**Self-Objectification and Sexual Satisfaction:
A Preregistered Test of the Replicability and Robustness of
Calogero & Thompson (2009) in a Sample of U.S. Women**

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Abstract

Objectification theory has provided a useful framework for the study of women's sexual outcomes. However, little research has been conducted on the role of self-objectification in predicting sexual satisfaction. We conducted a replication of Calogero and Thompson (2009a), which reported a direct relationship between self-surveillance and sexual satisfaction, and expanded upon their work. We tested four path analysis models: Calogero and Thompson's reported and hypothesized models, and two previously untested models, all containing our variables of interest (media internalization, self-surveillance, body shame, sexual self-esteem, and sexual satisfaction). Each model was tested with the full sample ($N = 349$) and a restricted sample ($N = 127$) that met Calogero and Thompson's relationship status and sexual frequency inclusion criteria, and with and without BMI covaried. Both samples consisted of U.S. college women recruited in Fall 2019, with a mean age of $M = 19.68$ in the restricted sample. Results showed good fit for all tested models but failed to replicate the direct pathway between self-surveillance and sexual satisfaction. Instead, our models supported an indirect effect of self-surveillance on sexual satisfaction through body shame and sexual self-esteem. Findings support the role of sociocultural channels in influencing college women's body image and sexual experiences.

Keywords: self-objectification, body image, sexual satisfaction, women's sexuality

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In many sociocultural contexts, women are subject to sexual objectification of their bodies, both on an interpersonal level (see Loughnan & Pacilli, 2014 for a review) and through media images and messages (Ward, 2016). Objectification theory posits that this objectifying gaze is internalized as a result of these experiences, causing women to adopt an observer's perspective on their bodies, i.e., to engage in self-objectification (Fredrickson & Roberts, 1997). The theoretical model of self-objectification begins with instances of objectification by others, which lead to self-objectification processes and consecutively cause negative body image outcomes, such as body shame and appearance anxiety. These facets of body image are proposed to decrease sexual functioning, and by extension may decrease satisfaction with sexual experiences and facilitate a more negative sexual self-concept. The purpose of the present study was to clarify the nature of the relationship between self-objectification and sexual satisfaction in college women by conducting a preregistered replication of a relevant study (Calogero & Thompson, 2009a), as well as testing additional sociocultural models of self-objectification and sexual outcomes.

Self-Objectification and Sexual Outcomes

Body image seems to play an important role in predicting college women's sexual functioning (e.g., Cash et al., 2004; Yamamiya et al., 2006) and sexual satisfaction (e.g., La Rocque & Cioe, 2011). Indeed, one proposed component of objectification theory is a diminished awareness of physical sensations, rendering self-objectification particularly relevant to investigations of women's sexual dysfunction (Fredrickson & Roberts, 1997). Previous research has supported self-objectification (commonly operationalized as self-surveillance;

McKinley & Hyde, 1996) as a predictor of self-reported sexual functioning (Robbins & Reissing, 2018; Tiggemann & Williams, 2012; Vencill et al., 2015; Steer & Tiggemann, 2008; Lustig, 2012). Similar results have emerged demonstrating an indirect negative relationship between self-objectification and sexual satisfaction in women, with constructs such as appearance anxiety during sex (Vencill et al., 2015), body shame (Barzoki et al., 2017), and body self-consciousness during sexual activity (Claudat & Warren, 2014) mediating this relationship. Conversely, other researchers have reported direct relationships leading from women's self-objectification to decreased sexual satisfaction (Calogero & Thompson, 2009a; De Wilde et al., 2020; Edwards, 2012; Grower & Ward, 2021), making the exact nature of this relationship unclear. Sexual self-esteem may also play an important role in models of body image and sexual outcomes. While Aubrey (2007) did not observe sexual self-esteem as a significant outcome of self-surveillance, Calogero and Thompson (2009a, 2009b) and Grower and Ward (2021) found this negative pathway to be significant. More research is needed to clarify this relationship.

Current Study

Support for the role of self-objectification in predicting self-reported sexual satisfaction is robust, although the effects have often been indirect. In addition, the link between sexual self-esteem and self-objectification is not yet fully clear, making our study important in potentially relating multiple sexual outcomes to women's self-objectification experiences. We attempted to clarify the nature of the relationship between self-surveillance, a construct commonly accepted in theory and research as a behavioral presentation of self-objectification (Roberts et al., 2018), and these two sexual outcomes. To do so, we conducted a replication of Calogero and Thompson (2009a), in addition to testing new models of women's sexual outcomes. Replication is a core component of science, despite the fact that it historically has not been treated as such in

psychology and related fields (Zwaan et al., 2018). What is particularly needed are direct replications, where researchers seek to conduct new studies that use the same (or very similar) instruments and test the same claims as previously published studies. Such direct replications can provide evidence for consistency of the findings, serving as a foundation from which the subject can be further explored. In taking on this replication of Calogero and Thompson (2009a), we followed the framework for replications outlined by LeBel et al. (2019), which we describe in the Methods section.

There is also yet to be a study in this area of research that reports results from multiple statistical models of relationships between self-surveillance and sexual outcomes. This limits researchers' abilities to determine if a given model provides the best fit relative to other models and is problematic due to the often correlational nature of this research area; given that we are unable to attribute causality, it is especially important to be able to compare relationships across different models based on fit statistics. Therefore, we selected four path analysis models to estimate the relationships between the variables of interest: Calogero and Thompson's reported model (Model 1), their hypothesized model (Model 2), and two previously untested models (Models 3-4.)

In addition, few studies have been conducted that sufficiently account for the role of relationship status and sexual frequency, despite the potential importance of these variables in research on sexual outcomes. For example, sexual self-consciousness tends to be lower in coupled women (Claudat & Warren, 2014; Sanchez & Kiefer, 2007; Steer & Tiggemann, 2008; Wiederman, 2000), whereas sexual satisfaction tends to be higher (Claudat & Warren, 2014; Higgins et al., 2011; Kislev, 2020; Pedersen & Blekesaune, 2003). Similar issues arise in regard to sexual frequency. Given that recall period length has been documented to impact self-

reporting of sexual behaviors in some cases (Bogart et al., 2007; Jaccard et al., 2002; McFarlane & St. Lawrence, 1999) it is likely that how recently an individual has engaged in sexual activity could influence their self-reporting of sexual satisfaction and sexual self-esteem.

Calogero and Thompson (2009a) addressed this by designating inclusion criteria which required participants to either be single or in a relationship with a duration shorter than 10 weeks, and to have been sexually active at least twice within the past 12 weeks. To assess the possible effects of these criteria, we compared models tested using both the full sample and a restricted sample who met Calogero and Thompson's (2009a) inclusion criteria. Finally, BMI is likely related to relevant variables such as self-surveillance (Aubrey, 2007), body shame (Calogero & Thompson, 2009a; Aubrey, 2007), and sexual self-esteem (Calogero & Thompson, 2009b). Because of this, we tested each of our models with and without BMI covaried.

Notably, social media platforms have played an increasingly important role in influencing young women's self-objectification and general body image (see Holland & Tiggemann, 2016; Karsay et al., 2018; Saiphoo & Vahedi, 2019 for reviews). The impact of social media use on body image often operates through the internalization of body standards from media (e.g., Lee & Lee, 2020). Therefore, in constructing the new models, we opted to retain pathways linking media internalization to both self-surveillance and body shame, given empirical (Calogero & Thompson, 2009a; Dakanalis et al., 2015; Erchull et al., 2013; Gattino et al., 2018; Moradi et al., 2005; Rollero et al., 2018; Rousseau & Eggermont, 2018; Rousseau et al., 2017; Vandebosch & Eggermont, 2012, 2015, 2016; Vencill et al., 2015) and theoretical (Fredrickson & Roberts, 1997) support for these relationships. Because of the breadth of research supporting sexual self-esteem as a predictor of sexual satisfaction (Antičević et al., 2017; Brassard et al., 2015; Brown,

2018; Calogero & Thompson, 2009b; Menard & Offman, 2009; Peixoto et al., 2018; Schick et al., 2010) we included this pathway in Model 4.

