

TESTING MODERATION AND MEDIATION MODELS OF THE RELATIONSHIPS
BETWEEN SELF-OBJECTIFICATION AND DISORDERED EATING AND RISKY
SEXUAL BEHAVIORS

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ABSTRACT

MARY K. HIGGINS: Testing Moderation and Mediation Models of the Relationships between Self-Objectification and Disordered Eating and Risky Sexual Behaviors
(Under the direction of Anna Bardone-Cone)

Self-objectification has been linked to disordered eating in a number of studies, and body shame is a well-documented mediator of this relationship. The relationship between self-objectification and risky sexual behaviors has been examined much less, although preliminary studies have provided support for this linkage. Due to the limited evidence for this relationship, as well as the lack of moderator findings for both relationships, we probed these relationships further by looking at (1) body shame and sexual self-efficacy as moderators of the relationships between self-objectification and disordered eating and risky sexual behaviors (2) body shame and sexual self-efficacy as mediators of the relationships between self-objectification and disordered eating and risky sexual behaviors. An existing dataset of 441 female undergraduates was analyzed using regression to test for moderation and path analysis to test for mediation. Results indicated that the moderators/mediators generally adhered most closely to the dependent variables of related content (i.e., body shame with disordered eating, sexual self-efficacy with risky sexual behaviors). The moderation models showed more crossover, whereas the mediation models had the most conceptually consistent findings. These results suggest a linkage between the eating disorder and risky sexual behavior literatures, and clinical implications and future directions are discussed.

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CHAPTER 1

INTRODUCTION

Objectification theory (Fredrickson & Roberts, 1997) states that the widespread and chronic sexual objectification to which women in our culture are exposed (through the media, men, and peers) causes women to take an outsider's perspective when assessing their own bodies. This phenomenon of viewing oneself from an outsider's perspective is known as self-objectification, and has been linked to a number of adverse psychological and physical outcomes including eating disorders, depression, and sexual dysfunction. Research has shown that objectification and negative body esteem occur in very young girls. In a surprising study conducted by Murnen, Smolak, and Good (2003) the authors found that girls as young as 6 to 12 years of age who were exposed to objectified images of women and responded positively to such images endorsed a desire to look like these women, as well as a belief that achieving such an appearance would be easy. Furthermore, internalization and awareness of society's pressure to be thin was related to body esteem, in that girls who had internalized the thin ideal less had higher body esteem. Regarding objectification and sexual health, in the 2007 *Report of the American Psychological Association Task Force on the Sexualization of Girls* the authors called for research investigating the impact of sexualization on girls, including its relationship to early pregnancy, sexually transmitted infections, and poor sexual health more generally, as well as links with body image and self-esteem. Due to

the increased sexual objectification of girls at younger and younger ages (Coy, 2009), there is a growing and pressing need to identify the negative outcomes of such sexual objectification.

Youth's susceptibility to objectification highlights the importance of investigating (and hopefully unveiling) those who are most at risk of experiencing the effects of living in an objectifying world. In this study we will investigate two factors, high body shame and low sexual self-efficacy, that we believe may increase the probability of engaging in disordered eating and risky sexual behaviors among women living in an objectifying culture where these concerns are prevalent.

Self-objectification and disordered eating

Fredrickson and Roberts' (1997) objectification theory draws a clear link between self-objectification and disordered eating. As women start to view themselves from an outsider's perspective, they are more likely to compare themselves to the "ideals" found in the media. Women in the media are commonly portrayed as very thin and sexualized. In fact, numerous studies have shown that women are objectified and sexualized more often than men in mainstream media (Copeland, 1989; Furnham & Mak, 1999; Zhang, Dixon, & Conrad, 2010). As this is the culture that women grow up in, it is not surprising that women are critical of themselves and often fail to "measure up," leading to increased body dissatisfaction. Furthermore, in striving to achieve the perfection they see in the media, they may engage in unhealthy behaviors such as dieting and the compensatory behavior of purging (Hawkins, Richards, Granley, & Stein, 2004; Stice & Shaw, 1994).

The link between self-objectification and disordered eating has been identified in numerous studies (Hurt, Nelson, Turner, Haines, Ramsey, Erchull, & Liss, 2007; Kozee &

Tylka, 2006; Noll & Fredrickson, 1998; Prichard & Tiggemann, 2005). Rolnik, Engeln-Maddox, and Miller's (2010) study exemplifies this link. The authors found that women who were going through sorority rush had higher levels of self-objectification and subsequent increased disordered eating behaviors and attitudes, when compared to undergraduate women who were not rushing. Furthermore, the authors found a strong link between increases in self-objectification and increases in disordered eating over time. These findings suggest that women who more often take on an observer's perspective when evaluating their own bodies may engage in eating disorder activities, presumably as a means of achieving or maintaining the bodies they feel are most prized in our culture (e.g., via restrained eating and compensatory behaviors) or as a means of escaping negative affect generated by failing to meet up to highly prized body standards (e.g., binge eating).

While the self-objectification/disordered eating link has been well-established, why is it that not all women engage in disordered eating in our culture? Few studies have tested moderation models in relation to this linkage, but of those that have, no clearly supported moderators have emerged. Choma, Shove, Busseri, Sadava, and Hosker (2009) investigated body shame and body image coping strategies (e.g., ways in which individuals handle threats to body image) as potential moderators and mediators of the linkage between self-objectification and depression, disordered eating attitudes, and subjective well-being. The authors found that among a group of undergraduate women, self-objectification was positively associated with disordered eating. While they found evidence to support body shame and body image coping strategies as partial mediators of this relationship, they did not find support for these variables as moderators. Mitchell (2009) tested moderators within the context of the self-objectification/disordered eating relationship in an ethnically diverse

undergraduate female sample, finding no support for either ethnic identity or feminist identity as moderators.

Although moderators of the self-objectification/disordered eating relationships have not been identified, Fredrickson and Roberts (1997) outlined a few potential mediators in their objectification theory, body shame being one such example. Body shame is closely related to self-objectification such that engaging in self-objectification leads to body shame. This occurs when a woman compares her body to an idealized version of the female form (set forth by depictions in the media, through comments made by peers, etc.), and finds that she fails to “measure up.” This realization may lead to embarrassment, sadness, and shame. Shame has been shown to cause an intense desire to hide, escape scrutiny by others, or disappear, along with feelings of worthlessness (Tangney, Miller, Flicker, & Barlow, 1996), all which may drive disordered eating. Furthermore, Fredrickson and Roberts (1997) posit that in American culture, body size and weight are believed to be controllable factors. Thus, for women who self-objectify, the belief that the body is eminently controllable may contribute both to body shame and to efforts to change their appearance through extreme compensatory behaviors.

