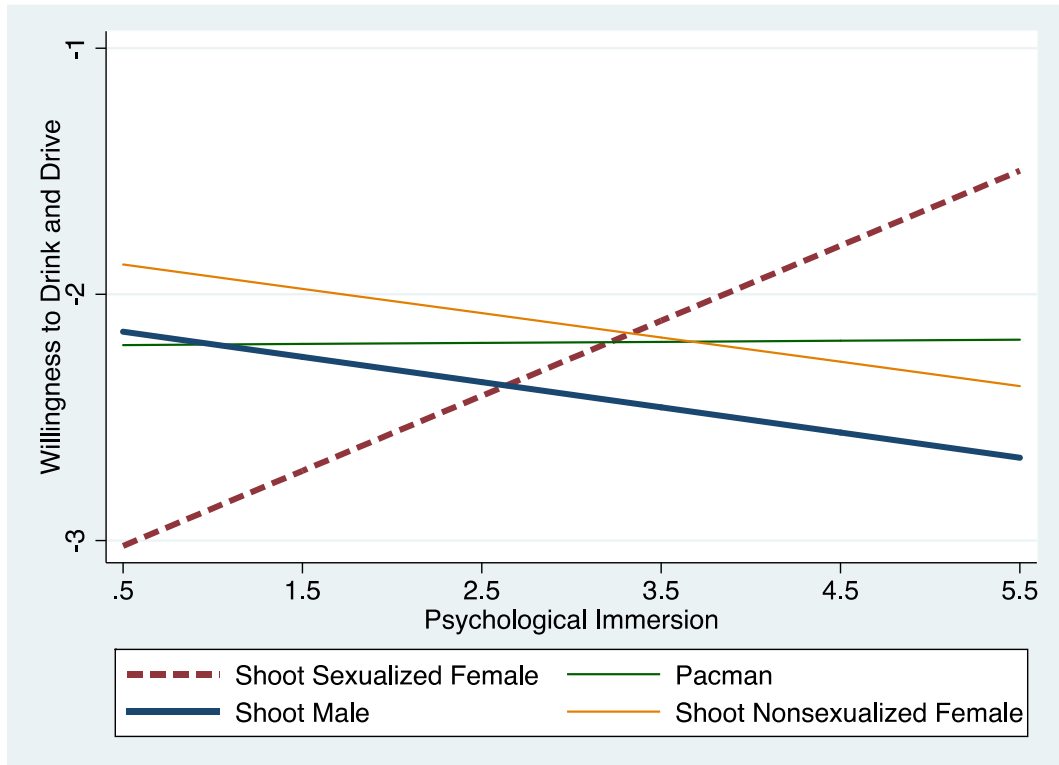
Figure A1

Figure A1. Study 2 Condition X Immersion Interaction Predicting Willingness to Drink and Drive

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.30$, $t(128) = 2.32$, $p = .02$, male condition, $B = -0.10$, $t(228) = 0.70$, $p = .48$, nonsexualized female condition, $B = -0.10$, $t(228) = 0.71$, $p = .48$, and Pacman, $B = 0.00$, $t(228) = 0.04$, $p = .97$.

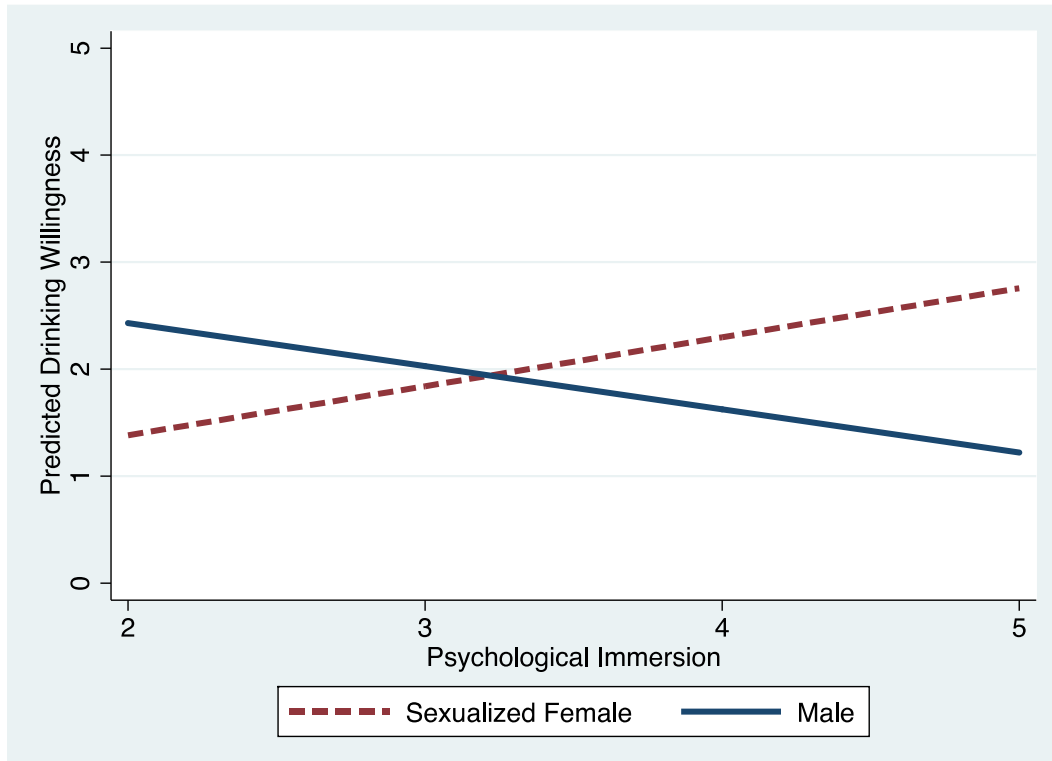
Figure A2.