We also tested several new pathways that, to our knowledge, have not been assessed in previous research, despite their relevance. Notably, sexual satisfaction has not to our knowledge been tested as a predictor of sexual self-esteem, despite the close relationship between these variables (e.g., Antičević et al., 2017; Menard & Offman, 2009). We therefore included this pathway in Model 3. While much research has established self-surveillance as a significant predictor of body shame (see Moradi & Huang, 2008 for a review), consistent with an objectification theory framework, the reverse relationship has not to our knowledge been tested. McKinley and Hyde (1996) proposed in their theoretical framework of objectified body consciousness that self-surveillance and body shame may operate as parallel outcomes of objectification experiences, rather than being positioned in a particular temporal sequence. While not evidence in and of itself for body shame as a precursor to self-surveillance, this does indicate potential for a different ordering of variable relationships than what is typically tested in self-objectification research (i.e., self-surveillance predicting body shame). In addition, body shame was originally defined by McKinley and Hyde as negative feelings about body size pertaining specifically to an internalization of cultural standards, similar to the construct media internalization. Therefore, placing body shame prior to self-surveillance (but after media internalization) in our proposed model is consistent with the idea that body shame is a direct result of endorsing body standards from media. Given this alternative theoretical basis, we tested this variable relationship in Model 4. Finally, little research has been conducted on the influence of media internalization on sexual self-esteem, except for Weaver and Byers (2013). While this study did not provide evidence for a significant relationship between these constructs, their

sample included only women in long-term romantic relationships. Given evidence that experiences of sexual esteem differ depending on an individual's relationship status (Antičević et al., 2017; Maas & Lefkowitz, 2015), we tested this pathway in Model 4.

The models were hypothesized as follows: In Model 1 (Calogero and Thompson's reported model), media internalization was hypothesized to lead to greater self-surveillance and body shame. Self-surveillance was hypothesized to lead to greater body shame and lower sexual self-esteem and sexual satisfaction. Body shame was also hypothesized to lead to lower sexual self-esteem and sexual satisfaction. Hypotheses were the same for Model 2 (Calogero and Thompson's hypothesized model), excluding the pathway from self-surveillance to sexual satisfaction, and with an additional pathway from sexual self-esteem to sexual satisfaction. Model 3 (our first newly tested model) was identical to Model 1 with the addition of a hypothesized pathway from sexual satisfaction to sexual self-esteem. Model 4 (our second newly tested model) was similar to Model 2, but with an additional hypothesized pathway from media internalization to sexual self-esteem as well as a reversed pathway in which body shame predicted self-surveillance.

Methods

Participants

Participants were 532 undergraduate women from a large Midwestern university who were recruited from a psychology department participant pool. Data exclusions were applied based on the criteria denoted in our preregistration analysis plan, available on the Open Science Framework¹ (<https://osf.io/awqzn/>). Twenty-eight cases were removed from participants who

¹ For transparency, we would like to note that the document detailing data exclusion criteria was uploaded to OSF after submission of the manuscript when a reviewer correctly indicated that it had mistakenly been left out. This information is present in the original registration, however.

failed both of our attention checks (e.g., “Please select ‘Mostly Agree’ as the answer to this question”). Data from cases with incomplete data for exogenous variables used in our models were also excluded: 20 participants were removed for failing to report valid height and weight information (i.e., responses that were blank or notably out of range of height/weight means) given that these were used to calculate BMI, and data from five additional participants were excluded due to incomplete responses on the media internalization measure.

Because our path analysis models contained the sexual satisfaction variable, a measure which was only presented to participants who reported being sexually active, data from 130 non-sexually active participants were removed prior to analyses, leaving a final sample size of 349. To create the restricted sample, Calogero and Thompson’s (2009a) exclusion criteria were applied to the full sample. Participants who had been sexually active fewer than two times in the past 12 weeks and/or had been in a relationship for longer than 10 weeks were removed at this stage, leaving a total of 127 cases in the restricted sample.

Participants were required to respond “Yes” to the question “Do you identify as a woman?” in order to qualify for the study. Descriptive statistics for other demographic variables in the full sample and restricted sample are displayed in Table 1. Aside from relationship status, there are few notable differences between the sample groups. However, participants in the restricted sample were more likely to be in their first year of college and had a smaller age range than the full sample. The proportion of white participants relative to participants of color was also slightly larger in the restricted sample, and participants in this sample were more likely to have parents/guardians who had received a master’s or doctoral degree. BMI means for both groups were lower than that of women in the U.S. overall (Fryar et al., 2018), but differed by fewer than two standard deviations.

Procedure

Participants were recruited in Fall 2019 through the Research Experience Program (REP) at the university they attended, where they could view an online posting advertising the study. Only students enrolled in courses that utilized REP points had access to the recruitment materials. Participants who registered for the study were sent an email with a link to the Qualtrics survey and completed the questionnaires online after giving informed consent. Those who completed the entire questionnaire were awarded one REP point, which could be used to earn extra credit in their psychology course. Participants provided their university email addresses and student ID numbers in a survey separate from the study, and this identifying information was not connected to the study data. At the beginning of the Qualtrics survey, participants reported if they identified as a woman or not, and those who answered “No” were automatically redirected out of the survey. Those who answered “Yes” were then asked if they were, or previously had been, sexually active to determine if they would be presented with the Sexual Satisfaction measure. We allowed participants to use their own definitions of sexual activity. Primary measures were then presented in a randomized order to minimize order effects. After completing the primary measures, participants reported their relationship status, relationship length (if applicable), and recent sexual frequency. Sexual frequency was defined as the number of times they had engaged in partnered sexual activity in the past 12 weeks. Participants also completed a demographics section that inquired about their age, year in college, race/ethnicity, sexual orientation, parent/guardian educational background, height & weight (used to calculate BMI), and whether they were born in the U.S. or not.

Measures***Media Internalization***

This construct was assessed using a revised version of the Internalization-General subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3; Thompson et al., 2004). This scale assesses the degree to which an individual has internalized standards of idealized bodies portrayed in various forms of media, and includes nine items such as, “I compare my body to the bodies of people who are on TV.” Three items that discussed body standards portrayed in magazines were altered to describe social media, given cultural and technological changes that render social media more relevant to young adults (Pew Research Center, 2021). The item “I would like my body to look like the models who appear in magazines” was changed to “I would like my body to look like social media influencers.” “I do not compare my body to the bodies of people in magazines” was changed to “I do not compare my body to the bodies of people on social media”, and the item “I compare my appearance to the appearance of people in magazines” was changed to “I compare my appearance to the appearance of people on social media.” Participants rated items on a Likert scale ranging from 1 (*Definitely Disagree*) to 5 (*Definitely Agree*), with appropriate items reverse-coded. Scores were averaged into a mean score ranging from 1-5, with higher scores indicating greater internalization of appearance standards from media ($\alpha = 0.94$; $\omega = 0.93$).

Self-Surveillance

Self-surveillance was measured using the Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996), which assesses the degree to which an individual focuses on their bodily appearance using eight items. An example item is, “I think more about how my body feels than how my body looks”. Items were rated on a Likert scale ranging from 1 (*Somewhat Agree*) to 7 (*Strongly Agree*). Appropriate items were reverse coded,

and scores were averaged to create a mean score ranging from 1-7, with higher scores indicating greater levels of self-surveillance ($\alpha = 0.85$; $\omega = 0.84$).

Body Shame

Body shame was measured using the Body Shame subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996), which contains eight items assessing the degree to which one feels ashamed when they fail to maintain their ideal weight or are unhappy with their appearance. An example item is, “I feel like I must be a bad person when I don’t look as good as I could”. Items were rated on a Likert scale ranging from 1 (*Somewhat Agree*) to 7 (*Strongly Agree*), with appropriate items reverse-coded. Scores were averaged to create a mean score ranging from 1-7, with greater scores indicating more experiences of body shame ($\alpha = 0.87$; $\omega = 0.87$).