Multiple studies have found support for body shame as a mediator of the relationship between self-objectification and disordered eating (Choma et al., 2009; Noll & Fredrickson, 1998; Slater & Tiggemann, 2002; Tiggemann & Kuring, 2004). The work of Fredrickson, Roberts, Noll, Quinn, and Twenge (1998) highlights the role of body shame using an experimental paradigm. They found that the manipulation of self-objectification (i.e., wearing a swimsuit) resulted in body shame which in turn predicted restrained eating in an *ad libitum* setting. Body shame was also reported as a mediator by Greenleaf (2005), finding

that among women who endorsed working out for at least 20 minutes, two times per week, self-objectification increased body shame, which then mediated the relationship between self-objectification and disordered eating. This finding held, even when looking at younger (ages 18-30) versus older (ages 39-64) women, demonstrating the potentially broad relevance of this linkage for women, regardless of age.

A less studied mediator of the relationship between self-objectification and disordered eating is sexual self-efficacy. Bandura (1986) stated that self-efficacy is an individual's belief about her ability to perform a given activity or task in a particular situation. For example, sexual self-efficacy is one's belief that she can convince her partner to engage in safe sexual practices (e.g. contraception use) or one's belief that she herself can abstain from sexual experiences she does not want (Rosenthal, Moore, & Flynn, 1991). Applying objectification theory to sexual experiences, it makes sense that women who feel they solely exist for others' pleasure (i.e. sexually, visually), may feel less empowered to insist that their partner wear a condom or to say "no" to an unwanted sexual advance. In relation to disordered eating, women who view themselves as objects may feel incapable of asking their partners to engage in safe sex (i.e., low sexual self-efficacy) and may be more likely to engage in disordered eating, either as an escape from their unpleasant feelings, as could be the case with binge eating (Heatherton & Baumeister, 1991), or as a means of exerting control over their bodies, as could be the case with anorexic behaviors (Dignon, Beardsmore, Spain, & Kuan, 2006).

Calogero and Thompson (2009) tested sexual self-esteem and sexual self-efficacy as mediators of the self-objectification/disordered eating relation with two groups of undergraduate women. In the first study, utilizing a group of American women, they found

that higher levels of self-objectification were related to less sexual self-esteem, which mediated the relationship between self-objectification and disordered eating. In a follow-up study, using a British sample, the authors performed the same analyses, but used sexual self-efficacy as a mediator, finding that the relationship still held, but was weaker. Thus, women who engaged in self-objectification were more likely to have lower levels of sexual self-esteem and sexual self-efficacy, which were associated with higher levels of disordered eating. More broadly, this line of research demonstrates a link between objectification, feelings about sexuality, and eating behaviors and attitudes.

Self-Objectification and Sexual Behaviors

Far less research has examined the link between self-objectification and sexual behaviors. Fredrickson and Roberts (1997) discuss this possible link, stating that the shame associated with not living up to cultural standards of beauty can make women feel negatively towards their bodies and sexual experiences more generally. Additionally, Martin (1996) argues that the cultural expectation of women to be inactive participants in sexual situations (i.e., function more as objects) subsequently leads adolescent girls and young women to be more passive in their sexual encounters.

Conceptually, it would not be surprising for young women who are attuned to cultural standards (related to appearances and to sexual passivity) to feel uncomfortable talking to a sexual partner about safe sexual practices or to be unsure of how to deny a potential partner sexual intercourse. This pressure to comply with cultural standards could lead to women acting in one of two distinct ways. Some women who view themselves as objects, whose bodies are solely meant for the enjoyment of others, and who feel uncomfortable demanding safe sexual practices from their partners (or themselves), may have intercourse with many

partners, or may engage in intercourse without the use of a condom or other contraception. These women may not feel they are worth men's attention, and as a result, may be more willing to engage in risky sexual intercourse, thinking that if they do not permit sexual activity to occur, they will lose the man's attention. In contrast, other women may refrain from sexual activities (or, when they do engage in sexual activities, they may find themselves having difficulties achieving orgasm or enjoying the experience more generally) because of shame and embarrassment associated with their bodies as a result of self-objectification (Fredrickson & Roberts, 1997). Thus, it is possible that women may either become hypersexual and engage in risky sexual behaviors if they self-objectify, or they may become avoidant of sexual activity or unable to enjoy sexual intercourse, which could lead to sexual dysfunction.

Of the scant research linking self-objectification with sexual behaviors, most studies have investigated possible mediators, explicitly or implicitly, in order to understand this association. Two theoretically compelling mediators that have been investigated are body shame and sexual self-efficacy. Schooler (2005) found that among a sample of women, those reporting more body shame had less sexual experience, less condom use self-efficacy, and less sexual assertiveness. Because the author highlights body shame as implicitly emerging from objectification, this study can be seen as at least suggestive evidence of body shame as a possible mediator.

In support of sexual self-efficacy as a potential mediator of the relationship between self-objectification and risky sexual behaviors, Impett, Schooler, and Tolman (2006) found that among a group of adolescent girls, self-objectification predicted non-use of a condom at first sexual intercourse, with sexual self-efficacy mediating this relationship. Thus, young

women who engage in self-objectification are likely to feel less sexually self-efficacious, which in turn helps explain engagement in risky sexual practices. Those who do not think they are “worthy” of asking a partner to wear a condom, or who feel that their bodies are not really their own, but are for others’ enjoyment, may not feel they have the right to act responsibly or healthfully in sexual situations.

The Current Study

The current study aimed to investigate the relationship between self-objectification and disordered eating, and between self-objectification and risky sexual behaviors, considering the potential moderating and mediating roles of body shame and sexual self-efficacy among a group of undergraduate college women. Most research in this area has focused on self-objectification and disordered eating or self-objectification and risky sexual behaviors, but few have considered, in the same sample, how self-objectification may be related to both of these behaviors. This approach could provide valuable information about the way in which women view their bodies and themselves as sexual entities.

By examining body shame and sexual self-efficacy as mediators, we attempted to understand the mechanisms underlying the link between self-objectification and disordered eating and between self-objectification and risky sexual behaviors. By examining body shame and sexual self-efficacy as moderators, we hoped to identify those for whom the self-objectification and disordered eating and self-objectification and risky sexual behaviors linkages are exacerbated. For example, perhaps being low on sexual self-efficacy or high on body shame strengthens the relationships that self-objectification has with disordered eating or risky sexual behaviors. This information could then be used to develop interventions targeted at boosting young women’s pride in their bodies or the belief that they can enact

change in their sexual encounters, in the hopes of buffering these harmful relationships. Since both variables have some support as mediators in the relationships between self-objectification and disordered eating and self-objectification and risky sexual behaviors, testing the mediation models in the current study may primarily replicate findings, albeit often with different assessments than used previously (e.g., Noll & Fredrickson, 1998). By additionally investigating these variables as moderators, we expand the potential roles body shame and sexual self-efficacy may have in the relationship between self-objectification and both disordered eating and risky sexual behaviors.