Figure A2. Study 3 Condition X Immersion Interaction Predicting Willingness to Drink to Intoxication

Note. Slopes for the regression lines are as follows: sexualized female condition, $B = 0.44$, $t(61) = 0.84$, $p = .41$, male condition, $B = -0.60$, $t(61) = 1.52$, $p = .13$.

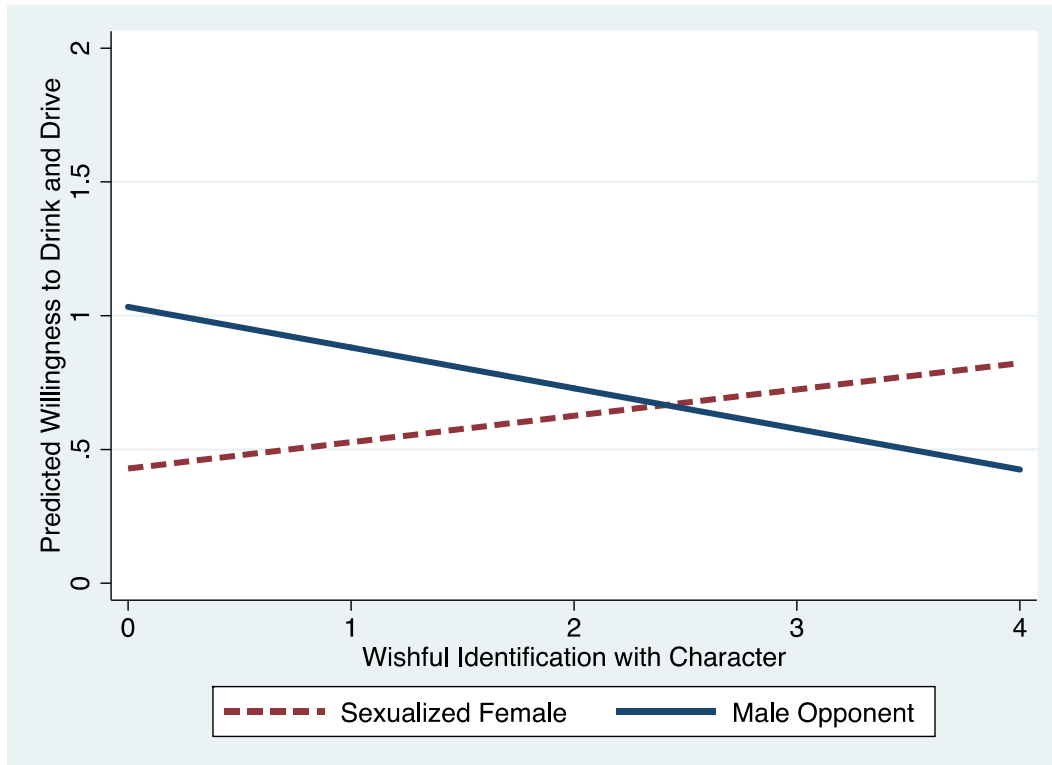
Figure A3

Figure A3. Study 4 Opponent X Wishful Identification Interaction Predicting Willingness to Drink and Drive

Note. Slopes for the regression lines are as follows: sexualized female, $B = 0.10$, $t(134) = 1.08$, $p = .28$, male, $B = -0.15$, $t(134) = 1.61$, $p = .11$.