Sexual Self-Esteem

This construct was measured using Calogero & Thompson’s revision of the Rosenberg Self-Esteem Scale (Calogero & Thompson, 2009a), and includes ten items assessing an individual’s perceptions of their sexual self. An example item is, “I feel that I have a number of good sexual qualities.” Participants rated items on a Likert scale ranging from 1 (*Strongly Disagree*) to 4 (*Strongly Agree*). Appropriate items were reverse scored, and a mean score was calculated for each case, which ranged from 1-4. Higher scores indicated a more positive sexual self-concept ($\alpha = 0.90$; $\omega = 0.90$).

Sexual Satisfaction

To measure sexual satisfaction, we used the Sexual Satisfaction Scale (Dove & Wiederman, 2000), which consists of three items inquiring broadly about how satisfied an individual is with the partnered sexual encounters they have had. An example item is, “Overall,

how pleasurable have your sexual experiences with a partner been for you?” Participants responded to items using a Likert scale ranging from 1 (*Not At All*) to 5 (*Very Much*), with appropriate items reverse-coded. Mean scores were calculated, ranging from 1-5, with higher scores indicating greater overall sexual satisfaction ($\alpha = 0.88$; $\omega = 0.88$). This measure was only presented to participants who indicated at the beginning of the survey that they were sexually active at the time of the study or had been sexually active previously.

Replication Design

LeBel et al. (2019) indicated that replication studies require a) transparency in how the replications are similar to and different from the target study, b) independence between the replication team and original research team, c) transparent methods, data, and analytic processes, and d) an assessment of relevant auxiliary hypotheses. In terms of similarities and differences, both samples consisted of young women attending university, although the mean age in our restricted sample was slightly lower than that of Calogero and Thompson’s (2009a) sample ($M = 19.68$ versus $M = 22.13$). Additionally, our study was conducted in the U.S. whereas the original was conducted in the UK, with somewhat different racial/ethnic demographics.

It is also important to note the societal changes that have occurred since the publication of Calogero and Thompson’s (2009a) study, including a profound increase in social media and dating app use among young adults (Pew Research Center, 2016, 2021), which likely has implications for their sexual self-concepts and behaviors (Chansiri et al., 2020; Hanna et al., 2017; Manago et al., 2015; Tomaszewska & Schuster, 2020). However, we used the same target measures as the original study, and both studies were conducted online. In the original study, Calogero and Thompson (2009a) only included participants who had been sexually active at least twice in the prior 12 weeks and who had been in a current relationship less than 10 weeks.

Neither of these were stated as a priori inclusion criteria, and thus it is not clear to what extent the findings would be restricted to this type of sample. Accordingly, we tested the models with the full sample that did not all meet these two criteria, as well as a restricted sample that did. The full sample was more than three times larger than the original sample, but the restricted sample was only slightly larger. We consider both samples to represent replications of the original study, and by testing the models under both conditions we can assess the robustness of the findings under differing conditions.

The current research team is fully independent from the original research team, having no past collaboration or even contact between them. All materials, data, and analytic code are available at <https://osf.io/awqzn/>, allowing for full transparency and reproducibility of the findings. Finally, the only auxiliary hypotheses that are relevant to the models are the psychometric properties of the measures, all of which are widely used and have demonstrated reliability and validity.

Data Analysis

Bivariate relationships showed adequate linearity ($p < .05$), with the exception of three relationships from the restricted sample: Media internalization and sexual satisfaction, self-surveillance and sexual satisfaction, and body shame and sexual satisfaction. Upon examining Calculated Variance Inflation Factor (VIF) values, we found no evidence for multicollinearity between predictor variables. Scatterplots of the data revealed some univariate outliers for all variables except body shame, and assessment of Mahalanobis distance revealed four multivariate outliers. Upon re-running Model 1 with multivariate outliers removed, some pathway coefficients differed slightly but remained well within the estimated confidence intervals, and there was a slight decrease in model fit relative to the original model (Table 4). Univariate

normality was good according to kurtosis values, but there was evidence of deviation from multivariate normality when examining skewness and kurtosis in both the full sample and the restricted sample. Finally, the data were tested for the assumptions of uncorrelated residual term by examining residual plots, which revealed some degree of correlation between variable residuals.

As already noted, we utilized data only from participants who had complete responses for exogeneous variables (BMI and Media Internalization) in all analyses due to limitations with our statistical software.² Missing data for other variables were handled with Full Information Maximum Likelihood Estimation. This method allowed us to retain cases with incomplete data by estimating population parameters. Following preliminary data exclusions, twenty cases were found to have invalid or incomplete height/weight reporting, responses which were used to calculate BMI. Four cases in the sexually active sample had missing data for media internalization, which were removed prior to analyses. After these exclusions, two missing cases for self-surveillance remained in the overall sample, and one case in the restricted sample. All other primary variables had complete data in the final samples.

After calculating bivariate correlations, we utilized path analysis to test our hypotheses, given that it facilitates ease of comparison between models of different variable relationships. We tested each model under four sets of criteria: 1) The full sample with BMI covaried 2) The full sample with no covariates 3) The restricted sample with BMI covaried 4) The restricted sample with no covariates. Our full sample size surpassed Kline's (2015) recommendation of at least 20 cases per model parameter in the context of structural equation modeling, though our restricted sample did not. Given that there was evidence of insufficient multivariate normality in

² The R *lavaan* package requires complete data for exogeneous variables when conducting path analysis

the data, we used bootstrapping to obtain standard error values for standardized regression coefficients. To assess model fit, we calculated test statistics and p -values for the Chi-square Goodness of Fit Test with a value close to 0 and significance level of $< .05$ indicating good fit, as well as values for the Comparative Fit Index (CFI; with a value of 0.90 or greater indicating acceptable fit), Root Mean Square Error of Approximation (RMSEA; with a value of 0.06 or less indicating acceptable fit), and Bayesian Information Criterion (BIC; with the model with the lowest value demonstrating the best fit).

Results

Descriptive Statistics

Datasets and R scripts are available on OSF (<https://osf.io/awqzn/>). All reported analyses were preregistered unless explicitly indicated otherwise. Means, standard deviations, and correlations are displayed in Tables 2-3. Mean distributions for most primary variables displayed slight negative skew, indicating a pattern of higher scores on these measures. Primary variable means did not differ between the full sample and the restricted sample, except in the case of sexual satisfaction, where scores were significantly higher in the full sample ($t(239.78) = 2.3, p = .02, d = 0.23$). This is likely due to more participants in the full sample reporting being in a romantic relationship (57.3% versus 7.9%), which is typically associated with greater sexual satisfaction (e.g., Kislev, 2020). Media internalization was significantly positively correlated with self-surveillance and body shame in both sample groups. Self-surveillance and body shame were each significantly negatively correlated with sexual self-esteem and sexual satisfaction in the full sample, but only the relationship between body shame and sexual self-esteem was significant in the restricted sample. Sexual satisfaction and sexual self-esteem were positively correlated in both groups. BMI was significantly positively correlated with body shame in both

groups, but only with self-surveillance in the full sample. Differences in significance of correlations between the samples may be partially due to differing statistical power, given that there were no large differences (i.e., $> .10$) in correlation magnitude.

Path Analysis

Models with standardized regression coefficients are displayed in Figures 1-4. As previously noted, coefficients were calculated for pathways in each model tested under four sets of conditions: The full sample with BMI covaried, the full sample without BMI covaried, the restricted sample with BMI covaried, and the restricted sample without BMI covaried.

Unstandardized and standardized regression coefficients, standard errors (SEs) and confidence intervals (CIs) are displayed in Tables 4-7. Due to potential non-linearity and non-normality in the data, SEs, CIs, and p -values were calculated using bootstrapping. Model fit indices are displayed in Table 8. All models showed good fit, with CFI values all equal to one. Chi-Square and RMSEA values did not clearly differ across models, therefore we relied primarily on the BIC to assess fit. BIC values demonstrated that Model 2 (Calogero and Thompson's hypothesized model) had the best fit across the four models. Results below reflect all testing conditions except when noted.

