

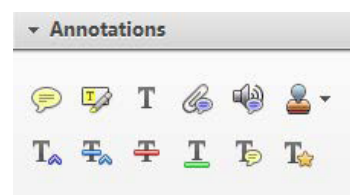
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Examining the Effects of Exposure to a Sexualized Female Video Game Protagonist on Women's Body Image

AQ: au
AQ: 1

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Whether sexualization of female characters in video games impacts women players' body satisfaction and aggression toward other women remains an issue of debate. In the current study, female players were randomly assigned to play either a more or less sexualized avatar in a *Tomb Raider* game. Participants also reported on their self-objectification and body dissatisfaction, as well as hostility and aggression toward a female confederate. Results indicated that exposure to a sexualized avatar in a video game did not influence any outcomes for female participants. These results indicate that, at least for video games, exposure to sexualized females may not have a substantial impact on female players.

Public Policy Relevance Statement

Many individuals are worried that sexualization in video games may increase female players' body dissatisfaction. Contrary to expectations, results from the current study did not find that sexualization increased body dissatisfaction or aggression toward other women. Media influences from video games appear to be minimal.

Keywords: video games, sexualization, body image

According to the American Psychological Association Task Force on the Sexualization of Girls (2007), a girl or woman is sexualized when she is reduced to her sexual appeal, appearance, or behavior, and other personal characteristics are ignored, or when sexuality is imposed on a person in a gratuitous manner (i.e., they prefer to be valued for other aspects of their identity other than their sexual appeal). Content analyses show that women are frequently portrayed as sexual objects in magazines, movies, and TV (Aubrey & Frisby, 2011; Stankiewicz & Rosselli, 2008). Objectification theory (Fredrickson & Roberts, 1997) argues that frequent exposure to sexually objectifying media messages socializes women to turn this sexualization inward, engaging in self-objectification. Self-objectification involves valuing one's body in terms of its appearance rather than its competence, thinking about

one's appearance primarily from the perspective of others, and treating one's body as if it is capable of representing the self (Calogero, 2011; Fredrickson & Roberts, 1997; Lindner & Tantleff-Dunn, 2017). In addition, self-objectification may involve the conceptualization of individual body parts, especially sexualized areas, as representative of the entire woman (Gervais, Vescio, Förster, Maass, & Suitner, 2012).

A large body of experimental and cross-sectional literature indicates that the primary consequence of self-objectification is body image disturbance, particularly in the form of body shame and body dissatisfaction (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Harper & Tiggemann, 2008; Lindner, Tantleff-Dunn, & Jentsch, 2012; Tiggemann & Lynch, 2001). These negative body image states in turn contribute to the development of mental health symptoms including disordered eating behavior, depressive symptoms, and sexual dysfunction (see Tiggemann, 2011 for a review). A comprehensive study by Tiggemann and Williams (2012) demonstrated that the objectification theory model was highly effective in predicting disordered eating, accounting for 93% of the variance, moderately effective in predicting depression, accounting for 60% of the variance, and minimally effective in predicting sexual functioning, accounting for 15% of the variance. Beyond mental health risks, self-objectification is linked to decreased cognitive performance, decreased awareness of internal bodily states, and fewer flow experiences (see Quinn, Chaudoir, & Kallen, 2011 for a review). Sexual objectification, the

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This is a preregistered study, and the preregistration can be found at <https://osf.io/r9w3x/>. Given that the authors come from different traditions and beliefs regarding the potential impact of media on self-objectification, this study was intended as an adversarial collaboration.

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precursor to self-objectification, can also have negative implications on the career paths and workplace environment for women, including decreased positive affect, increased negative affect, and decreased task performance (Gervais, Wiener, Allen, Farnum, & Kimble, 2016; Wiener, Gervais, Allen, & Marquez, 2013). Taken together, these findings highlight the pervasive impact that women's experience of sexual and self-objectification may have on their lives. Although sexual objectification can influence women of all ages, such influences may be particularly strong among teen girls, who are becoming aware of sexual appeal as a perceived value quality and often find this to be a focus of competition between girls (Ferguson, Muñoz, Garza, & Galindo, 2014). However, for media, these relationships are less certain. Most studies are conducted with college-aged women, and no critical period for effects has emerged in the literature (Ferguson, 2013).