Hypotheses related to self-objectification and disordered eating

Hypothesis 1. Self-objectification will be positively associated with disordered eating such that higher levels of self-objectification will be associated with higher levels of disordered eating.

Hypothesis 2-moderation. Body shame and sexual self-efficacy are each proposed to moderate the relationship between self-objectification and disordered eating, such that this relationship will be exacerbated among those with high body shame and among those with low sexual self-efficacy. However, it is proposed that body shame will be the stronger moderator of this relationship.

Hypothesis 3-mediation. Body shame and sexual self-efficacy are each proposed to mediate the relationship between self-objectification and disordered eating, such that the effect of self-objectification on disordered eating is at least partially explained through body shame and at least partially explained through sexual self-efficacy. Body shame is proposed to be a stronger mediator of this relationship, as well.

Hypotheses related to self-objectification and risky sexual behaviors

Hypothesis 4. Self-objectification will be positively associated with risky sexual behaviors, such that higher levels of self-objectification will be associated with more risky sexual behaviors.

Hypothesis 5-moderation. Body shame and sexual self-efficacy are each proposed to moderate the relationship between self-objectification and risky sexual behaviors such that this relationship will be exacerbated among those with high body shame and among those with low sexual self-efficacy. It is proposed that sexual self-efficacy will be a stronger moderator of this relationship.

Hypothesis 6-mediation. Body shame and sexual self-efficacy are each proposed to mediate the relationship between self-objectification and risky sexual behaviors, such that the effect of self-objectification on risky sexual behaviors is at least partially explained through body shame and at least partially explained through sexual self-efficacy. Sexual self-efficacy is proposed to be the stronger mediator of this relationship, as well.

CHAPTER 2

METHOD

Participants and Procedure

Participants were 441 female undergraduate students at a large Southeastern university. All participants were enrolled in the university's introductory psychology courses and received course credit for their participation which occurred in the 2010-2011 academic year. After providing informed consent, participants completed an online survey lasting about 45-60 minutes and then received a debriefing statement about the study. All aspects of this study were approved by the university's Institutional Review Board.

Participants ranged in age from 17 to 24 with a mean age of 18.71 ($SD = 1.01$ years). The majority of the participants (73.2%) self-reported as Caucasian, 9.1% as African American, 8% as Latina, 5% as Asian, .2% as Pacific Islander, 4.3% as multiple races or ethnicities, and .2% as other races/ethnicities. One participant did not report her race or ethnicity. Highest parental education, which is as a proxy for socioeconomic status, ranged from 7 to 21 years ($M = 17.00$ years, $SD = 2.67$). Based on their self-report of current height and weight, participants averaged a body mass index (BMI) of 22.39 kg/m^2 ($SD = 3.73$) with a range of 16.76 to 41.24.

Measures

Self-Objectification. Self-objectification was assessed with the Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996). Body surveillance is described by McKinley and Hyde (1996) as viewing one's body as

others see it, and is thus closely related to self-objectification. The Body Surveillance subscale consists of eight items that measure how much a woman monitors her body based on how it looks, rather than how it feels. Items are measured on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), with higher scores reflecting greater body surveillance/self-objectification. There is also a “not applicable” option, in case the participant has never been confronted with the situation described. McKinley and Hyde (1996) found that the Body Surveillance subscale has adequate reliability (e.g., coefficient alpha of .89), as well as good construct validity as indicated by its -.39 correlation with the Body Esteem Scale (BES; Franzoi & Shields, 1984) among a sample of undergraduate women. In the current study, coefficient alpha was .84.

Disordered Eating. Disordered eating was assessed with the Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) and the Eating Disorder Examination-Questionnaire (EDE-Q 6.0; Fairburn & Beglin, 2008). The EAT-26 is a 26-item self-report questionnaire that measures the degree to which participants engage in a variety of disordered eating behaviors and attitudes (e.g., “I am terrified about being overweight,” “I avoid eating when I am hungry”) and has been posited to, in particular, capture anorexic attitudes (Garner, Olmsted, Bohr, & Garfinkel, 1982). Items are rated on a 6-point scale (1 = *never*, 6 = *always*), with higher scores reflecting greater eating pathology. Items endorsed as 1, 2, or 3 are scored as “0,” while items marked as 4, 5, or 6 are scored as “1,” “2,” or “3,” respectively. The EAT-26 has been shown to be reliable among college women ($\alpha = .92$; Moradi, Dirks, & Matteson, 2005). As an indicator of this measure’s validity, studies have found the EAT-26 to be effective as a screening measure, with a cutoff

score of 20 indicating a probable eating disorder (King, 1989, 1991) among a sample of men and women aged 16-35. In the current study, coefficient alpha for the EAT-26 was .90.

The Eating Disorder Examination-Questionnaire is a 28-item questionnaire that assesses disordered eating behaviors and attitudes over the past 28 days and is derived from the Eating Disorder Examination (EDE) interview (Fairburn & Cooper, 1993). Items are scored on a 7-point scale, with higher scores reflecting greater eating pathology. This measure has the subscales of Weight Concern and Shape Concern which are combined in this study, given evidence that these two subscales loaded on the same factor in a study investigating the factor structure of the EDE-Q (Peterson et al., 2007). Additionally, the EDE-Q assesses frequency of specific eating disorder behaviors (e.g., binge eating, self-induced vomiting over the past 28 days). Studies have shown high levels of agreement between earlier versions of the EDE-Q and the EDE across various populations (Fairburn & Beglin, 1994; Mond, Hay, Rodgers, Owen, & Beumont, 2004). Acceptable internal consistency (.89 and .93) and test-retest reliability (.92 and .94) have been found for the subscales of weight concern and shape concern of an earlier version of this measure, respectively (Luce & Crowther, 1999). In the current study, coefficient alpha for the combined Weight Concern and Shape Concern subscale was .95.

Risky Sexual Behaviors. Risky sexual behaviors were assessed with the Sexual Experiences Questionnaire (SEQ) which was compiled from a variety of sources and authors (Feiring, 1996; Feiring, 1999; McCabe & Collins, 1984; Treboux & Busch-Rossnagel, 1990) and has been used in prior work (Allen, Porter, & McFarland, 2006). The SEQ asks participants to report on their sexual behaviors, including how many different sexual partners they have had in the last year (with options to choose a number between 1 and 10 or “more

than 10”) and how often the participant or her partner(s) have used protection against pregnancy when having sex (response scale from 1 = *never* to 5 = *all of the time*). Questions involving sexual behavior were only asked of those who reported having engaged in sexual intercourse in the past 12 months.