In Model 1 (Calogero and Thompson's reported model), media internalization predicted both self-surveillance and body shame, self-surveillance predicted body shame, and body shame negatively predicted sexual self-esteem. Body shame also negatively predicted sexual satisfaction under three of the testing conditions; this pathway was not significant for the restricted sample tested without BMI covaried. Finally, BMI predicted self-surveillance and body shame for both testing groups. Pathways from self-surveillance to sexual self-esteem and sexual satisfaction in Model 1 were not significant. This was the case for all testing conditions.

Results for relevant pathways in Model 2 (Calogero and Thompson's hypothesized model) were consistent with those of Model 1, excluding the non-significant pathway from body shame to sexual satisfaction and from BMI to self-surveillance for the restricted sample. The pathway from sexual self-esteem to sexual satisfaction was significant. Model 3 showed similar patterns of significance for pathways shared with Model 1 with a few small differences. Although body shame still negatively predicted sexual self-esteem across testing criteria, pathway coefficients were smaller overall and significant only at $p > .01$ for the restricted sample. Like Model 2, BMI did not predict self-surveillance in the restricted sample. Finally, the pathway from sexual satisfaction to sexual self-esteem was significant across testing conditions.

In Model 4, pathways that appeared in Model 1 remained consistent with those findings, except that the path from BMI to self-surveillance was insignificant. Identical to Model 2, the pathway from sexual self-esteem to sexual satisfaction was significant, and the negative pathway from body shame to sexual satisfaction was not. Regarding the newly tested pathways, body shame predicted self-surveillance, but media internalization did not predict sexual self-esteem.

To assess if Calogero and Thompson's (2009a) findings were replicated in this study, we conducted unregistered analyses comparing standardized 95% CIs for Model 1 pathways tested with the restricted sample and BMI covaried to standardized regression coefficients reported in their study. While, like the present study, Calogero and Thompson found that media internalization significantly predicted self-surveillance ($\beta = .42, p < .001$), their path coefficient was just outside of our CI for this relationship ([0.43, 0.73]). Their reported pathway from internalization to body shame ($\beta = .42, p < .001$), however, was replicated in the present study ([0.20, 0.53]). The pathway from self-surveillance to body shame ($\beta = .34, p < .001$) was also replicated ([0.17, 0.55]), along with body shame to sexual self-esteem ($\beta = -.21, p < .05$) ([-0.55,

–0.16]), and body shame to sexual satisfaction ($\beta = -.29, p < .05$) ($[-0.46, -0.02]$). The relationships between self-surveillance and sexual self-esteem ($\beta = -.38, p < .001$; $[-0.19, 0.20]$) and self-surveillance and sexual satisfaction ($\beta = -.21, p < .05$; $[-0.14, 0.28]$) were not significant in the present study and did not replicate.

Summary of Model Tests

Looking across models, many hypotheses were confirmed. Media internalization consistently predicted self-surveillance and body shame, while the relationship between self-surveillance and body shame was significant bidirectionally. Body shame negatively predicted sexual self-esteem across models, though to a lesser degree in Model 3. The pathway from body shame to sexual satisfaction was only significant in Models 1 & 3 and only for three of the testing conditions. The pathway between sexual self-esteem and sexual satisfaction was significant in both directions across testing conditions (Models 2-4). However, self-surveillance did not significantly predict sexual satisfaction or sexual self-esteem under any testing conditions, inconsistent with Calogero and Thompson's (2009a) findings. Results also did not support a negative relationship between body shame and sexual satisfaction in Models 2 and 4.

In addition, the proposed direct pathway from media internalization to sexual self-esteem tested in Model 4 was not significant; only an indirect effect through body shame was shown according to unregistered analyses: $\beta = -.22, p < .001$. Finally, BMI predicted body shame in all relevant models, while self-surveillance was only selectively predicted by BMI. BMI did not significantly predict any other variables. R^2 and adjusted R^2 values for primary variables are displayed in Table 9. The models described between 3%–39% of the variance in sexual satisfaction, with Models 2 and 4 accounting for the most variance with BMI controlled: 33% in the full sample, and 39% in the restricted sample.

Unregistered Exploratory Analyses

Given the lack of independence between the full sample and restricted sample, we were unable to assess mean differences for demographic variables between the groups used to test our models. Instead, we compared means between cases in the restricted sample and those not in the restricted sample. There were no significant differences found for race/ethnicity ($\chi^2(7, N = 349) = 2.73, p = .909$), country of birth ($\chi^2(1, N = 348) = 0.64, p = .424$), sexual orientation ($\chi^2(7, N = 349) = 6.57, p = .475$), year in college ($\chi^2(4, N = 349) = 7.90, p = .095$), socioeconomic status ($\chi^2(8, N = 349) = 6.00, p = .648$), or BMI ($t(270) = -0.91, p = .360$). Age was the only demographic variable that significantly differed: $t(336.43) = 2.75, p = .006, d = 0.27$. We re-ran Model 1 with the inclusion of age as a covariate, however R^2 values did not differ from the original model by more than 1 percentage point and model fit was not noticeably improved. In addition, age did not significantly predict any variables in the model.

We ran a series of Welch's t -tests of unequal variances to determine if primary variable means differed between participants who were in relationships and those who were not. Results indicated that mean scores did not differ between relationship groups for media internalization ($t(316) = 0.48, p = .631$), self-surveillance ($t(332) = 1.52, p = .128$), or body shame ($t(317) = 1.46, p = .147$). However, sexual self-esteem significantly differed between single ($M = 2.96, SD = 0.57$) and coupled ($M = 3.08, SD = 0.53$) participants ($t(305) = -1.97, p = .049, d = -0.22$). Single ($M = 3.41, SD = 0.90$) and coupled ($M = 4.06, SD = 0.77$) participants also differed significantly in sexual satisfaction scores ($t(289) = -7.00, p < .001, d = -0.78$). Both sexual self-esteem ($r(347) = .14, p = .011$) and sexual satisfaction ($r(347) = .32, p < .001$) were significantly correlated with sexual frequency (the number of times participants had engaged in sexual activity in the past 12 weeks) for the entire sample. However, upon breaking down the

sample based on relationship status, we found that sexual frequency was significantly associated with sexual satisfaction only for coupled participants: $r(198) = .24, p < .001$. This was not the case for single women ($r(147) = .13, p = .114$). Sexual self-esteem was not significantly correlated with frequency among single or coupled women ($r(147) = .10, p = .222$; $r(198) = .11, p = .131$).

We conducted a series of Chi-square difference tests to assess mediation, a technique that estimates the fit of a mediator from a model comparison perspective by evaluating the fit of two nested models using Chi-square values. The models are compared with and without a direct pathway between the predictor and outcome variables of interest. If Chi-square values do not significantly differ between the partial and full mediation models, then the more parsimonious full mediation model is supported (Schermelele-Engel et al., 2003). This method was advantageous given that we were examining multiple models containing the same variables. *P*-values were bootstrapped for all mediation tests, and all tests were conducted using the full sample with BMI covaried except when noted.

We tested sexual self-esteem as a mediator of the relationship between body shame and sexual satisfaction in Model 2. We first estimated the indirect effect using a full mediation model (i.e., Model 2 with the direct effect removed), which was significant ($\beta = -.23, p < .001$), indicating potential for a mediating role of sexual self-esteem. We then compared the full mediation model to the partial mediation model, which included the direct pathway from body shame to sexual satisfaction. Fit for the full mediation model ($\chi^2 = 3.182, df = 4$) did not differ significantly from that of the partial mediation model ($\chi^2 = 1.650, df = 3$) according to the Chi-square critical value for 1 *df*, indicating support for the full mediation model. This was also the case for the restricted sample, where full mediation model fit was $\chi^2 = 1.668, df = 4$, and partial

mediation model fit was $\chi^2 = 1.584$, $df = 3$, with a significant indirect effect of body shame on sexual satisfaction through sexual self-esteem ($\beta = -0.22$, $p = .002$) in the fully mediated model.

We also tested sexual satisfaction as a mediator of the relationship between body shame and sexual self-esteem in Model 3. The indirect effect from body shame to sexual self-esteem in the full mediation model was significant: $\beta = -.09$, $p = .015$. However, upon comparing the full mediation model to the partial mediation model, fit was significantly better for the model with the direct effect ($\chi^2 = 38.371$, $df = 3$; $\chi^2 = 1.470$, $df = 2$) indicating no evidence of mediation.