The consequences of self-objectification are not limited to the individual. There is correlational research to suggest that women who engage in self-objectification are also more likely to objectify other women (Lindner et al., 2012; Strelan & Hargreaves, 2005), contributing to the occurrence of sexualization on a cultural level. Other correlational research suggests that individuals who sexually objectify women are likely to hold negative attitudes toward them (Vaes, Paladino, & Puvia, 2011) and perceive them as less competent (Johnson & Gurung, 2011).

Media messages are viewed by some scholars as one of the primary vehicles for transmission of the sexualization of women. Many forms of American media have been shown to convey objectification, from sexualized music videos to video games and magazines (Aubrey, Hopper, & Mbure, 2011; Hatton & Trautner, 2011; Kistler & Lee, 2009; Ward, Reed, Trinh, & Foust, 2014). Results of studies of the effects of exposure to sexually objectified and appearance-related media are mixed. Some studies find evidence for small effect sizes (r s of approximately .15), indicating that exposure to appearance-related media has negative consequences for women's body image. By contrast, other studies illustrate that for most women without significant preexisting body image disturbance, the effects are negligible (see Ferguson, 2013, and Grabe, Ward, & Hyde, 2008 for meta-analytic reviews). Some scholars have contended that methodological issues creating spurious effects are common in media effects research (Want, 2014), and using more sophisticated method reduces effect sizes (Whyte, Newman, & Voss, 2016). In addition, the majority of studies examining the relationship between appearance-related media and body image involve convenience samples of mostly White female college students, and thus, the results may not be generalizable to other populations.

Video games have been studied less frequently than other media; however, a content analysis indicated that female video game characters are more likely than male characters to be depicted as partially nude, in sexually revealing clothing, or as unrealistic with regard to the proportions of one's body (Downs & Smith, 2010; Martins, Williams, Ratan, & Harrison, 2011), although representations of female characters have improved somewhat more recently (Lynch, Tompkins, van Driel, & Fritz, 2016). A more recent content analysis indicated that video games use sexuality and sexualization to indicate capability in female characters, especially in fighting games (Lynch et al., 2016). The result of this use of overt sexiness to signify capability is unstudied as of yet.

With regard to body image and video games, current studies are very few. One experimental study suggested that exposure to a thin

female character during video game play led to decreased state body esteem in women (Barlett & Harris, 2008). However, the sample was very small ($n = 32$) and the potential for demand characteristics, or for participants to change their behavior to fit their impressions of the study, given the salience of appearance messages during the procedure and the absence of distractor tasks (see Want, 2014). Another study found that those controlling sexualized avatars are more likely to have higher levels of self-objectification than those controlling nonsexualized avatars (Fox, Ralston, Cooper, & Jones, 2015). However, another study by the same group (Fox, Bailenson, & Tricase, 2013) yielded more curious results regarding rape myth acceptance (i.e., the endorsement of false beliefs about rape and rape victims, such as women who dress in sexy attire are consenting to have sex with any man). In this study, although women playing as a sexualized avatar with their own face had high rape myth acceptance, women playing as a sexualized avatar with another woman's face had the *lowest* rape myth acceptance, lower even than that for the nonsexualized control groups.

The consequences of sexualization of women in the media have also been studied in regard to men. Results have been inconsistent, with more studies not finding effects than those finding them. For example, in one experimental study of American college students with a female majority, video games depicting sexual objectification of women and violence against women led to an increase in the perpetuation of rape myths for men but not women (Beck, Boys, Rose, & Beck, 2012). However, a follow-up study by the same research group examining American college men found the opposing effect, namely, playing a sexualized game led to *decreased* rape myth acceptance (Beck & Rose, 2018). Another study found ambiguous results. Men who played sexist video games were more likely to have a higher level of benevolent sexism (the belief that women are morally superior and must be protected by men) than those who did not (Stermer & Burkley, 2015), but no differences were seen in regard to hostile sexism. Further, the results for benevolent sexism are hard to interpret given that the questions are worded such as that individuals may have answered in such a manner as to be trying to avoid hostile sexism. One study of Italian youth initially suggested that, using a complex and nonpreregistered statistical analysis, sexist games might indirectly lead boys to show decreased empathy toward women (Gabbadini, Riva, Andrighetto, Volpato, & Bushman, 2016). However, when independently analyzed, it was found that these conclusions could not be supported (Ferguson & Donnellan, 2017). Furthermore, the original authors had not randomly assigned the youth to conditions, such that all of the youngest youth were in the sexist game condition, thereby conflating age with condition. One high-quality 3-year longitudinal study of gamers likewise found little impact of sexist gameplay on sexist attitudes (Breuer, Kowert, Festl, & Quandt, 2015). Few other longitudinal studies have considered this issue, and this study may not be generalizable beyond its German sample. Likewise, few studies have examined direct aggression toward women as an outcome of sexualization in video games as opposed to attitudinal outcomes such as rape myth acceptance.