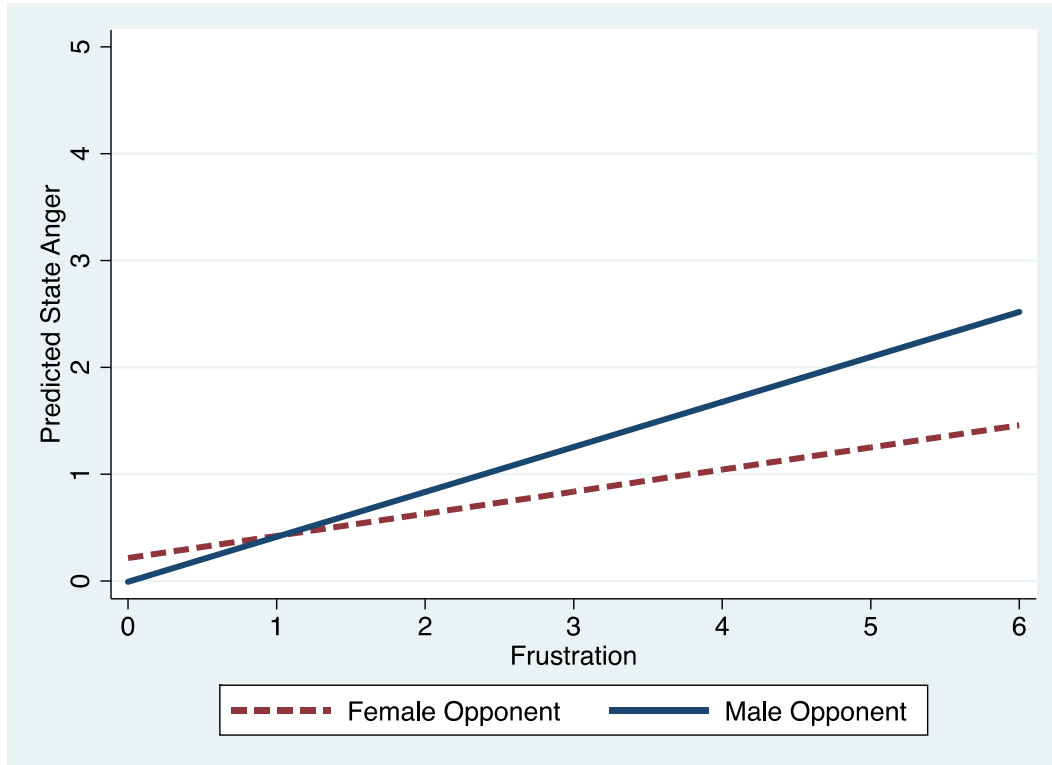
Figure A4

Figure A4. Study 5 Condition X Frustration Interaction Predicting State Anger
Note. Slopes for the regression lines were as follows: female opponent condition, $B = 0.19$, $t(131) = 2.59$, $p = .01$, male opponent condition, $B = 0.44$, $t(131) = 5.57$, $p < .001$.

Table A1. Study 2 Results of Hierarchical Multiple Regression Predicting Willingness to Drink and Drive

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Condition						
Pacman	0.06	0.19	0.30	0.97	0.55	1.77
Nonsexualized Female Target	0.11	0.18	0.59	1.34	0.61	2.19
Male target	-0.19	0.18	-1.02	1.07	0.64	1.68
Immersion	0.04	0.07	0.53	0.30	0.13	2.32
Immersion x Condition						
Immersion x Pacman				-0.30 ⁺	0.18	1.69
Immersion x Nonsexualized Female				-0.40 [*]	0.19	2.11
Immersion x Male				-0.41 [*]	0.20	2.07
Constant	-2.35 ^{***}	0.24	9.71	-3.17 ^{***}	0.42	7.50
R ²	0.01			0.04		
F for regression	0.76			1.31		

Note. Sexualized female condition is the reference group. ⁺ $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$. N = 236.

Table A2. Study 3 Results of Hierarchical Multiple Regression Predicting Willingness to Drink to Intoxication

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Male Opponent	-0.97*	0.48	2.04	2.71	2.39	1.14
Immersion	-0.23	0.32	0.72	0.44	0.53	0.84
Immersion x Male Opponent				-1.03	0.66	1.57
Constant	4.15	1.20	3.44	1.70 [±]	1.96	0.86
R ²	0.06			0.10		
F for regression	2.15 ⁺			2.29 ⁺		

Note. N = 65. Male opponent is the reference group. [±]*p* = .12, ⁺*p* < .10, **p* < .05, ***p* < .01.

Table A3. Study 4 Results of Hierarchical Multiple Regression Predicting Willingness to Drink and Drive

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Male Opponent	0.13	0.16	0.81	0.86*	0.39	2.21
Wishful Identification with Character	-0.02	0.07	0.30	0.10	0.09	1.08
General Identification with Character	0.03	0.07	0.37	0.00	0.07	0.05
Wishful Identification x Male Opponent				-0.25*	0.12	2.05
Constant	0.58***	0.17	3.43	0.42*	0.19	2.28
R ²	0.01			0.04		
F for regression	0.26			1.25		

Note. N = 139. Sexualized female opponent is the reference group. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table A4. Study 5 Results of Hierarchical Multiple Regression Predicting State Anger

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Male Opponent	0.34*	0.17	2.04	-0.78	0.58	1.35	-0.62	1.06	0.59
Immersion	0.24**	0.09	2.77	-0.15	0.19	0.80	-0.11	0.29	0.40
Frustration	0.31***	0.05	5.59	-0.10	0.18	0.59	-0.06	0.31	0.18
Immersion X Male				0.19	0.18	1.10	0.14	0.36	0.38
Frustration X Male				0.21*	0.11	2.01	0.15	0.38	0.39
Immersion X Frustration				0.11 ⁺	0.06	1.88	0.09	0.11	0.84
Imm X Frus X Male							0.02	0.13	0.18
Constant	-0.70*	0.29	2.37	0.66	0.56	1.18	0.02	0.82	0.67
R ²	0.30			0.35			0.35		
F for regression	18.34***			11.52***			9.81***		

Note. N = 135. Sexualized female condition is the reference group. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table A5. Psychological Immersion by Study and Condition

Study	Game	Sexualized Female	<u>Condition</u>	
			Male	Pacman
Study 1	First-person-shooter	2.02 (1.01) ^a	1.97 (1.00) ^a	1.88 (0.88) ^a
Study 2	First-person-shooter	3.07 (0.90) ^b	3.20 (0.90) ^b	2.66 (1.14) ^b
Study 3	Mortal Kombat	3.65 (0.64) ^c	3.41 (0.86) ^{bc}	NA
Study 4	Dead or Alive	3.09 (1.07) ^b	3.26 (1.03) ^b	3.01 (0.83) ^b
Study 5	Dead or Alive	2.88 (0.84) ^b	2.89 (1.05) ^b	NA

Note. Values sharing a superscript letter are not significantly different from one another.