Body Shame. Body shame was assessed with the Body Shame subscale of the OBCS (McKinley & Hyde, 1996). This subscale contains eight items that measure the degree to which one feels shame when her body does not conform to cultural standards. Each item is rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), with higher scores reflecting greater body shame. Participants have the option to mark “not applicable” if they encounter an item that does not apply to their experiences. McKinley and Hyde (1996) found that the Body Shame subscale has adequate reliability (e.g., coefficient alpha of .75), as well as good construct validity as indicated by its -.51 correlation with the Body Esteem Scale (BES; Franzoi & Shields, 1984) among a sample of undergraduate women. In the current study, coefficient alpha was .84.

Sexual Self-Efficacy. Sexual self-efficacy was assessed with the Sexual Self-Efficacy Scale (SSES; Soet, Dudley, & Dilorio, 1999). For the purposes of this study, only the Refusal subscale was used, and items were slightly modified from the original wording “can” to “can/could” in order to allow participants who had not engaged in sexual intercourse to respond to the items. The Refusal subscale contains four items, scored on a 10-point scale (1 = *not at all sure I can do it*, 10 = *completely sure I can do it*). It asks about one’s perceived ability to say “no” to a sexual partner in favor of engaging in safe sexual behaviors (e.g., “I can/could always say no to sex without a condom, even if it is with someone new who I really want to have a relationship with,” “I can/could say no to sex with someone even

if I have had sex with them before”). The Refusal subscale of the SSES has been shown to be reliable among college women ($\alpha = .74$; Soet, Dudley, & Dilorio, 1999). Additionally, the overall SSES has demonstrated validity; those who stated they did not use a condom at last sexual intercourse were found to have significantly lower sexual self-efficacy ratings than those who stated they did. In the current study, coefficient alpha was .85.

Analytic Strategy

Moderation Analyses. Hypothesized interactions were assessed using hierarchical multiple regression following the guidelines prescribed by Cohen and Cohen (1983). As recommended by Frazier, Tix, and Barron (2004), continuous variables entering into interactions (i.e., self-objectification and body shame or self-objectification and sexual self-efficacy) were centered. A significant two-way interaction would indicate that the strength or direction of the association between self-objectification and the dependent variable (i.e., disordered eating or risky sexual behaviors) depends on the level of the moderator. To understand the nature of the interaction, all significant interactions were graphed to provide a visual depiction of the relations among the variables. Additionally, simple slope analyses were used to further probe the nature of any significant interactions (Aiken & West, 1991). IBM SPSS Statistics 19.0 was used to run these analyses.

Mediation Analyses. Hypothesized mediation models were tested using bootstrapping analyses as described by Preacher and Hayes (2004; 2008) for estimating indirect effects with single and multiple mediators. This analytic procedure not only allows the indirect effect of a single mediator to be tested, but it also allows multiple mediators to be tested simultaneously. Bootstrapping analyses are superior to traditional tests of mediation in that they do not assume a normal sampling distribution for the indirect effects (this is critical

because indirect effects are normal only in very large samples, and even then do not generally follow a normal distribution). Additionally, the number of inferential tests is reduced by using bootstrapping, and thus there is less likelihood of Type I errors (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004; Preacher & Hayes, 2008; Shrout & Bolger, 2002). Bootstrapping (using 5,000 resamples) was used to obtain estimates of the indirect effects and to test their significance via confidence intervals. Additionally, contrasts were used in models with multiple mediators to examine whether the indirect effects of the hypothesized mediators were significantly different from one another. Mplus Version 5.21 (Muthén & Muthén, 2007) was used to run these analyses.

CHAPTER 3

RESULTS

Descriptive Analyses

Table 1 includes the means and standard deviations of the primary measures. The observed range for binge eating in the past 28 days was zero to 60 times; the observed range for vomiting frequency in the past 28 days was zero to 29 times. Number of sexual partners in the past year was only asked of participants who indicated that they had engaged in consensual sexual intercourse in the past year; responses ranged from one partner to ten or more.

Table 2 includes correlations among all independent and dependent variables. Body surveillance, the behavioral manifestation of self-objectification, was significantly positively correlated with the disordered eating measures, as well as number of sexual partners in the last year, but significantly negatively correlated with sexual self-efficacy, such that greater levels of body surveillance were associated with lower levels of sexual self-efficacy. Body shame was significantly positively correlated with the disordered eating measures and number of sexual partners, and significantly negatively correlated with sexual self-efficacy. Sexual self-efficacy was significantly negatively correlated with the disordered eating measures and number of sexual partners, and significantly positively correlated with use of protection against pregnancy during sexual intercourse. Number of sexual partners was significantly positively correlated with multiple disordered eating measures. Use of

protection against pregnancy was not significantly associated with any of the other dependent variables.¹

Self-Objectification and Disordered Eating Moderation Analyses

Body Shame. When examining EAT-26 scores, body surveillance interacted with body shame such that among those with high body surveillance, higher levels of body shame were associated with greater disordered eating symptoms, $t(373) = 9.29$, $\Delta R^2 = .10$, $p < .001$ (see Table 3 and Figure 1; in all figures, high and low values of the independent variables are defined as plus or minus one standard deviation from the mean, respectively). Simple slope analyses, performed as directed by Aiken and West (1991), indicated that body surveillance was significantly associated with disordered eating symptoms at high levels of body shame (1 SD above the mean), $\beta = .67$, $t(373) = 12.77$, $p < .001$, but not at low levels of body shame (1 SD below the mean), $\beta = .08$, $t(373) = 1.60$, $p = .111$.

When examining number of episodes of binge eating in the past 28 days, no significant two-way interaction emerged involving body surveillance and body shame, $t(414) = .95$, $\Delta R^2 = .00$, $p = .345$; see Table 3.