We conducted another test to determine if body shame mediated the relationship between self-surveillance and sexual satisfaction in Model 3. There was a small but significant indirect effect from self-surveillance to sexual satisfaction in the full mediation model: $\beta = -.06$, $p = .003$. The full mediation ($\chi^2 = 1.988$, $df = 3$) and partial mediation ($\chi^2 = 1.470$, $df = 2$) models did not differ significantly, indicating good fit for body shame as a mediator in this model. The indirect effect was not significant for the restricted sample: $\beta = -.09$, $p = .073$.

Finally, we assessed if body shame mediated the relationship between BMI and self-surveillance in Model 4. There was a significant indirect effect of BMI on self-surveillance in the full mediation model ($\beta = .08$, $p < .001$), and the full mediation model fit ($\chi^2 = 1.727$, $df = 3$) did not differ significantly from the partial mediation model fit ($\chi^2 = 0.181$, $df = 2$), supporting the role of body shame as a mediator. There was also evidence of mediation for the restricted sample; full mediation model fit ($\chi^2 = 2.316$, $df = 3$) did not differ significantly from partial mediation model fit ($\chi^2 = 1.263$, $df = 2$). The indirect effect in the full mediation model for the restricted sample was $\beta = .09$, $p = .027$.

Discussion

The present study provided further clarification on the role of objectification theory in explaining differences in women's sexual outcomes by conducting a replication and robustness test of Calogero and Thompson (2009a) and testing additional models, while also accounting for relationship status, sexual frequency, and BMI. Results showed further support for sociocultural models of sexual outcomes by supporting internalization of body standards from media as a robust predictor of individual self-surveillance and body shame, in line with past research (e.g., Calogero & Thompson, 2009a; Erchull et al., 2013). These variables in turn selectively predicted sexual self-esteem and sexual satisfaction. However, our findings did not support the role of self-surveillance as a direct predictor of sexual satisfaction or sexual self-esteem as reported in previous research (Calogero & Thompson, 2009a, 2009b; De Wilde et al., 2020; Edwards, 2012; Grower & Ward, 2021). We instead observed an indirect pathway leading consecutively through body shame and sexual self-esteem to sexual satisfaction.

Indeed, the most robust predictor of sexual satisfaction in our models was sexual self-esteem, consistent with previous research (e.g., Brassard et al., 2015; Peixoto et al., 2018). Around 1/3 of the variance in college women's sexual satisfaction was accounted for in models where sexual self-esteem predicted sexual satisfaction (Models 2 & 4), while models with body image predictors only were less effective in describing this outcome. While somewhat unsurprising given the close conceptual relationship between these sexual outcomes, this could suggest that self-surveillance and other aspects of body image play less of a role in women's sexual satisfaction than what Calogero and Thompson (2009a) found.³ However, this may also be accounted for by slight differences between samples and the fact that the two studies were conducted at least 10 years apart. More research is needed to parse out the role of cultural and

³ Notably, only 5% of sexual satisfaction variance was explained in Model 1 (restricted sample, BMI covaried) in contrast to 30% in Calogero and Thompson's (2009a) study.

technological changes in impacting this particular relationship. It may also be the case that assessing sexual self-consciousness or a similar mediating variable is necessary to better examine how sexual outcomes function in college women, given its close relationship with self-objectifying behaviors (Claudat & Warren, 2014; Steer & Tiggemann, 2008; Vencill et al., 2015) and negative body image (Cash et al., 2004; La Rocque & Cioe, 2011; Yamamiya et al., 2006).

Our study also tested a model that took inspiration from the objectified body consciousness framework (McKinley & Hyde, 1996) and reversed a typical objectification theory pathway leading from self-surveillance to body shame. The reversed pathway was significant across testing criteria and the model including this pathway (Model 4) had very good fit. There was not clear evidence based on model fit indices to determine which direction better fits the theoretically causal relationship, indicating potential for an alternative sociocultural channel stemming from the internalization of media body standards leading to body shame and subsequently surveillance of one's appearance, along with direct relationships from media internalization to each body image variable. However, it is important to note that the original model is more theoretically justifiable in line with objectification theory, somewhat limiting its meaningfulness for self-objectification researchers.

In comparing findings between the full sample and restricted sample, pathway relationships were generally stronger for the full sample. However, there were few notable differences, suggesting that self-objectification may function similarly among young women despite differences in relationship status and sexual frequency. This was reinforced by exploratory findings showing similar levels of self-surveillance and body shame between single and coupled participants, replicating Lustig (2012). However, exploratory analyses also showed that sexual satisfaction was greater for women who were in relationships, consistent with

previous research (Claudat & Warren, 2014; Higgins et al., 2011; Kislev, 2020). Sexual frequency was also associated with sexual satisfaction only for women in relationships according to exploratory findings, indicating that more research is needed on predictors of sexual satisfaction in uncoupled women.

Results also demonstrated that the role of BMI in predicting self-surveillance was limited and inconsistent across models. Additionally, exploratory findings showed that the influence of body size on self-surveillance was no longer significant once body shame was accounted for. This is consistent with objectification theory's proposal that self-objectification occurs regardless of a woman's body size (Fredrickson & Roberts, 1997). Finally, our study compared fit indices across multiple self-objectification models. While Calogero and Thompson's hypothesized model (Model 2) had the best fit across testing conditions, there were few notable differences in fit indices, with good fit displayed across models and testing conditions. These findings support testing models with fewer pathways in future research to determine which variable relationships best fit the data.

Limitations and Future Directions

While our study presents a robust test of objectification theory in relation to sexual outcomes, there are several limitations. First, the self-surveillance subscale (McKinley & Hyde, 1996), while prevalent in previous research, is fundamentally a behavioral measure of the degree to which someone pays attention their appearance and fails to capture the cognitive components of viewing oneself as an object. This may limit interpretations of findings. In addition, while the path analysis models we tested present theoretical causal relationships, our study was cross-sectional and could not provide evidence of directionality. We also encountered some issues with multivariate normality, non-linear variable relationships, and correlated residuals, which limit the

statistical validity of our path analysis models. We counteracted this by bootstrapping inference values, but interpretations are nevertheless restricted. Another prominent limitation is that our models relied on comparing a restricted sample to our full sample, rather than a comparison between two independent groups. While we made this decision in our preregistration in order to maintain greater statistical power, this limits inferences that can be made about the role of relationship status and sexual frequency in our results and may incorporate error due to sample size differences between testing groups. Future research should directly compare similarly sized sub-groups based on these factors.

It is also important to acknowledge that, as previously discussed, there were several differences between ours and Calogero and Thompson's (2009a) study that may have impacted results. Notably, the mean age in our sample (particularly in the restricted sample) was lower, and the two studies took place in different cultural and technological landscapes, including a profound increase in social media use (Pew Research Center, 2021). It may be the case that self-surveillance is directly related to sexual satisfaction only in older college women, or that historical changes have altered the way this relationship manifests. Relatedly, our study was also limited by demographics. While more diverse than some, our sample was not racially or ethnically representative of the United States as a whole, and somewhat differed from the demographics of Calogero and Thompson's (2009a) sample. Although we included participants of various sexual identities, we did not account for how LGBTQ women's experiences of self-objectification and sexual experiences might diverge from those of heterosexual and cisgender women. To maximize participant comfort, we also did not assess the number of transgender women who participated in this study, which may limit interpretation of results. The influence of

gender and sexual identities in determining these outcomes should be addressed in future research.