Appendix B

Study 1 Dependent Measures

Psychological Immersion Questionnaire

Engagement (Mental Immersion), Temple Presence Inventory (Lombard et al., 2009)

1. To what extent did you feel mentally immersed in the experience?
2. How involving was the experience?
3. How completely were your senses engaged?
4. To what extent did you experience a sensation of reality?
5. How exciting was the experience?
6. How engaging was the story?

Additional items

7. How much did you enjoy playing the game?
8. How would you rate the quality of the graphics for this game?
9. How much do you think the average video game costs?
10. How much do you think a fully developed game similar to the one you just played would cost?

Ambivalent Sexism Inventory (Glick & Fiske, 1996)

Hostile Sexism Subscale

1. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
2. Most women interpret innocent remarks or acts as being sexist.
3. Women are too easily offended.
4. Feminists are not seeking for women to have more power than men.*
5. Most women fail to appreciate fully all that men do for them.
6. Women seek to gain power by getting control over men.
7. Women exaggerate problems they have at work.
8. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.
9. When women lose to men in a fair competition, they typically complain about being discriminated against.
10. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.*
11. Feminists are making entirely reasonable demands of men.*

Benevolent Sexism Subscale

12. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.
13. In a disaster, women ought not necessarily to be rescued before men.*
14. People are often truly happy in life without being romantically involved with a member of the other sex.*
15. Many women have a quality of purity that few men possess.
16. Women should be cherished and protected by men.
17. Every man ought to have a woman whom he adores.
18. Men are complete without women.*
19. A good woman should be set on a pedestal by her man.
20. Women, compared to men, tend to have a superior moral sensibility.
21. Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives.

22. Women, as compared to men, tend to have a more refined sense of culture and good taste.

*Reverse item.

Willingness to Engage in Risk Behaviors

1. Ride on the back of a motorcycle without a helmet
2. Go swimming in a lake after you are feeling intoxicated
3. Drive a car after you feel "slightly buzzed" from alcohol
4. Ride in a car with a friend who seems "slightly buzzed" from drinking alcohol
5. Make an obscene gesture at a bad driver
6. Engage in an aggressive driving maneuver with someone who cut you off
7. Have sex without a condom with a sexually attractive person you just met
8. Drive more than 10 miles over the speed limit on campus to avoid being late
9. Drive more than 20 miles over the speed limit on the highway to avoid being late
10. Smoke a cigarette at a party
11. Smoke marijuana at an outdoor music festival
12. Try an illegal drug that a few friends have said is safe and fun
13. Cheat off the person sitting next to you during an exam
14. Plagiarize from a webpage while writing a term paper
15. Drink from an open container of alcohol at a concert in a park that prohibits alcohol.

Aggression Questionnaire – Short Form (Buss & Perry, 1992)

1. Given enough provocation, I may hit another person. (P)
2. I often find myself disagreeing with people. (V)
3. At times I feel I have gotten a raw deal out of life. (H)
4. There are people who have pushed me so far that we have come to blows. (P)
5. I can't help getting into arguments when people disagree with me. (V)
6. Sometimes I fly off the handle for no good reason. (A)
7. Other people always seem to get the breaks. (H)
8. I have threatened people I know. (P)
9. My friends say that I'm somewhat argumentative. (V)
10. I have trouble controlling my temper. (P)
11. I wonder why sometimes I feel so bitter about things. (H)
12. I sometimes feel like a powder keg ready to explode. (A)

Subscales: P=physical; V=verbal; A=anger; H=hostility

Video Game Experience

1. Which types of video games do you play most often? Check all game types that apply.
Action, first-person-shooter, sports, fighting, adventure, strategy, role playing games, puzzle, racing, music, dancing
2. About how many hours per week do you spend playing video games in general?
3. About how many hours per week do you spend playing action video games (e.g., first-person shooter, adventure, fighting)?
4. Please list the video games that you play most often.
5. In general, do you prefer first-person or third-person playing modes?

Study 2 Dependent Measures

Psychological Immersion Questionnaire

Transportation (Green & Brock, 2000)

1. While I was playing the video game, I could easily picture the events in it taking place.
2. While I was playing the video game, activity going on in the room around me was on my mind.
3. I could picture myself in the scene of the events shown in the video game.
4. I was mentally involved in the video game while playing it.
5. After the video game ended, I found it easy to put it out of my mind.
6. I wanted to learn how the video game ended.
7. The video game affected me emotionally.
8. I found myself thinking of ways the video game could have turned out differently.
9. I found my mind wandering while playing the video game.
10. I had a vivid mental image of the hero in the video game.