When examining number of episodes of vomiting in the past 28 days, body surveillance interacted with body shame such that among those with high body surveillance, higher levels of body shame were associated with more vomiting, $t(418) = 5.09$, $\Delta R^2 = .06$, $p < .001$; see Table 3 and Figure 2. Simple slope analyses indicated that body surveillance was

¹ Self-reported BMI was significantly positively correlated with body shame and most of the disordered eating measures (EAT-26, binge eating frequency, and weight and shape concern from the EDE-Q) (all $ps < .05$), indicating that higher body mass index is associated with more disordered eating symptoms. In contrast, BMI was not significantly associated with either of the risky sexual behaviors. Thus, all analyses with disordered eating were run with BMI as a covariate. The pattern of the results was the same, with or without BMI in the model. As such, all results are reported without BMI as a covariate, for parsimony.

significantly associated with vomiting frequency at high levels of body shame, $\beta = .29$, $t(418) = 3.97$, $p < .001$, as well as at low levels of body shame, albeit not as strongly and in the opposite direction, $\beta = -.15$, $t(418) = -2.30$, $p = .022$.²

When examining weight and shape concern, body surveillance interacted with body shame such that among those with high body surveillance, higher levels of body shame were associated with greater weight and shape concern, $t(419) = 3.08$, $\Delta R^2 = .01$, $p < .01$; see Table 3 and Figure 3. Simple slope analyses indicated that body surveillance was significantly associated with weight and shape concern at high levels of body shame, $\beta = .38$, $t(419) = 8.10$, $p < .001$, as well as at low levels of body shame, albeit not as strongly, $\beta = .21$, $t(419) = 4.82$, $p < .001$.

Sexual Self-Efficacy. When examining EAT-26 scores, body surveillance interacted with sexual self-efficacy such that among those with high body surveillance, lower levels of sexual self-efficacy were associated with greater disordered eating symptoms, $t(385) = -3.48$, $\Delta R^2 = .02$, $p < .001$; see Table 4 and Figure 4. Simple slope analyses revealed that body surveillance was significantly associated with disordered eating symptoms at low sexual self-efficacy, $\beta = .72$, $t(385) = 10.83$, $p < .001$, as well as at high sexual self-efficacy, albeit not as strongly, $\beta = .40$, $t(385) = 6.81$, $p < .001$.

When examining number of episodes of binge eating in the past 28 days, no significant two-way interaction emerged involving body surveillance and sexual self-efficacy, $t(431) = .13$, $\Delta R^2 = .00$, $p = .894$; see Table 4.

² Figures of moderator models involving vomiting frequency used high and low values of $\pm \frac{1}{2}$ a standard deviation of the independent variables. This was done because with a full standard deviation, the resulting hypothesized values were impossible due to the restricted range of our sample. Although changing to $\pm \frac{1}{2}$ a standard deviation still produced some impossible values (i.e. negative vomiting frequency) these were less negative than they had been with a full standard deviation.

When examining number of episodes of vomiting in the past 28 days, body surveillance interacted with sexual self-efficacy such that among those with high body surveillance, lower levels of sexual self-efficacy were associated with more vomiting, $t(435) = -5.13$, $\Delta R^2 = .05$, $p < .001$; see Table 4 and Figure 5. Furthermore, simple slope analyses revealed that body surveillance was significantly associated with vomiting frequency at low sexual self-efficacy, $\beta = .41$, $t(435) = 5.58$, $p < .001$, but not at high sexual self-efficacy, $\beta = -.11$, $t(435) = -1.72$, $p = .086$.

When examining weight and shape concern no significant two-way interaction emerged involving body surveillance and sexual self-efficacy, $t(436) = -1.39$, $\Delta R^2 = .00$, $p = .165$; see Table 4.

Comparing the moderators of body shame and sexual self-efficacy. Body shame was a significant moderator for three models (dependent variables of EAT-26, vomiting frequency, and weight and shape concern), while sexual self-efficacy was only significant in two models (dependent variables of EAT-26 and vomiting frequency) providing initial support for body shame being the more robust moderator. Considering relative strength, in the two models where both moderators were significant, more variance was accounted for by body shame than sexual self-efficacy when examining EAT-26 score as the dependent variable (10% for body shame, 2% for sexual self-efficacy), but for the interactive model with vomiting frequency as the dependent variable, similar amounts of variance were accounted for by the interactive effect (6% for body shame, 5% for sexual self-efficacy).

Self-Objectification and Disordered Eating Mediation Analyses

Body Shame. When examining EAT-26 scores, the bootstrap results indicated that the indirect effect of body surveillance on EAT-26 scores through body shame was

significant, with a standardized point estimate of 0.21 ($p < .001$) and a 95% BC (bias-corrected) bootstrap confidence interval (CI) of 0.17 to 0.26. Body shame partially mediated the relation between body surveillance and EAT-26 scores.

When examining binge eating frequency in the past 28 days, the bootstrap results indicated that the indirect effect of body surveillance on binge eating frequency through body shame was significant, with a standardized point estimate of 0.13 ($p < .001$) and a 95% BC CI of 0.06 to 0.19. Body shame partially mediated the relation between body surveillance and binge eating frequency.

When examining vomiting frequency in the past 28 days, the bootstrap results indicated that the indirect effect of body surveillance on vomiting frequency through body shame was significant, with a standardized point estimate of 0.11 ($p < .001$) and a 95% BC CI of 0.06 to 0.16. Body shame fully mediated the relation between body surveillance and vomiting frequency.

When examining weight and shape concern, the bootstrap results indicated that the indirect effect of body surveillance on weight and shape concern through body shame was significant, with a standardized point estimate of 0.31 ($p < .001$) and a 95% BC CI of 0.26 to 0.36. Body shame partially mediated the relation between body surveillance and weight and shape concern.

Sexual Self-Efficacy. When examining the EAT-26 scores, the bootstrap results indicated that the indirect effect of body surveillance on EAT-26 score through sexual self-efficacy was not significant, with a standardized point estimate of 0.02 ($p = .068$) and a 95% BC CI of -0.002 to 0.05. Sexual self-efficacy did not mediate the relation between body surveillance and EAT-26 scores.

When examining binge eating frequency, the bootstrap results indicated that the indirect effect of body surveillance on binge eating frequency through sexual self-efficacy was not significant, with a standardized point estimate of 0.01 ($p = .399$) and a 95% BC CI of -0.02 to 0.04. Sexual self-efficacy did not mediate the relation between body surveillance and binge eating frequency.

When examining vomiting frequency, the bootstrap results indicated that the indirect effect of body surveillance on vomiting frequency through sexual self-efficacy was not significant, with a standardized point estimate of 0.03 ($p = .078$) and a 95% BC CI of -0.003 to 0.07. Sexual self-efficacy did not mediate the relation between body surveillance and vomiting frequency.

When examining weight and shape concern, the bootstrap results indicated that the indirect effect of body surveillance on weight and shape concern through sexual self-efficacy was significant, with a standardized point estimate of 0.03 ($p < .05$) and a 95% BC CI of 0.01 to 0.05. Sexual self-efficacy partially mediated the relation between body surveillance and weight and shape concern.

Comparing the mediators of body shame and sexual self-efficacy. From a count perspective, body shame was clearly the more consistent mediator than sexual self-efficacy in the body surveillance/disordered eating relations. Since we can empirically test relative strengths of mediators using path analysis, the following lays out those findings.