Conclusions

Building off of past research, our study found evidence for a sociocultural channel through which body ideals are transmitted that cause women to turn an objectifying gaze inward, leading to shameful feelings about their bodies and therefore diminished sexual confidence and less satisfying sexual experiences. However, the body image factors in our models were somewhat limited in their ability to predict sexual satisfaction. It seems to be the case nevertheless that media portrayals of idealized female bodies can be problematic for women's self-image, and that the sexualized nature of these images may present a standard by which college women measure their sexual competence. This is perhaps unsurprising given the recent prominence of social media in facilitating women's appearance comparisons (Fardouly et al., 2017; Hendrickse et al., 2017). Previous researchers (e.g., Kantor & Lindberg, 2020; Scull et al., 2014) have called for sex education programs for young adults that attempt to mitigate these influences by encouraging pleasure-based exploration of sexuality and providing information on media literacy. These types of curriculum should be made more widely available in university contexts, given that these issues are often insufficiently addressed in middle and high school (Scull et al., 2014) and likely impact many women in college and beyond. Programs such as these would be beneficial in empowering women to de-center perceptions of their bodies during sexual encounters and potentially facilitate greater satisfaction with their sexual lives.

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Table 1*Demographic Variable Frequencies for the Full Sample and Restricted Sample*

	Full Sexually Active Sample					Restricted Sample				
	<i>N</i>	%	Range	<i>M</i>	<i>SD</i>	<i>N</i>	%	Range	<i>M</i>	<i>SD</i>
Age	339		18–40	20.07	2.30	125		18–29	19.68	1.47
Year in College	349					127				
1st	93	26.6%				40	31.5%			
2nd	90	25.8%				34	26.8%			
3rd	81	23.2%				27	21.3%			
4th	70	20.1%				25	19.7%			
5th +	15	4.3%				1	0.8%			
Race/Ethnicity	349					127				
Black/African American	11	3.2%				5	3.9%			
Hispanic/Latinx	5	1.4%				2	1.6%			
Asian/Asian American	53	15.2%				15	11.8%			
Arab/MENA	2	0.6%				1	0.8%			
Native American/Indigenous	2	0.6%				1	0.8%			
White	245	70.2%				93	73.2%			
Biracial/Multiracial	28	8.0%				9	7.1%			
Other	3	0.9%				1	0.8%			
Born in U.S.	348					127				
Yes	309	88.8%				110	86.6%			
No	39	11.2%				17	13.4%			
Years Lived in U.S.	39		0–21	10.79	6.77	17		0–20	10.53	7.29
Sexual Orientation	349					127				
Gay/Lesbian	9	2.6%				2	1.6%			
Bisexual/Pansexual	36	10.3%				13	10.2%			
Queer	4	1.1%				1	0.8%			
Heterosexual/Straight	283	81.1%				103	81.1%			
Questioning/Unsure	13	3.7%				6	4.7%			
Other	4	1.1%				2	1.6%			
Parental Education (SES)	349					127				
High School or Less	59	16.9%				21	16.5%			
Bachelor's or Associate's degree	158	45.3%				53	41.7%			
Master's or Doctoral degree	132	37.8%				53	41.7%			
Relationship Status	349					127				
Single	149	42.7%				117	92.1%			
In a Relationship	200	57.3%				10	7.9%			
Sexual Frequency (past 12 weeks)	349		0–100	19.13	20.25	127		2–93	11.87	12.41
BMI	349		16–38	23.11	3.54	127		16–35	23.34	3.50

Table 2*Means, Standard Deviations, and Correlations for the Full Sample*

	Mean (SD)	Skew	Media Internalization	Self-Surveillance	Body Shame	Sexual Self-Esteem	Sexual Satisfaction
BMI	23.11 (3.54)	1.37	.04	.15**	.24***	-.02	-.04
Media Internalization	3.46 (0.93)	-0.45		.59***	.61***	-.31***	-.15*
Self-Surveillance	4.88 (0.99)	-0.6			.58***	-.26***	-.14**
Body Shame	3.87 (1.25)	-0.05				-.41***	-.19**
Sexual Self-Esteem	3.03 (0.55)	-0.46					.57***
Sexual Satisfaction	3.78 (0.88)	-0.74					

Note. Correlation *p*-values are bootstrapped.* = $p < .05$ ** = $p < .01$ *** = $p < .000$ **Table 3***Means, Standard Deviations, and Correlations for the Restricted Sample*

	Mean (SD)	Skew	Media Internalization	Self-Surveillance	Body Shame	Sexual Self-Esteem	Sexual Satisfaction
BMI	23.33 (3.50)	1.34	.05	.18	.25**	-.05	.08
Media Internalization	3.44 (0.94)	-0.49		.59***	.59***	-.24*	-.15
Self-Surveillance	4.90 (1.02)	-0.63			.61***	-.20	-.05
Body Shame	3.97 (1.25)	0.14				-.34**	-.17
Sexual Self-Esteem	3.01 (0.57)	-0.66					.62***
Sexual Satisfaction	3.58 (0.82)	-0.76					

Note. Correlation *p*-values are bootstrapped.* = $p < .05$ ** = $p < .01$ *** = $p < .000$

Table 4

Unstandardized Regression Coefficients, Bootstrapped Standard Errors, Bootstrapped 95% Confidence Intervals, Bootstrapped p-values and Standardized Regression Coefficients for Model 1

Model 1	B	SE (bootstrap)	95% CI (bootstrap)	p-values (bootstrap)	β
BMI → Media Internalization	.01 .01	.01 .02	[−0.02, 0.04] [− 0.03 , 0.06]	.478 .558	.04 .05
Media Internalization → Self-Surveillance	.62 .63 .64 <u>.64</u>	.05 .05 .09 <u>.09</u>	[0.52, 0.73] [0.53, 0.72] [0.46 , 0.80] [<u>0.47</u> , <u>0.82</u>]	.000 <u>.000</u> .000 <u>.000</u>	.58 .59 .58 <u>.59</u>
BMI → Self-Surveillance	.04 .04	.01 .02	[0.01, 0.06] [− 0.00 , 0.09]	.005 .047	.13 .15
Media Internalization → Body Shame	.56 .54 .49 <u>.47</u>	.07 .07 .11 <u>.11</u>	[0.43, 0.70] [0.42, 0.68] [0.28 , 0.71] [<u>0.25</u> , <u>0.70</u>]	.000 <u>.000</u> .000 <u>.000</u>	.41 .40 .37 <u>.35</u>
Self-Surveillance → Body Shame	.40 <u>.44</u> .44 <u>.49</u>	.06 .06 .11 <u>.11</u>	[0.28, 0.52] [0.31, 0.56] [0.21 , 0.64] [<u>0.23</u> , <u>0.70</u>]	.000 <u>.000</u> .000 <u>.000</u>	.31 .35 .36 <u>.40</u>
BMI → Body Shame	.06 .06	.01 .02	[0.04, 0.09] [0.02 , 0.10]	.000 .003	.18 .16
Self-Surveillance → Sexual Self-Esteem	−.02 −.02 .00 <u>.00</u>	.03 .03 .06 <u>.06</u>	[−0.08, 0.04] [−0.09, 0.04] [− 0.10 , 0.12] [−0.10, 0.12]	.483 .503 .978 <u>.964</u>	−.04 −.04 .00 <u>.00</u>
Body Shame → Sexual Self-Esteem	−.18 −.17 −.16 <u>−.16</u>	.03 .03 .05 <u>.05</u>	[−0.24, −0.13] [−0.22, −0.12] [− 0.26 , −0.07] [−0.26, −0.06]	.000 <u>.000</u> .001 <u>.001</u>	−.40 −.39 −.35 <u>−.34</u>
BMI → Sexual Self-Esteem	.01 .01	.01 .01	[−0.00, 0.03] [− 0.02 , 0.03]	.105 .636	.08 .04
Self-Surveillance → Sexual Satisfaction	−.04 −.04 .06 <u>.06</u>	.05 .05 .09 <u>.08</u>	[−0.14, 0.07] [−0.15, 0.06] [− 0.12 , 0.24] [−0.09, 0.23]	.420 .427 .500 <u>.430</u>	−.05 −.05 .07 <u>.08</u>
Body Shame → Sexual Satisfaction	−.12 −.11 −.16 <u>−.14</u>	.05 .05 .08 <u>.08</u>	[−0.21, −0.03] [−0.21, −0.03] [− 0.32 , −0.00] [−0.30, −0.00]	.016 .013 .039 <u>.059</u>	−.16 −.16 −.24 <u>−.22</u>
BMI → Sexual Satisfaction	.00 .03	.02 .02	[−0.03, 0.03] [− 0.01 , 0.07]	.923 .166	.01 .12

Note. Full sample with BMI covaried; *Full sample without BMI covaried*; **Restricted sample with BMI covaried**; Restricted sample without BMI covaried.