Additional items

11. How much did you enjoy playing the game?
12. How would you rate the quality of the graphics for this game?
13. How much do you think the average video game costs?
14. How much do you think a fully developed game similar to the one you just played would cost?

Hostile and Benevolent Sexism (Glick & Fiske, 1996)

1. Women, as compared to men, tend to have a more refined sense of culture and good taste. B
2. In a disaster, women ought not necessarily to be rescued before men. B*
3. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances. H*
4. Women exaggerate problems they have at work. H
5. Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives. B
6. Many women have a quality of purity that few men possess. B
7. Women should be cherished and protected by men. B
8. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality." H
9. Women, compared to men, tend to have a superior moral sensibility. B
10. Women are too easily offended. H
11. Women seek to gain power by getting control over men. H

(Pro) Attitudes toward Assuming Sexual Consent, Sexual Consent Scale, Revised (Humphreys, 2011)

1. I think it is okay to assume consent and proceed sexually until the partner indicates "no."
2. If a sexual request is made and the partner indicates "no," I feel that it is okay to continue negotiating the request.
3. I think nonverbal behaviors are as effective as verbal communication to indicate sexual consent.
4. Not asking for sexual consent is not really a big deal.
5. In making a sexual advance, I believe that it is okay to assume consent unless you hear a "no."
6. I believe it is enough to ask for consent at the beginning of a sexual encounter.
7. I believe that sexual intercourse is the only sexual activity that requires explicit verbal consent.

Rape Tolerance

Instructions: The following is based on a real-life interview that was conducted with an undergraduate student about her experiences with a fellow student. Names have been changed. Please read the story and answer the questions that follow it.

Ashley's first year started out as you might expect — football games, all nighters, a little too much partying and plenty of friends. One of the guys Ashley hung around with during her fresh year was Michael, a wrestling star from her high school back in her home town. Ashley acknowledges she had consensual sex with Michael once in October. But she says what happened the night of February 22 was completely different. That night, Ashley came back from an off campus bar— a little buzzed, she says, but not drunk—and met up with Michael for a smoke outside his dorm. Ashley says he'd left his cigarettes upstairs, so she agreed to go to his room. But she says she told him she wasn't interested in anything physical.

Interviewer: Is there any way Jeremy could have misunderstood when you went up to his room that night?

Ashley: No.

Interviewer: Is there any way he could have thought—

Ashley: Not a chance.

Interviewer: She's coming up here and we know what's going to happen.

Ashley: No way. Not a chance. I said, "We are not hooking up, right? You know that right?"

Interviewer: And he said?

Ashley: Oh of course. My roommate's up there.

But his roommate was passed out cold. Michael started to kiss her and at first she let him, but Ashley says the former wrestler turned violent, pulling down her pants, and penetrating her with his hand, and biting her neck, all while he had her pinned down.

Ashley: My hands above my head. Pulling my ears with his teeth. Telling me how much I was enjoying it, although I was gasping in pain. And right away he was—started raping me. And I told him several times—I don't know what words I can use and what words I can't. But, "Get the fuck off me."

Ashley says the third time she yelled so loud his roommate stirred and Michael got off of her. She says she walked back to her dorm, feeling numb. The next day, she went to a university official and reported she'd been raped.

Instructions: Please circle the number that best reflects your opinion.

1. If Ashley's story is true, would you personally believe that Michael is guilty of rape? *Not at all – Definitely*
2. If Michael admitted doing what Ashley accused him of doing, how harshly do you think he should be punished? *No punishment – Severe punishment*
3. To what extent do you feel Ashley is responsible for Michael's actions? In other words, did she do something to cause his behavior? *Not at all responsible – Clearly responsible*
4. How seriously should Ashley's report be taken? *Not at all serious – Extremely serious*
5. How sorry do you feel for Ashley? *Not at all sorry – Extremely sorry*
6. How damaging do you think Michael's behavior was to Ashley? *Not at all damaging – Extremely damaging*
7. If the story about Michael is true, which of the following punishments do you think he would deserve? Assume they are in order from least to greatest punishment. Check one.

- ___ No punishment
- ___ Being asked to apologize to Ashley
- ___ Being given a verbal reprimand from the university authorities
- ___ Being given a written reprimand from the university authorities
- ___ Being warned that repeating this type of behavior may result in his expulsion
- ___ Being suspended from attending classes
- ___ Being expelled from the university

Video Game Experience

1. How many hours per week do you spend playing video games?
2. How many hours per week do you spend playing "shooter" video games?
3. List shooter games played in the past month.
4. How many hours per week do you spend playing "role-playing" video games?
5. List role-playing games played in the past month.
6. What video games do you play most often?
7. Do you prefer first-person or third-person playing modes?