At present, there are fewer studies of impact on female players than studies on sexualized video games' impact on male players. This may reflect the stereotype that gaming is a male activity, but increasing proportions of gamers are now female (Chess, 2017).

AQ: 2

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Those studies that do exist often do not use distractor tasks to limit demand characteristics, nor do they carefully match stimuli conditions to be as similar as possible (see [Want, 2014](#) for discussion). Thus, more data are clearly needed.

The aim of the current study was to experimentally investigate the effects of exposure to a sexualized female video game protagonist on women's body image and attitudes toward other women. Although sexualized versus nonsexualized female protagonists have been studied before, the focus has been on gender stereotyping and female self-concept or on men's views and how this changes how men view and objectify women ([Behm-Morawitz & Mastro, 2009](#)). This study will contribute to the body of literature regarding the effects of media on body image by studying video games rather than the more frequently studied media outlets (e.g., TV and magazines; [Ferguson, 2013](#); [Grabe et al., 2008](#)). In addition, this study investigates not only self-objectification and body image disturbance as consequences of exposure to images of a sexualized woman but also the potential for negative attitudes and/or aggression toward women to arise as a result of such exposure. This is important, given the previously cited literature, which suggests that those who are sexually objectified are perceived less positively ([Johnson & Gurung, 2011](#); [Vaes et al., 2011](#)), as well as studies examining the effects of sexually objectifying, violent video games on rape myth acceptance but not on aggressive behavior itself ([Beck et al., 2012](#); [Beck & Rose, 2018](#)).

Hypotheses for the current study are as follows:

- (1) Participants exposed to a sexualized female video game protagonist will experience increased state self-objectification (Hypothesis 1), body shame, and body dissatisfaction (Hypothesis 2) relative to participants exposed to a nonsexualized female video game protagonist. These effects will hold when controlling for trait self-objectification.
- (2) Participants exposed to a sexualized female video game protagonist will behave more aggressively toward a female research assistant (Hypothesis 3) and hold more negative attitudes toward her than participants exposed to a nonsexualized female video game protagonist (Hypothesis 4). These effects will hold when controlling for trait levels of hostile sexism.

Method

Participants

Participants were recruited from lower division psychology courses at a small liberal arts university in the Southeastern United States. To participate, students needed to be 18 years of age or older and identify as female. Our original sample size was $n = 98$; however, nine of these individuals did not fill out one measure (the Self-Objectification Questionnaire [SOQ] described in the following text) correctly and were not included on analyses involving that measure. These individuals were evenly distributed across experimental and control conditions. The average age of participants was 19.14 ($SD = 1.13$). Regarding race, 68.4% identified as White, 8.2% identified as Asian, and 7.1% identified as African American, with the remainder in other categories or declining to

answer. Regarding Hispanic ethnicity, 13.3% identified as Hispanic. Regarding video game-playing history, 31.6% of our sample reported no current time spent playing video games. Mean number of weekly hours spent gaming was 2.59 ($SD = 3.86$). In the current study, we did not access for familiarity with the Lara Croft series specifically. We wished to avoid too many questions that might provoke demand characteristics and were confident that randomization would eliminate familiarity issues across conditions.