Table 5

Unstandardized Regression Coefficients, Bootstrapped Standard Errors, Bootstrapped 95% Confidence Intervals, Bootstrapped p-values and Standardized Regression Coefficients for Model 2

Model 2	B	SE (bootstrap)	95% CI (bootstrap)	p-values (bootstrap)	β
BMI → Media Internalization	.01 .01	.01 .02	[-0.02, 0.04] [- 0.04, 0.06]	.497 .552	.04 .05
Media Internalization → Self-Surveillance	.62 .63 .64 .64	.05 .05 .08 .09	[0.53, 0.73] [0.52, 0.73] [0.47, 0.80] [0.47, 0.83]	.000 .000 .000 .000	.58 .59 .58 .59
BMI → Self-Surveillance	.04 .04	.01 .02	[0.01, 0.06] [0.00, 0.09]	.008 .050	.13 .15
Media Internalization → Body Shame	.56 .54 .49 .47	.06 .07 .11 .11	[0.44, 0.70] [0.41, 0.69] [0.28, 0.70] [0.26, 0.70]	.000 .000 .000 .000	.41 .40 .37 .35
Self-Surveillance → Body Shame	.40 .44 .44 .49	.06 .06 .11 .11	[0.27, 0.52] [0.32, 0.56] [0.20, 0.65] [0.26, 0.68]	.000 .000 .000 .000	.31 .35 .36 .40
BMI → Body Shame	.06 .06	.01 .02	[0.04, 0.09] [0.02, 0.10]	.000 .002	.18 .16
Self-Surveillance → Sexual Self-Esteem	-.02 -.02 .00 .00	.03 .03 .06 .06	[-0.08, 0.04] [-0.09, 0.04] [-0.12, 0.11] [-0.11, 0.12]	.494 .502 .980 .966	-.04 -.04 .00 .00
Body Shame → Sexual Self-Esteem	-.18 -.17 -.16 <u>-.16</u>	.03 .03 .05 .05	[-0.23, -0.13] [-0.22, -0.12] [-0.26, -0.06] [-0.25, -0.05]	.000 .000 .001 .001	-.40 -.39 -.35 <u>-.34</u>
BMI → Sexual Self-Esteem	.01 .01	.01 .01	[-0.00, 0.03] [-0.02, 0.03]	.108 .620	.08 .04
Body Shame → Sexual Satisfaction	.04 .04 .01 .03	.04 .04 .06 .06	[-0.04, 0.12] [-0.03, 0.11] [-0.10, 0.13] [-0.09, 0.15]	.269 .340 .814 .602	.06 .05 .02 .05
Sexual Self-Esteem → Sexual Satisfaction	.95 .94 .91 .91	.09 .08 .12 .12	[0.77, 1.12] [0.79, 1.11] [0.65, 1.13] [0.68, 1.14]	.000 .000 .000 .000	.59 .59 .63 .63
BMI → Sexual Satisfaction	-.01 .02	.01 .02	[-0.03, 0.01] [-0.01, 0.06]	.374 .159	-.04 .10

Note. Full sample with BMI covaried; *Full sample without BMI covaried*; **Restricted sample with BMI covaried**; Restricted sample without BMI covaried.

Table 6

Unstandardized Regression Coefficients, Bootstrapped Standard Errors, Bootstrapped 95% Confidence Intervals, Bootstrapped p-values and Standardized Regression Coefficients for Model 3

Model 3	B	SE (bootstrap)	95% CI (bootstrap)	p-values (bootstrap)	β
BMI → Media Internalization	.01 .01	.01 .02	[-0.02, 0.04] [- 0.03, 0.06]	.495 .546	.04 .05
Media Internalization → Self-Surveillance	.62 .63 .64 .64	.05 .05 .09 .09	[0.52, 0.72] [0.52, 0.73] [0.47, 0.82] [0.48, 0.83]	.000 .000 .000 .000	.58 .59 .58 .59
BMI → Self-Surveillance	.04 .04	.01 .02	[0.01, 0.06] [- 0.00, 0.09]	.006 .062	.13 .15
Media Internalization → Body Shame	.56 .54 .49 .47	.06 .07 .11 .11	[0.44, 0.68] [0.42, 0.67] [0.29, 0.71] [0.25, 0.71]	.000 .000 .000 .000	.41 .40 .37 .35
Self-Surveillance → Body Shame	.40 .44 .44 .49	.06 .06 .11 .11	[0.29, 0.52] [0.32, 0.55] [0.19, 0.65] [0.25, 0.70]	.000 .000 .000 .000	.31 .35 .36 .40
BMI → Body Shame	.06 .06	.01 .02	[0.04, 0.09] [0.02, 0.10]	.000 .002	.18 .16
Self-Surveillance → Sexual Self-Esteem	-.01 -.01 -.02 -.02	.03 .03 .04 .04	[-0.07, 0.05] [-0.06, 0.05] [- 0.11, 0.06] [-0.12, 0.06]	.759 .771 .598 .590	-.02 -.02 -.04 -.04
Body Shame → Sexual Self-Esteem	-.14 -.13 -.10 -.10	.02 .02 .04 .04	[-0.18, -0.10] [-0.18, -0.09] [- 0.18, -0.01] [-0.19, -0.02]	.000 .000 .025 .021	-.32 -.30 -.21 -.22
Sexual Satisfaction → Sexual Self-Esteem	.32 .32 .41 .40	.03 .03 .06 .06	[0.25, 0.37] [0.26, 0.38] [0.28, 0.52] [0.27, 0.52]	.000 .000 .000 .000	.51 .51 .58 .58
BMI → Sexual Self-Esteem	.01 -.01	.01 .01	[-0.00, 0.03] [- 0.03, 0.02]	.062 .619	.08 -.03
Self-Surveillance → Sexual Satisfaction	-.04 -.04 .06 .06	.05 .05 .09 .08	[-0.14, 0.06] [-0.14, 0.07] [- 0.12, 0.24] [-0.09, 0.23]	.420 .433 .495 .436	-.05 -.05 .07 .08
Body Shame → Sexual Satisfaction	-.12 -.11 -.16 -.14	.05 .05 .08 .07	[-0.21, -0.02] [-0.21, -0.03] [- 0.31, -0.01] [-0.29, 0.01]	.015 .013 .037 .052	-.16 -.16 -.24 -.22
BMI → Sexual Satisfaction	.00 .03	.01 .02	[-0.03, 0.03] [- 0.01, 0.07]	.919 .179	.01 .12

Note. Full sample with BMI covaried; *Full sample without BMI covaried*; **Restricted sample with BMI covaried**; Restricted sample without BMI covaried.

Table 7

Unstandardized Regression Coefficients, Bootstrapped Standard Errors, Bootstrapped 95% Confidence Intervals, Bootstrapped p-values and Standardized Regression Coefficients for Model 4