Study 3 Dependent Measures

Psychological Immersion Questionnaire

Engagement (Mental Immersion), Temple Presence Inventory (Lombard et al., 2009)

1. To what extent did you feel mentally immersed in the experience?
2. How involving was the experience?
3. How completely were your senses engaged?
4. To what extent did you experience a sensation of reality?
5. How exciting was the experience?
6. How engaging was the experience?
7. How relaxing was the experience? (reverse)

Additional items

8. How frustrating was the experience?
9. Do you think you played on easy, medium, or hard mode?

Hostile Sexism (Glick & Fiske, 1996)

1. Most women interpret innocent remarks or acts as sexist.
2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
3. Women exaggerate problems they have at work.
4. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.*
5. Women are too easily offended.
6. Women seek to gain power by getting control over men.

Willingness to Engage in Risk Behaviors

1. Driving after feeling a slight buzz from a few alcoholic drinks.
2. Having sex with an attractive person you have just met.
3. Drinking to the point of intoxication.
4. Going home with an attractive person you just met at a party.

(Pro) Attitudes toward Assuming Sexual Consent, Sexual Consent Scale, Revised (Humphreys, 2011)

1. I think it is okay to assume consent and proceed sexually until the partner indicates "no."
2. If a sexual request is made and the partner indicates "no," I feel that it is okay to continue negotiating the request.
3. I think nonverbal behaviors are as effective as verbal communication to indicate sexual consent.
4. Not asking for sexual consent is not really a big deal.
5. In making a sexual advance, I believe that it is okay to assume consent unless you hear a "no."
6. I believe it is enough to ask for consent at the beginning of a sexual encounter.
7. I believe that sexual intercourse is the only sexual activity that requires explicit verbal consent.

Rape Victim Empathy (Deitz et al., 1982)

Circle the number below each pair of statements that comes closest to your opinion.

Please only circle ONE number per pair of statements.

A. If I were a member of the jury in a sexual assault trial, I would probably be more likely to believe the woman's testimony than the man's, since it takes a lot of courage on the woman's part to accuse the man of rape.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. If I were a member of the jury in a sexual assault trial, I would probably be more likely to believe the man's testimony than the woman's, since rape is a charge that is difficult to defend against, even if the man is innocent.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

A. In deciding guilt or innocence in a sexual assault case, it is more important to know about the past sexual activity of the alleged victim than the past sexual activity of the defendant.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. It is more important to know about the past sexual activity of the defendant than the past sexual activity of the alleged victim in deciding guilt or innocence in a sexual assault case.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

A. I would find it easier to empathize with the shame and humiliation a man on trial for sexual assault might feel than with the feelings the alleged victim might have.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. I would find it easier to empathize with the shame and humiliation the alleged victim might feel than with the feelings a man on trial for sexual assault might have.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

A. In deciding whether a sexual assault has occurred or not, the burden of proof should rest with the woman, who should prove that it actually occurred.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. In deciding whether a sexual assault has occurred or not, the burden of proof should rest with the man, who should prove that it has not actually occurred.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

A. After making an accusation of sexual assault, I think the woman would suffer more emotional torment in dealing with the police than the man would.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. After being accused of sexual assault, I think the man would suffer more emotional torment in dealing with the police than the woman would.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

A. When sexual assault trials are publicized in the news and online, I feel the alleged victim suffers more emotional trauma from the publicity than the alleged rapist.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

B. When sexual assault trials are publicized in the news and online, I feel the alleged rapist suffers more emotional trauma from the publicity than the alleged victim.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

Video Game Experience

1. Which types of video games do you play most often? Check all game types that apply.
Action, first-person-shooter, sports, fighting, adventure, strategy, role playing games, puzzle, racing, music, dancing
2. About how many hours per week do you spend playing video games in general?
3. About how many hours per week do you spend playing action video games (e.g., first-person shooter, adventure, fighting)?
4. Please list the video games that you play most often.
5. In general, do you prefer first-person or third-person playing modes?
6. How much did you enjoy playing the game?
7. How would you rate the quality of the graphics for this game?
8. How much do you think the average video game costs?
9. How much do you think a fully developed game similar to the one you just played would cost?

Aggression Questionnaire – Short Form (Buss & Perry, 1992)

1. Given enough provocation, I may hit another person. (P)
 2. I often find myself disagreeing with people. (V)
 3. At times I feel I have gotten a raw deal out of life. (H)
 4. There are people who have pushed me so far that we have come to blows. (P)
 5. I can't help getting into arguments when people disagree with me. (V)
 6. Sometimes I fly off the handle for no good reason. (A)
 7. Other people always seem to get the breaks. (H)
 8. I have threatened people I know. (P)
 9. My friends say that I'm somewhat argumentative. (V)
 10. I have trouble controlling my temper. (P)
 11. I wonder why sometimes I feel so bitter about things. (H)
 12. I sometimes feel like a powder keg ready to explode. (A)
- Subscales: P=physical; V=verbal; A=anger; H=hostility

Study 4 Dependent Measures

Psychological Immersion Questionnaire

Engagement (Mental Immersion), Temple Presence Inventory (Lombard et al., 2009)

10. To what extent did you feel mentally immersed in the experience?
11. How involving was the experience?
12. How completely were your senses engaged?
13. To what extent did you experience a sensation of reality?
14. How exciting was the experience?
15. How engaging was the experience?
16. How relaxing was the experience? (reverse)

Frustration (Lin, 2013)

17. It was a very frustrating experience.
18. I experienced very little frustration.
19. Do you think you played on easy, medium, or hard mode?