When examining body shame and sexual self-efficacy together as mediators in relation to EAT-26 scores, the bootstrap results indicated that the total indirect effect of body surveillance on EAT-26 scores through this set of mediators was significant, with a standardized point estimate of 0.22 ($p < .001$) and a 95% BC CI of 0.17 to 0.26. Thus, body

shame and sexual self-efficacy partially mediated the relation between body surveillance and EAT-26 scores. The specific indirect effects of each mediator showed that body shame was a unique and significant mediator, with a standardized point estimate of 0.21 ($p < .001$) and a 95% BC CI of 0.16 to 0.25. However, sexual self-efficacy did not add significantly to the model, with a standardized point estimate of 0.01 ($p = .280$) and a 95% BC CI of -0.01 to 0.03. A contrast confirmed that the indirect effect of body shame in the body surveillance/EAT-26 relation was significantly stronger ($p < .001$) than the indirect effect of sexual self-efficacy (see Figure 6 for the full mediational model).

When examining body shame and sexual self-efficacy together as mediators in relation to binge eating in the past 28 days, the bootstrap results indicated that the total indirect effect of body surveillance on binge eating frequency through this set of mediators was significant, with a standardized point estimate of 0.13 ($p < .001$) and a 95% BC CI of 0.06 to 0.20. Thus, body shame and sexual self-efficacy partially mediated the relation between body surveillance and binge eating frequency. The specific indirect effects of each mediator showed that body shame was a unique and significant mediator, with a standardized point estimate of 0.13 ($p < .001$) and a 95% BC CI of 0.07 to 0.18. However, sexual self-efficacy did not add significantly to the model, with a standardized point estimate of 0.00 ($p = .757$) and a 95% BC CI of -0.02 to 0.03. A contrast confirmed that the indirect effect of body shame in the body surveillance/binge eating relation was significantly stronger ($p < .001$) than the indirect effect of sexual self-efficacy (see Figure 7 for the full mediational model).

When examining body shame and sexual self-efficacy together as mediators in relation to number of episodes of vomiting in the past 28 days, the bootstrap results indicated

that the total indirect effect of body surveillance on vomiting frequency through this set of mediators was significant, with a standardized point estimate of 0.12 ($p < .001$) and a 95% BC CI of 0.06 to 0.17. Thus, body shame and sexual self-efficacy partially mediated the relation between body surveillance and vomiting frequency. The specific indirect effects of each mediator showed that body shame was a unique and significant mediator, with a standardized point estimate of 0.09 ($p < .001$) and a 95% BC CI of 0.04 to 0.14. However, sexual self-efficacy did not add significantly to the model, with a standardized point estimate of 0.03 ($p = .138$) and a 95% BC CI of -0.01 to 0.06. A contrast indicated that the indirect effect of body shame in the body surveillance/vomiting relation was not significantly stronger ($p = .141$) than the indirect effect of sexual self-efficacy (see Figure 8 for the full mediational model).

When examining body shame and sexual self-efficacy together as mediators in relation to weight and shape concern, the bootstrap results indicated that the total indirect effect of body surveillance on weight and shape concern through this set of mediators was significant, with a standardized point estimate of 0.31 ($p < .001$) and a 95% BC CI of 0.26 to 0.36. Thus, body shame and sexual self-efficacy partially mediated the relation between body surveillance and weight and shape concern. The specific indirect effects of each mediator showed that body shame was a unique and significant mediator, with a standardized point estimate of 0.31 ($p < .001$) and a 95% BC CI of 0.26 to 0.36. However, sexual self-efficacy did not add significantly to the model, with a standardized point estimate of 0.01 ($p = .350$) and a 95% BC CI of -0.01 to 0.02. A contrast confirmed that the indirect effect of body shame in the body surveillance/weight and shape concern relation was significantly stronger

($p < .001$) than the indirect effect of sexual self-efficacy (see Figure 9 for the full mediational model).

Self-Objectification and Risky Sexual Behavior Moderation Analyses

Body Shame. When examining the number of sexual partners in the past year and use of protection against pregnancy during sexual intercourse, no significant two-way interactions emerged involving body surveillance and body shame (see Table 5).

Sexual Self-Efficacy. When examining number of sexual partners in the past year, body surveillance interacted with sexual self-efficacy such that among those with high body surveillance, lower levels of sexual self-efficacy were associated with more sexual partners in the past year, $t(207) = -3.51$, $\Delta R^2 = .05$, $p < .001$; see Table 6 and Figure 10. Further, simple slope analyses revealed that body surveillance was significantly associated with number of sexual partners at low sexual self-efficacy, $\beta = .42$, $t(207) = 4.69$, $p < .001$, but not at high sexual self-efficacy, $\beta = -.04$, $t(207) = -.43$, $p = .671$.

When examining use of protection against pregnancy during sexual intercourse, no significant two-way interaction emerged involving body surveillance and sexual self-efficacy, $t(205) = .26$, $\Delta R^2 = .00$, $p = .759$; see Table 6.

Self-Objectification and Risky Sexual Behaviors Mediation Analyses

Body Shame. When examining number of sexual partners in the past year, the bootstrap results indicated that the indirect effect of body surveillance on number of sexual partners through body shame was not significant, with a standardized point estimate of -0.001 ($p = .992$) and a 95% BC CI of -0.12 to 0.12 . Body shame did not mediate the relation between body surveillance and number of sexual partners.

When examining frequency of use of protection against pregnancy, the bootstrap results indicated that the indirect effect of body surveillance on frequency of use of protection through body shame was not significant, with a standardized point estimate of -0.03 ($p = .523$) and a 95% BC CI of -0.13 to 0.06. Body shame did not mediate the relation between body surveillance and frequency of use of protection.

Sexual Self-Efficacy. When examining number of sexual partners in the past year, the bootstrap results indicated that the indirect effect of body surveillance on number of partners through sexual self-efficacy was significant, with a standardized point estimate of 0.05 ($p < .01$) and a 95% BC CI of 0.02 to 0.09. Sexual self-efficacy partially mediated the relation between body surveillance and number of sexual partners.

When examining frequency of use of protection against pregnancy, the bootstrap results indicated that the indirect effect of body surveillance on frequency of use of protection through sexual self-efficacy was significant, with a standardized point estimate of -0.04 ($p < .05$) and a 95% BC CI of -0.07 to -0.01. Sexual self-efficacy fully mediated the relation between body surveillance and frequency of use of protection.

Comparing the mediators of body shame and sexual self-efficacy. From a count perspective, sexual self-efficacy was clearly the more consistent mediator than body shame in the body surveillance/risky sexual behavior relations. The relative strengths of these mediators were tested using path analysis; the following lays out those findings.