Model 4	B	SE (bootstrap)	95% CI (bootstrap)	p-values (bootstrap)	β
BMI → Media Internalization	.01 .01	.02 .02	[-0.02, 0.04] [-0.03, 0.06]	.513 .538	.04 .05
Media Internalization → Self-Surveillance	.40 <i>.40</i> .40 <i>.39</i>	.06 <i>.07</i> .11 <i>.11</i>	[0.27, 0.52] <i>[0.26, 0.52]</i> [0.17, 0.62] <i>[0.17, 0.60]</i>	.000 <i>.000</i> .000 <i>.001</i>	.38 <i>.37</i> .37 <i>.36</i>
Body Shame → Self-Surveillance	.27 <i>.28</i> .31 <i>.33</i>	.05 <i>.05</i> .10 <i>.09</i>	[0.18, 0.37] <i>[0.20, 0.37]</i> [0.12, 0.50] <i>[0.15, 0.52]</i>	.000 <i>.000</i> .002 <i>.001</i>	.34 <i>.36</i> .37 <i>.40</i>
BMI → Self-Surveillance	.01 .02	.01 .02	[-0.01, 0.04] [-0.02, 0.06]	.229 .293	.05 .07
Media Internalization → Body Shame	.81 <i>.82</i> .77 <i>.79</i>	.05 <i>.05</i> .08 <i>.09</i>	[0.71, 0.91] <i>[0.72, 0.92]</i> [0.61, 0.93] <i>[0.59, 0.96]</i>	.000 <i>.000</i> .000 <i>.000</i>	.60 <i>.61</i> .58 <i>.59</i>
BMI → Body Shame	.08 .08	.01 .02	[0.05, 0.10] [0.03, 0.12]	.000 .000	.22 .22
Media Internalization → Sexual Self-Esteem	-.05 <i>-.06</i> -.04 <i>-.04</i>	.04 <i>.04</i> .08 <i>.08</i>	[-0.13, 0.03] <i>[-0.13, 0.02]</i> [-0.19, 0.10] <i>[-0.20, 0.10]</i>	.248 <i>.152</i> .611 <i>.572</i>	-.08 <i>-.09</i> -.06 <i>-.07</i>
Self-Surveillance → Sexual Self-Esteem	-.01 <i>.00</i> .01 <i>.02</i>	.04 <i>.03</i> .07 <i>.06</i>	[-0.07, 0.06] <i>[-0.07, 0.06]</i> [-0.11, 0.16] <i>[-0.10, 0.16]</i>	.860 <i>.933</i> .828 <i>.793</i>	-.01 <i>-.01</i> .03 <i>.03</i>
Body Shame → Sexual Self-Esteem	-.16 <i>-.15</i> -.15 <i>-.15</i>	.03 <i>.03</i> .06 <i>.05</i>	[-0.22, -0.10] <i>[-0.21, -0.10]</i> [-0.26, -0.04] <i>[-0.26, -0.05]</i>	.000 <i>.000</i> .007 <i>.006</i>	-.37 <i>-.35</i> -.33 <i>-.32</i>
BMI → Sexual Self-Esteem	.01 .01	.01 .01	[-0.01, 0.03] [-0.02, 0.03]	.160 .703	.07 .03
Body Shame → Sexual Satisfaction	.04 <i>.04</i> .01 <i>.03</i>	.04 <i>.04</i> .06 <i>.06</i>	[-0.03, 0.12] <i>[-0.03, 0.11]</i> [-0.11, 0.14] <i>[-0.09, 0.15]</i>	.236 <i>.331</i> .820 <i>.605</i>	.06 <i>.05</i> .02 <i>.05</i>
Sexual Self-Esteem → Sexual Satisfaction	.95 <i>.94</i> .91 <i>.91</i>	.08 <i>.08</i> .12 <i>.12</i>	[0.79, 1.11] <i>[0.77, 1.10]</i> [0.64, 1.13] <i>[0.67, 1.13]</i>	.000 <i>.000</i> .000 <i>.000</i>	.59 <i>.59</i> .63 <i>.63</i>
BMI → Sexual Satisfaction	-.01 .02	.01 .02	[-0.04, 0.01] [-0.01, 0.06]	.393 .171	-.04 .10

Note. Full sample with BMI covaried; *Full sample without BMI covaried*; **Restricted sample with BMI covaried**; Restricted sample without BMI covaried.

Table 8*Model Fit Indices*

	Chi-Square	Chi-Square <i>p</i> -values	<i>df</i>	RMSEA	CFI	BIC
Model 1 –BMI Covaried	1.47	0.479	2	0.00	1	4089.49
Model 2 –BMI Covaried	1.65	0.648	3	0.00	1	4083.81
Model 3 –BMI Covaried	1.47	0.479	2	0.00	1	4089.49
Model 4 –BMI Covaried	0.18	0.914	2	0.00	1	4088.20
Model 1 –No BMI	2.09	0.352	2	0.01	1	3143.04
Model 2 –No BMI	2.28	0.516	3	0.00	1	3137.38
Model 3 –No BMI	2.09	0.352	2	0.01	1	3143.04
Model 4 –No BMI	0.21	0.900	2	0.00	1	3141.16
Model 1 –Restricted, BMI Covaried	0.90	0.637	2	0.00	1	1537.43
Model 2 –Restricted, BMI Covaried	1.58	0.663	3	0.00	1	1533.27
Model 3 –Restricted, BMI Covaried	0.90	0.637	2	0.00	1	1537.43
Model 4 –Restricted, BMI Covaried	1.26	0.532	2	0.00	1	1537.79
Model 1 –Restricted, No BMI	1.28	0.527	2	0.00	1	1173.75
Model 2 –Restricted, No BMI	2.05	0.562	3	0.00	1	1169.67
Model 3 –Restricted, No BMI	1.28	0.527	2	0.00	1	1173.75
Model 4 –Restricted, No BMI	1.66	0.437	2	0.00	1	1174.13

Note. Chi-Square = Chi-square Test of Goodness of Fit; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; BIC = Bayesian Information Criterion.

Table 9*Primary Variable R² and Adjusted R² Values*

	R ² : MI	R ² : SS	Adj. R ² : SS	R ² : BS	Adj. R ² : BS	R ² : SSE	Adj. R ² : SSE	R ² : SSat	Adj. R ² : SSat
Model 1 –BMI Covaried	0.00	0.36	0.35	0.48	0.47	0.17	0.16	0.04	0.03
Model 2 –BMI Covaried	0.00	0.36	0.35	0.48	0.47	0.17	0.16	0.33	0.32
Model 3 –BMI Covaried	0.00	0.36	0.35	0.48	0.47	0.42	0.41	0.04	0.03
Model 4 –BMI Covaried	0.00	0.43	0.42	0.41	0.40	0.18	0.17	0.33	0.32
Model 1 –No BMI		0.35	0.34	0.45	0.44	0.17	0.16	0.04	0.03
Model 2 –No BMI		0.35	0.34	0.45	0.44	0.17	0.16	0.32	0.32
Model 3 –No BMI		0.35	0.34	0.45	0.44	0.42	0.41	0.04	0.03
Model 4 –No BMI		0.43	0.42	0.37	0.36	0.17	0.16	0.32	0.32
Model 1 –Restricted, BMI Covaried	0.00	0.37	0.35	0.48	0.46	0.12	0.09	0.05	0.02
Model 2 –Restricted, BMI Covaried	0.00	0.37	0.35	0.48	0.45	0.12	0.08	0.39	0.37
Model 3 –Restricted, BMI Covaried	0.00	0.37	0.35	0.48	0.46	0.44	0.42	0.05	0.02
Model 4 –Restricted, BMI Covaried	0.00	0.46	0.43	0.39	0.37	0.12	0.08	0.39	0.37
Model 1 –Restricted, No BMI		0.35	0.33	0.45	0.44	0.12	0.09	0.03	0.01
Model 2 –Restricted, No BMI		0.35	0.33	0.45	0.43	0.12	0.09	0.38	0.36
Model 3 –Restricted, No BMI		0.35	0.33	0.45	0.44	0.44	0.43	0.03	0.01
Model 4 –Restricted, No BMI		0.45	0.43	0.35	0.33	0.12	0.09	0.38	0.36

Note. MI = Media Internalization; SS = Self-Surveillance; BS = Body Shame; SSE = Sexual Self-Esteem; SSat = Sexual Satisfaction.

Figure 1

Pathways with Standardized Regression Coefficients for Model 1

Note. Full sample with BMI; *Full sample without BMI*; **Restricted sample with BMI**; Restricted sample without BMI.

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

Figure 2*Pathways with Standardized Regression Coefficients for Model 2*

Note. Full sample with BMI; Full sample without BMI; **Restricted sample with BMI**; Restricted sample without BMI.

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

Figure 3*Pathways with Standardized Regression Coefficients for Model 3*

Note. Full sample with BMI; Full sample without BMI; **Restricted sample with BMI**; Restricted sample without BMI.

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

Figure 4

Pathways with Standardized Regression Coefficients for Model 4

Note. Full sample with BMI; Full sample without BMI; **Restricted sample with BMI**; Restricted sample without BMI.

* = $p < .05$ ** = $p < .01$ *** = $p < .001$