Identification with Character

General Identification with Character (Hefner et al., 2007)

1. I almost had the feeling of actually being the character.
2. I had the feeling I was the game character more so than myself.
3. When I played the game, I imagined myself in the character's place.

Wishful Identification with Character (Eyal & Rubin, 2003)

4. I think it would be fun to have a life more like my character's life.
5. I wish I could be more like my character.
6. I'd like to do the kinds of things my character did in the game.

Hostile Sexism (Glick & Fiske, 1996)

1. Most women interpret innocent remarks or acts as sexist.
2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
3. Women exaggerate problems they have at work.
4. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.*
5. Women are too easily offended.
6. Women seek to gain power by getting control over men.

Willingness to Engage in Risk Behaviors

1. Driving after feeling a slight buzz from a few alcoholic drinks.
2. Having unprotected sex with someone you have been seeing for a few weeks.
3. Drinking to the point of intoxication.
4. Plagiarizing from a webpage while writing a term paper.
5. Going home with an attractive person you just met at a party.
6. Smoking marijuana at an off-campus party.
7. Having sex without a condom with a sexually attractive person you just met.
8. Cheating off the person sitting next to you during an exam.
9. Smoking marijuana at an outdoor music festival.
10. Hooking up with a sexually attractive person while you're in a committed relationship with someone else.

11. Riding in a car with a friend who seems slightly buzzed from drinking alcohol.
12. Drink from an open container of alcohol while driving a car.

(Pro) Attitudes toward Assuming Sexual Consent, Sexual Consent Scale, Revised (Humphreys, 2011)

1. I think it is okay to assume consent and proceed sexually until the partner indicates "no."
2. If a sexual request is made and the partner indicates "no," I feel that it is okay to continue negotiating the request.
3. I think nonverbal behaviors are as effective as verbal communication to indicate sexual consent.
4. Not asking for sexual consent is not really a big deal.
5. In making a sexual advance, I believe that it is okay to assume consent unless you hear a "no."
6. I believe it is enough to ask for consent at the beginning of a sexual encounter.
7. I believe that sexual intercourse is the only sexual activity that requires explicit verbal consent.

Rape Victim Empathy (Deitz et al., 1982)

Circle the number below each pair of statements that comes closest to your opinion.

Please only circle ONE number per pair of statements.

C. If I were a member of the jury in a sexual assault trial, I would probably be more likely to believe the woman's testimony than the man's, since it takes a lot of courage on the woman's part to accuse the man of rape.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. If I were a member of the jury in a sexual assault trial, I would probably be more likely to believe the man's testimony than the woman's, since rape is a charge that is difficult to defend against, even if the man is innocent.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

C. In deciding guilt or innocence in a sexual assault case, it is more important to know about the past sexual activity of the alleged victim than the past sexual activity of the defendant.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. It is more important to know about the past sexual activity of the defendant than the past sexual activity of the alleged victim in deciding guilt or innocence in a sexual assault case.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

C. I would find it easier to empathize with the shame and humiliation a man on trial for sexual assault might feel than with the feelings the alleged victim might have.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. I would find it easier to empathize with the shame and humiliation the alleged victim might feel than with the feelings a man on trial for sexual assault might have.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

C. In deciding whether a sexual assault has occurred or not, the burden of proof should rest with the woman, who should prove that it actually occurred.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. In deciding whether a sexual assault has occurred or not, the burden of proof should rest with the man, who should prove that it has not actually occurred.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

C. After making an accusation of sexual assault, I think the woman would suffer more emotional torment in dealing with the police than the man would.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. After being accused of sexual assault, I think the man would suffer more emotional torment in dealing with the police than the woman would.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

C. When sexual assault trials are publicized in the news and online, I feel the alleged victim suffers more emotional trauma from the publicity than the alleged rapist.

I prefer Statement A:

6 5 4 3 2 1 0
Extremely Quite a bit Slightly Neutral

D. When sexual assault trials are publicized in the news and online, I feel the alleged rapist suffers more emotional trauma from the publicity than the alleged victim.

I prefer Statement B:

1 2 3 4 5 6
Slightly Quite a bit Extremely

State Arousal (Anderson et al., 1995)

How well do each of these words describe how you feel right now?

- | | | | |
|------------------------|---------------|----------------------|------------------------|
| 1. active | 8. excited | 15. weary | 22. worn-out |
| 2. energetic | 9. sharp | 16. sexually aroused | 23. sleepy |
| 3. lively | 10. weak | 17. dull | 24. quiet |
| 4. vigorous | 11. hungry | 18. forceful | 25. fatigued |
| 5. sexual | 12. drowsy | 19. tired | 26. physically aroused |
| 6. emotionally aroused | 13. exhausted | 20. alert | 27. inactive |
| 7. depressed | 14. sluggish | 21. powerful | 28. slow |

Trait Hostility

- At times I feel I have gotten a raw deal out of life.
- Other people always seem to get the breaks.
- I wonder why sometimes I feel so bitter about things.