Materials/Measures

Video game manipulation. Participants were randomized to play one of two video games: *Lara Croft: Tomb Raider Underworld*, which was used for the sexualized (experimental) condition, and *Lara Croft: Tomb Raider*, which was used for the nonsexualized (control) condition. In the sexualized condition, participants began playing from the point at which Lara Croft's character was wearing a bathing suit that included bikini bottoms and a form-fitting long-sleeved wetsuit top. The bikini bottoms left Lara Croft's legs very exposed, and the wetsuit top was portrayed in a way that emphasized Lara's waist, hips, and breasts. One of the indicators of sexualization is clothing that is not appropriate for the task to be completed ([American Psychological Association Task Force on the Sexualization of Girls, 2007](#)). Although the bathing suit itself was appropriate, the level of sexualization in an otherwise task- and adventure-focused setting would have been atypical, but the bathing suit was not so gratuitously sexualized that it may have led participants to guess the hypotheses. In the nonsexualized condition, Lara Croft was wearing cargo pants and a tank top that, although fitted, did not place extraordinary emphasis on her body shape and dimensions and that was very appropriate to the task at hand.

State self-objectification. As in other experimental studies where measurements of state self-objectification were needed ([Fredrickson et al., 1998](#)), participants completed the Twenty Statements Test (TST; [Bugental & Zelen, 1950](#); [Kuhn & McPartland, 1954](#)) before and after exposure to the video game to measure state self-objectification. In the TST, participants are asked to complete the statement "I am . . ." by listing attributes to describe themselves. Two independent raters coded participant responses. We adopted a coding scheme similar to that of [Fredrickson and colleagues' \(1998\)](#) study, though we added an additional category for roles. The coding scheme was as follows: (a) body shape and size (e.g., "I am overweight" and "I am out of shape,"); (b) other physical appearance (e.g., "I am blond" and "I am ugly,"); (c) physical competence (e.g., "I am strong" and "I am energetic,"); (d) traits or abilities (e.g., "I am friendly," and "I am intelligent,"); (e) states or emotions (e.g., "I am tired" and "I am self-conscious,"); (f) roles, and (g) uncodable or illegible. Interrater reliability was assessed by calculating the percent agreement between raters (99.2%), and disagreements were resolved by discussion among the raters and first author. Consistent with [Noll and Fredrickson's \(1998\)](#) conceptualization of self-objectification as emphasizing physical appearance in one's self-evaluations, we calculated the proportion of each participants' responses that reflected appearance (i.e., weight and shape or other physical appearance), with higher scores reflecting greater self-objectification.

State body image. State body image refers to how participants feel about their bodies at the time of the assessment, rather than in general. It was measured before and after exposure to the video game using the Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002). The BISS is a six-item measure of participants' feelings about their bodies, including satisfaction with overall appearance, satisfaction with body size and shape, satisfaction with weight, current feelings about one's looks relative to how one usually feels, and evaluations of one's appearance relative to the average individual. Each item is rated on a 9-point rating scale, with anchors that vary to reflect item content. Given the centrality of body shame to objectification theory, we also designed a single item to assess body shame that was modeled after the original BISS items. In initial scale development studies, BISS scores had high internal consistency and were correlated with other measures of body image (Cash et al., 2002). Coefficient α in the current sample was .91 at pretest and .94 at posttest.

Aggressive behavior toward women. Aggressive behavior toward women was measured using the ice-water task, also called the cold compressor task (Quartana & Burns, 2007; Vasquez, Denson, Pedersen, Stenstrom, & Miller, 2005). In the ice-water task, the participant is asked to place the hand of a confederate in a bucket of ice water under the guise of assisting with a secondary experiment about pain tolerance. The participant decides whether to place the confederate's hand in the water, and while their hand is in the water, the confederate makes a few standardized comments about how cold and uncomfortable the water is. The participant decides when the confederate can remove their hand from the water, and the amount of time the participant leaves the confederate's hand in the water represents their level of aggression. To measure aggression toward women, our confederate was always a woman. Although instructing someone to place their hand in ice water is a very mild form of aggression, a behavioral measure is less likely to be affected by social desirability. During debriefing, three participants revealed they had heard of the ice-water measure previously and were dropped from analyses with this measure.

Negative attitudes toward women. Negative attitudes toward women were measured using a semantic differential scale (Lavrakas, 2008). Participants were asked to rate the female research assistant on a number of attributes before and after video game play to determine whether exposure to the sexually objectified video game protagonist led participants to view the research assistant in a more objectified and less competent light. Fourteen attributes were included in the scale, with five reflecting objectification or competence (e.g., competent–incompetent and attractive–unattractive) and nine distractor items indicating more general evaluations (e.g., nice–mean and feminine–masculine). Items were presented with the adjectives at either end of a 7-point scale presented without numbers. Unexpectedly, all evaluation items, whether objectified or not, were highly correlated (α s were .85 at pre and .88 at post). This suggested that evaluation was consistent across objectification and nonobjectification terms, and, as such, full scale scores were subsequently used.