When examining body shame and sexual self-efficacy together as mediators in relation to number of sexual partners in the past year, the bootstrap results indicated that the total indirect effect of body surveillance on number of sexual partners through this set of mediators was not significant, with a standardized point estimate of 0.01 ($p = .876$) and a

95% BC CI of -.10 to 0.12. Thus, body shame and sexual self-efficacy as a set did not mediate the relation between body surveillance and number of sexual partners. The specific indirect effects of each mediator showed that sexual self-efficacy was a unique and significant mediator, with a standardized point estimate of 0.06 ($p < .01$) and a 95% BC CI of 0.02 to 0.10. However, body shame did not add significantly to the model, with a standardized point estimate of -0.05 ($p = .406$) and a 95% BC CI of -0.16 to 0.07. A contrast indicated that the indirect effect of sexual self-efficacy in the body surveillance/number of sexual partners relation was not significantly stronger ($p = .136$) than the indirect effect of body shame (see Figure 11 for the full mediational model).

When examining body shame and sexual self-efficacy together as mediators in relation to frequency of use of protection against pregnancy, the bootstrap results indicated that the total indirect effect of body surveillance on frequency of use of protection through this set of mediators was not significant, with a standardized point estimate of -0.04 ($p = .475$) and a 95% BC CI of -.13 to 0.06. Thus, body shame and sexual self-efficacy as a set did not mediate the relation between body surveillance and frequency of use of protection. The specific indirect effects of each mediator showed that sexual self-efficacy was a unique and significant mediator, with a standardized point estimate of -0.04 ($p < .05$) and a 95% BC CI of -0.07 to -0.01. However, body shame did not add significantly to the model, with a standardized point estimate of 0.01 ($p = .904$) and a 95% BC CI of -0.08 to 0.10. A contrast indicated that the indirect effect of sexual self-efficacy in the body surveillance/frequency of

use of protection relation was not significantly stronger ($p = .361$) than the indirect effect of body shame (see Figure 12 for the full mediational model).³

³ Maladaptive sexual attitudes were also investigated, but the measure had poor reliability (coefficient alpha was .45) and thus questionable validity.

CHAPTER 4

DISCUSSION

Contrary to what was proposed, body shame and sexual self-efficacy did not moderate all of the relationships involving self-objectification and the disordered eating variables. Body shame moderated the relationship between self-objectification and almost all of the disordered eating variables (excluding binge frequency), while sexual self-efficacy only moderated the relationships between self-objectification and EAT-26 scores and vomiting frequency. Furthermore, body shame was the stronger moderator when compared with sexual self-efficacy in relation to the broad measure of eating pathology (i.e., EAT-26).

Additionally, not all of the hypotheses regarding body shame and sexual self-efficacy as moderators of the relationship between self-objectification and risky sexual behaviors were supported. Body shame did not moderate either of the relationships between self-objectification and risky sexual behaviors, while sexual self-efficacy moderated the relationship between self-objectification and number of sexual partners in the past year.

Taking these findings together, why is it that some relationships were moderated, while others were not? Past research has found support for body shame as a mediator of the relationship between self-objectification and disordered eating (Choma et al., 2009; Noll & Fredrickson, 1998; Slater & Tiggemann, 2002; Tiggemann & Kuring, 2004). However, few studies have tested body shame as a moderator of this relationship, and of those that have body shame did not emerge as a significant moderator (i.e., Choma et al., 2009). Not only were we able to find that body shame acted as a moderator, but these findings held for

multiple measures of disordered eating, especially those focused on body and eating attitudes. The failure of body shame to act as a significant moderator for binge eating frequency may be due to the fact that the combination of self-objectification and body shame pulls more for body concern and restrictive behaviors. That is, theoretically, women who are accustomed to viewing their body as others see it and who are ashamed that they are not meeting cultural standards would be motivated to engage in disordered eating behaviors revolving around weight loss, such as more anorectic behaviors (captured by the EAT-26) and purging behaviors (captured by vomiting). Since binge eating does not help them accomplish their goal of looking like the thin ideal (and reduce the shame associated with their bodies), it makes sense that the combination of high body surveillance and high body shame might not be associated with heightened binge eating frequency. However, one could argue that from an escape theory model (Heatherton & Baumeister, 1991) the negative affect generated by high body surveillance and high body shame may motivate binge eating as an escape, though this pattern of results was not found in our study.

In the case of sexual self-efficacy as a moderator between self-objectification and the disordered eating variables, it is interesting that only the relationships involving the EAT-26 and vomiting frequency were found to be significant. Why is it that these disordered eating variables fit the hypothesized model, while the other ones did not? One possible explanation is that the self-objectification/disordered eating relationships that were moderated by sexual self-efficacy perhaps capture more of a willingness to engage in self-harm. For instance, the EAT-26 captures anorectic behavior, while our purging measure captures instances of self-induced vomiting, both behaviors that can be conceptualized as harming the body. The constructs that were not moderated (binge eating frequency and weight/shape concern) are

less clearly self-harm behaviors. It appears that women who are comfortable and confident in their abilities to mutually engage in healthy sexual practices with their partners are also more confident and willing to abstain from particularly harmful disordered eating, even if they report high levels of self-objectification. These women may want to change their appearances to conform to cultural standards, but may feel efficacious that they can reach these goals through healthy (e.g., moderate exercise and healthy diet) versus unhealthy (e.g., starvation or self-induced vomiting) means. Although we did not assess efficacy related to appearance or fitness, it could be that the sexual self-efficacy measure taps into a broader elevated sense of self-efficacy.

Turning to the mediation models, body shame and sexual self-efficacy did not mediate all of the relationships involving self-objectification and disordered eating, contrary to hypotheses. Body shame was a partial mediator of all of the self-objectification/disordered eating relationships (except for vomiting, for which it was a full mediator); sexual self-efficacy partially mediated only the self-objectification/weight and shape concern relationship. When performing path analysis on the self-objectification/disordered eating relationships with body shame and sexual self-efficacy as a set of mediators, all of the relationships were significantly mediated by this set of mediators, with body shame being a unique significant mediator and significantly stronger than sexual self-efficacy when examining the outcome variables of EAT-26 scores, binge eating, and weight and shape concern. This was not the case for vomiting frequency, in which the two mediators functioned significantly as a set, but body shame, although a significant unique mediator, was not significantly stronger than sexual self-efficacy.