Video Game Experience

- Which types of video games do you play most often? Check all game types that apply. Action, first-person-shooter, sports, fighting, adventure, strategy, role playing games, puzzle, racing, music, dancing
- About how many hours per week do you spend playing video games in general?
- About how many hours per week do you spend playing action video games (e.g., first-person shooter, adventure, fighting)?
- Please list the video games that you play most often.
- In general, do you prefer first-person or third-person playing modes?
- How much did you enjoy playing the game?
- How would you rate the visual quality of the environment for this game?
- How would you rate the visual quality of visual quality of the characters in this game?
- How would you rate the quality of the controls for this game?
- How much do you think the average video game costs?
- How much do you think a fully developed game similar to the one you just played would cost?

Study 5 Dependent Measures

Psychological Immersion Questionnaire

Engagement (Mental Immersion), Temple Presence Inventory (Lombard et al., 2009)

1. To what extent did you feel mentally immersed in the experience?
2. How involving was the experience?
3. How completely were your senses engaged?
4. To what extent did you experience a sensation of reality?
5. How exciting was the experience?
6. How engaging was the experience?
7. How relaxing was the experience? (reverse)

Frustration (Lin, 2013)

8. It was a very frustrating experience.
9. I experienced very little frustration.
10. What difficulty level do you feel you played on? (higher level indicates greater difficulty, 1 to 5)

Identification with Character

General Identification with Character (Hefner et al., 2007)

1. I almost had the feeling of actually being the character.
2. I had the feeling I was the game character more so than myself.
3. When I played the game, I imagined myself in the character's place.

Wishful Identification with Character (Eyal & Rubin, 2003)

4. I think it would be fun to have a life more like my character's life.
5. I wish I could be more like my character.
6. I'd like to do the kinds of things my character did in the game.

Hostile Sexism (Glick & Fiske, 1996)

1. Most women interpret innocent remarks or acts as sexist.
2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
3. Women exaggerate problems they have at work.
4. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.*
5. Women are too easily offended.
6. Women seek to gain power by getting control over men.

Willingness to Engage in Risk Behaviors

1. Driving after feeling a slight buzz from a few alcoholic drinks.
2. Drinking to the point of intoxication.
3. Smoking a cigarette at a party.
4. Driving 10 miles over the speed limit.
5. Smoking marijuana at an off-campus party.
6. Accepting a cigarette from a friend at a party.
7. Smoking marijuana at an outdoor music festival.
8. Riding in a car with a friend who seems slightly buzzed from drinking alcohol.
9. Driving 20 miles over the speed limit.

Willingness to Have Sex Without a Condom

Imagine you have an opportunity to have sex with someone you find sexually attractive. Everything feels “right” to you. How willing would you be to have sex with this person if:

1. You have been dating for a few weeks, but now that you have an opportunity to have sex, you do not have a condom.
2. You have engaged in safer sex with this person in the past but at this moment you do not have a condom.
3. Neither of you have a condom but this individual expresses a desire to have sex anyway.
4. You or your partner is on birth control but you have no condoms.

Willingness to Engage in Objectifying Sex

Imagine you have an opportunity to have casual sex with someone you find sexually attractive. How willing would you be to have casual sex with this person, if the following were true?

1. The other individual has feelings for you that you do not share.
2. You are interested in this person for their body but not their mind.
3. This individual will probably want a relationship with you, but you do not feel the same.
4. You have no intention of getting to know this person better if you have sex.

Women Like Force, Sexual Beliefs Scale (Muehlenhard & Felts, 1998)

1. Girls like it when guys are a little rough with them.
2. Girls think it is exciting when guys use a little force on them.
3. By being dominated, girls get sexually aroused.

State Arousal (Kroner & Reddon, 1992; PANAS-X, Watson & Clark, 1994)

How well do each of these words describe how you feel right now?

- | | | | |
|------------------------|---------------|----------------------|------------------------|
| 1. active | 10. proud | 19. hostile | 28. dull |
| 2. energetic | 11. depressed | 20. weary | 29. annoyed |
| 3. lively | 12. excited | 21. drowsy | 30. physically aroused |
| 4. vigorous | 13. upset | 22. strong | 31. guilty |
| 5. sexual | 14. alert | 23. sexually aroused | 32. mad |
| 6. emotionally aroused | 15. sharp | 24. nervous | 33. attentive |
| 7. jittery | 16. weak | 25. angry | |
| 8. tired | 17. irritable | 26. forceful | |
| 9. sensual | 18. sluggish | 27. exhausted | |

Character Perceptions

strong, competent, skilled, successful, dominant, forceful, violent, competitive
good guy/bad guy, immoral/moral, pro-social/antisocial, villainous/heroic

Video Game Experience

1. Which types of video games do you play most often? Check all game types that apply. Action, first-person-shooter, sports, fighting, adventure, strategy, role playing games, puzzle, racing, music, dancing
2. About how many hours per week do you spend playing video games in general?
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5. In general, do you prefer first-person or third-person playing modes?
6. How much did you enjoy playing the game?
7. How would you rate the visual quality of the environment for this game?
8. How would you rate the visual quality of visual quality of the characters in this game?
9. How would you rate the quality of the controls for this game?
10. How much do you think the average video game costs?
11. How much do you think a fully developed game similar to the one you just played would cost?