Trait self-objectification. Trait-level self-objectification was measured using the SOQ (Noll & Fredrickson, 1998). The SOQ is a 10-item measure of an individual's tendency to evaluate their bodies in terms of what it looks like rather than what it can do. Participants are shown a list of 10 body attributes, five for physical

appearance (e.g., weight and sex appeal) and five for physical competence (e.g., health and strength). They are asked to rank the attributes from most to least important in determining their physical self-concept. Total scores are calculated for the appearance items and the competence items, and then the competence score is subtracted from the appearance score to yield a total. Total scores range from -25 to $+25$, with higher scores reflecting greater emphasis on appearance or greater self-objectification. There is evidence for the reliability and validity of the measure (Fredrickson et al., 1998; Noll & Fredrickson, 1998), and it has been used as a measure of trait self-objectification in a number of experimental investigations of objectification theory (Fredrickson et al., 1998; Quinn, Kallen, Twenge, & Fredrickson, 2006).

Hostile sexism. The Hostile Sexism subscale of the Ambivalent Sexism Inventory (ASI-HS; Glick & Fiske, 1996) was administered to assess participants' trait-level negative attitudes toward women. Participants rate each of the scale's 11 items on a 6-point scale ranging from 0 (*disagree strongly*) to 5 (*agree strongly*). Sample items include "Most women interpret innocent remarks or acts as being sexist" and "When women lose to men in a fair competition, they typically complain about being discriminated against." After reverse-scoring the positively worded items, a mean score is obtained. Higher mean scores reflect more negative attitudes toward women. A series of studies by Glick and Fiske (1996) provide evidence for the reliability and validity of test scores. Coefficient α reliability for the current sample was .84.

Distractor measures. To minimize the likelihood of hypothesis guessing, we utilized two measures for distraction. We administered the Balanced Inventory of Desirable Responding Impression Management Scale (Paulhus, 1991), which consists of 20 items about personal behaviors rated on a 7-point scale ranging from 1 (*not true*) to 7 (*very true*). We also administered a brief memory task created for the purposes of this study. Participants were read a list of words over three trials and were asked to engage in free and cued recall. Words in this task were completely unrelated to study hypotheses (e.g., desk or banana). Neither distractor measure was scored.

Demographics. The demographics questionnaire was administered at the conclusion of the session. Participants were asked to report their age, race, and ethnicity. They were also asked to list their three favorite video games and indicate how frequently they played each one and to estimate the number of hours per week they play video games. Participants were also asked to describe what they remembered about the video game they played in the study, to ensure that they were paying attention.

Procedure

All study procedures were approved by the university's institutional review board. Participants were randomly assigned to the experimental (i.e., sexualized video game protagonist) or control (i.e., nonsexualized video game protagonist) condition before their arrival. When participants arrived to the lab, they were greeted by a female research assistant. Research assistants were dressed in street clothes without any overt messaging regarding appearance (e.g., jeans and a plain T-shirt). The research assistant obtained informed consent. Next, the research assistant instructed the participant to complete pretest measures: the TST, the BISS, and the Semantic Differential. After these were complete, the research

assistant instructed the participant to play the video game that corresponded to their assigned condition for 30 min. The research assistant provided minimal instruction regarding the video game, but a tutorial sheet was available to participants, and participants could ask questions about video game play as needed. After playing the game for 30 min, the research assistant asked the participant to complete a memory distractor task that involved memorizing lists of words unrelated to video games, gender, or sexualization. This task was included to reduce the potential for demand characteristics. The research assistant then informed the participant that we were conducting a secondary experiment in pain tolerance and asked if they were willing to assist. Participants were then introduced to the confederate (located in a nearby office and dressed also in street clothes without overt appearance messaging), and the ice-water task was completed. Following this task, the research assistant and participant returned to the lab to complete all posttest measures: the TST, BISS, and Semantic Differential, along with the SOQ, ASI-HS, BIDR (distractor measure), and a demographics form. After completion of these measures, participants were debriefed and queried for hypothesis guessing and were given course credit as compensation for their participation. As noted earlier, three participants were eliminated from analysis in the ice-water task due to their knowledge of that task, and a fourth participant was eliminated for correct hypothesis guessing.

Results

All statistical analyses were run so as to comport with the preregistration document (link provided in the authors' note) unless specifically indicated otherwise.

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Hypotheses 1 and 2

Given the similarity of outcomes variables considered in Hypothesis 1 and Hypothesis 2, a multivariate analysis of covariance design was used to test these hypotheses. Time (pre to post on the outcome variable) was included as the within-subjects factor, condition entered as the between-subjects factor, trait self-objectification (SOQ) entered as a covariate, and state self-objectification (TST), body shame (supplemental item added to the Body Areas Satisfaction Scale), and body satisfaction (Body Areas Satisfaction Scale) entered as dependent variables. This model did not support the study hypotheses. The omnibus model for time by condition interaction, $F(3, 79) = .024$, $p = .995$, was not significant, nor were univariate tests for state self-objectification, $F(1, 81) = .060$, $p = .807$, body shame, $F(1, 81) = .012$, $p = .915$, or body satisfaction, $F(1, 81) = .001$, $p = .976$.

Because the fairly complex repeated measures multivariate analysis of covariance model inevitably reduces power, we sought to confirm these null results using Bayes factors (BF) based on independent t tests of only the postscore means for each outcome with no covariate. Such a design gives maximal power and opportunity for effects to be found. Using Bayes factors, results suggested that for state self-objectification (BF = 4.44), shame (BF = 4.52), and state body satisfaction (BF = 4.46), the null hypothesis was clearly favored over the alternative. Thus, we are confident in reporting findings that support the null for Hypothesis 1 and Hypothesis 2.

Hypothesis 3

An analysis of covariance was used to test Hypothesis 3 (aggressive behavior), with condition entered as the fixed factor, hostile sexism (Hostile Sexism Scale of the ASI-HS) entered as a covariate, and the participants' scores on the ice-water task entered as the dependent variable. Results for condition were nonsignificant, $F(2, 87) = 1.285$, $p = .260$. The individuals in the sexualized game group actually were less aggressive ($M = 19.07$, $SD = 17.50$) than were individuals in the control condition ($M = 23.94$, $SD = 19.78$), thus ruling out potential for Type II error as far the original direction of the hypothesis was concerned.

Hypothesis 4

A two-way mixed design analysis of covariance was used to test Hypothesis 4 (ratings of the research assistant), with time entered as the within-subjects factor, condition entered as the between-subjects factor, hostile sexism entered as a covariate, and semantic differential scores entered as the dependent variable. The results proved to be nonsignificant for the key time by condition interaction, $F(1, 78) = .677$, $p = .413$. These results did not meaningfully change when only the objectification items were considered, $F(1, 86) = .855$, $p = .358$. Bayes factor analyses for the overall ratings of the research assistant clearly favored the null (BF = 3.64). Results for the objectification items weakly supported the null (BF = 1.93). However, in this case, the mean objectification for the experimental group ($M = 8.60$, $SD = 3.92$) was lower than that for the control group ($M = 9.71$, $SD = 3.78$), so we are confident in noting that these results likewise do not support increased objectification of other women due to exposure to sexualized games.

Discussion

The potential impact of sexualized games on women's body satisfaction remains an issue of concern. However, few prior research articles have considered the issue. The current study examined the impact of sexualized game content on women's self-objectification, body shame, and body satisfaction as well as their increased objectification, negative attitudes, and aggression toward another woman. To our knowledge, this is the first preregistered study of its kind and the first to take the form of an adversarial collaboration, given the differing theoretical perspectives of the authors involved. Results indicated little evidence to suggest that playing a video game with sexualized content influenced any of the outcome variables. Thus, the null hypothesis appears to be correct in all cases, and results are not likely to be due to Type II error. These decisions were reinforced by the analysis of Bayes factors or inverse means (i.e., group means in opposing directions from the hypothesis) in all cases.

As to why sexualized video games had little impact on female players, this may be because participants identified the sexualized female video game protagonist as fictional and thus not a realistic source of messaging about women's bodies. Though objectification theory argues that sexual objectification occurs in part through exposure to sexualized media images, it may be that exposure to a sexualized female video game protagonist is not as salient as other forms of sexual objectification (e.g., interpersonal sexual objecti-

fiction). In addition, participants may not have viewed the video game protagonist as a realistic target for comparison. Though appearance comparison is not part of objectification theory in its original form, researchers have shown that appearance comparison does play a role in the relationships between self-objectification and body shame and body dissatisfaction (Lindner et al., 2012; Tylka & Sabik, 2010). These findings do not mean that self-objectification or appearance comparison does not occur; however, they suggest there may be nuances in the boundaries regarding women's perception of messages as sexually objectifying and where, when, and with whom women engage in appearance comparison. For instance, evolutionary theories suggest that women and girls are less likely to compare themselves to fictional media representations given the inefficiency in doing so and are more likely to socially compare with other women or girls in their social circle (Ferguson, Winegard, & Winegard, 2011). Thus, women and girls are able to differentiate the difference in importance for social comparison to fictional media representations as to real-life women and girls with whom they are in direct competition for potential romantic and sexual partners.

Our study also adds to increasing literature that fictional media in general, and video games specifically, have less impact on consumers than had previously been thought. Much of this issue had occurred on the topic of violence, wherein an increasing number of null studies have raised concerns that social science may have damaged its credibility by staking an early claim to public health impacts that could not be supported by subsequent data (Hall, Day, & Hall, 2011). We suspect that this field would benefit from being more cautious in asserting causal effects for sexualized video games until more data are available.

Naturally, one must be careful not to generalize too far from one experiment. For instance, it is possible that playing as more active versus passive female characters might have differing effects. Depictions from fictional media such as video games may have different influences than depictions in nonfiction, such as news media. Further, it is possible that tiny effects may not be discernible in brief, laboratory experiments but may nonetheless accumulate over time, although existing longitudinal data have not supported this belief (Breuer et al., 2015).

In keeping with the spirit of Whyte et al. (2016), our study was designed to reduce the potential impact of methodological weaknesses in producing false positive results (Want, 2014). These included close pairing of stimuli conditions, differing mainly in the degree of sexualization, being otherwise near-identical games, the use of the memory-task distractor task, and the cover story for the ice-water task to reduce hypothesis guessing. We suspect that, by reducing hypothesis guessing, such techniques more closely approximate population effect sizes, and we encourage future researchers to consider these. We also encourage scholars to make greater use of preregistration of study designs, which, likewise, may cut down on the rate of false positive findings. Many studies, including our own, make use of convenience samples of college women who may already be well-versed in objectification theory, potentially biasing their responses, particularly to studies with obvious demand characteristics. Studies with differing samples would certainly be welcome.

As with all studies, ours has its limitations. Our sample size is small and, indeed, smaller than we had hoped, the consequence of doing research at a smaller, liberal arts university. However, our

use of Bayes factors and examination of group means, which were, in some cases, the opposite of the hypothesized direction, gave us confidence that Type II error was not a likely explanation for our results. Although we suspect that the condition matching in our study is better than most studies in body image and media, by using two versions of the same game series, it is possible some differences in games were introduced, however small. Being able to adjust the avatar in a single game would have eliminated this issue, but in this, we were limited by our own lack of technical prowess. We welcome preregistered replications and extensions of our work and hope that future scholars will use similar methods when also testing for the impact of sexualized games on male players. In our study, we only included a female confederate/research assistant. Other studies may wish to contrast reactions to male versus female confederates.

Concluding Thoughts

Our study contributes to a body of work that suggests that societal fears of fictional media generally and sexualized video games specifically may be greater than the degree to which data can support them. We suspect that, as they often do, societal fears of new media will continue for some time, and this will reflect in the value that social science places on certain hypotheses as well, quite frankly, as certain conclusions. We express that, in such an atmosphere, Type I error potential remains quite high. This can be reduced by the use of preregistration of study designs, purposeful adversarial collaborations, standardization of study measures, distractor tasks to reduce demand characteristics, and close matching of experimental conditions. With improvements in the quality of research in this area, we may develop a clearer idea of what effects do and do not actually exist in the population.

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1

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