The reverse pattern of mediation findings was observed when investigating risky sexual behaviors. Body shame did not mediate the relationships between self-objectification and number of sexual partners in the past year or frequency of use of protection against pregnancy. Sexual self-efficacy, on the other hand, partially mediated the self-objectification/number of sexual partners relationship, and fully mediated the self-objectification/frequency of use of protection relationship. That is, it appears that those who view themselves as objects tend to exhibit decreased confidence in relation to sexual behaviors and this low level of self-efficacy is, in turn, associated with the risky sexual behaviors of a higher number of sexual partners and a lower frequency of use of protection. From path analysis, the set of mediators did not significantly mediate the relationships involving either risky sexual behavior. Within the context of the set, while sexual self-efficacy was a significant and unique mediator of both the self-objectification/number of sexual partners relationship and the self-objectification/frequency of use of protection relationship, it was not significantly stronger than body shame.

Of particular interest is why sexual self-efficacy mediated only the relation between self-objectification and weight and shape concern rather than the relationships involving behaviors (anorectic behaviors, binge eating, vomiting). Perhaps what we are finding in this mediational model is an overall pattern of thinking in which the tendency to view oneself as an object leads to low feelings of efficacy in terms of how she can (or should) be in sexual situations, which then leads to fear, guilt, and preoccupation with body weight and shape. Thus, this mediational pathway may capture underlying attitudes of self-esteem or respect one has for her body. Presumably someone who believes she is capable of refusing sexual

intercourse will also have better attitudes/more respect toward her body (i.e., weight and shape) more generally.

Another incongruity emerged when considering the self-objectification/vomiting relation. When body shame and sexual self-efficacy were examined as a set of mediators, this set significantly mediated the relationship between self-objectification and vomiting frequency, with body shame as a significant specific mediator, but not significantly stronger than sexual self-efficacy. Although the fact that the two acted as a significant set of mediators is not surprising given past research on related constructs (Calogero & Thompson, 2009), the fact that body shame was not a significantly stronger mediator is. In their 2008 article, Preacher and Hayes state that this pattern of results can emerge when one of the specific mediators (in this case, body shame) is not “sufficiently far from zero” when conducting the contrast, which compares the two mediators to one another. Thus, although body shame was acting as a significant specific mediator, its effect was not strong enough to set it apart from the non-significant specific mediator of sexual self-efficacy. This finding, along with the fact that body shame only partially mediated the self-objectification/binge eating relationship, points to a need for identification of additional pathways that describe how a person would progress from self-objectification to binge eating. It is clear that other mediators besides body shame and sexual self-efficacy play a role in linking self-objectification and binge eating. These mediators need to be discovered in order to gain a better understanding of how self-objectification and binge eating are connected.

One thing to note when comparing the moderation and mediation findings is that in the mediation analyses, findings tended to cluster together based on what was conceptually related. For instance, body shame was found to mediate all of the self-

objectification/disordered eating relationships, while sexual self-efficacy was not found to be a mediator of these relationships (with the exception of weight and shape concern). This is in contrast to the moderation findings, in which there was more overlap, with both body shame and sexual self-efficacy acting as moderators of some of the self-objectification/disordered eating and self-objectification/risky sexual behavior relations.

There are several strengths of this study, one being the large sample size, which enabled us to discover significant moderator findings involving self-objectification, body shame, and disordered eating when there had not been previous support for this relationship. Additionally, this study is novel in that it investigated and found links between self-objectification and body shame and variables in the domain of risky sexual behaviors, and self-objectification and sexual self-efficacy and variables in the domain of disordered eating, further providing support for the linkage between disordered eating and risky sexual behaviors. This study also employed multiple ways of looking at disordered eating constructs, including both behavioral (e.g., bingeing and vomiting frequencies) and attitudinal (i.e., weight and shape concern). Finally, the online aspect allowed participants to complete the survey in the comfort of their homes; this may have lead to more honest responding to sensitive topics, especially those regarding risky sexual behaviors (Joinson, 2001).

There are several limitations to this study, mostly concerning the variables related to sexual behaviors and sexual self-efficacy. Less than half of our sample (47.8%) endorsed having had sexual intercourse within the past year. Data were not collected on lifetime sexual intercourse, but our sample appears to be relatively sexually inexperienced. As a result, the sexual self-efficacy measure was likely answered hypothetically by half of the sample. If one had not been in a difficult sexual experience before (for instance, trying to

convince a partner to wear a condom during sexual intercourse) she may overestimate or underestimate her efficacy in that situation. Thus, future studies should attempt to recruit a more sexually experienced sample in order for sexual self-efficacy reports to capture self-efficacy based on experiences rather than speculations.

Another limitation with having a sexually inexperienced sample is that the analyses regarding sexual behaviors (i.e., use of protection against pregnancy and number of sexual partners in the past year) only included those participants who indicated that they had been sexually active in the past year—this means that our sample size was significantly reduced for these analyses. With a larger sample size we would have had more power and thus a greater chance of uncovering small effects between our constructs. Generalizability of our findings is also a limitation. Participants were all relatively young, primarily Caucasian undergraduate women; we do not know whether these same findings would apply to women of other ages and races/ethnicities, males, a clinical eating disordered sample, or persons who engage in high sexual risk behaviors.

Future research should use a longitudinal design; as our study was cross-sectional, one cannot infer a causal relationship among our variables. There are a number of additional factors that could be contributing to the relationship between the independent variables and the outcome variables of risky sexual behavior and disordered eating. One such variable could be impulsivity. For example, someone who has high levels of self-objectification and body shame may not engage in high levels of disordered eating or risky sexual behaviors unless they are also high on impulsivity. A three way interaction could be explored to see if someone who views herself as an object, and experiences body shame and feels a need to act on it in the moment (i.e., impulsivity) may be more at risk for engaging in higher rates of

binging and vomiting or having unprotected sexual intercourse or a large number of sexual partners. A 2005 study conducted by Culbert and Klump found that among a sample of 500 undergraduate women, impulsivity functioned as a third variable, helping to partially explain the relationship between compensatory behaviors and increased sexual activity.

Future research should go beyond risky sexual behaviors to measure maladaptive sexual attitudes as well. Women who do not have a lot of sexual experience may have maladaptive sexual attitudes which are important in their own right as a topic of research and which likely will influence subsequent sexual behaviors. Additionally, future research should investigate sexual self-efficacy in a broader sense. The measure included in the study focused on refusal self-efficacy, and it would be interesting to see if the same associations are found with a more general sexual self-efficacy measure. Finally, use of protection during sexual intercourse was limited to protection to prevent pregnancy, which includes birth control that does not necessarily require a discussion with a partner (e.g., the pill, spermicide). Perhaps by assessing use of protection against sexually transmitted infections (STIs), we would have been able to tap into the mutuality of engaging in safe sexual behaviors through condom use, which is something both partners know about and (presumably) agree to engage in. Relatedly, future work should ask about behaviors intended to protect against STIs since asking about protecting one's body against STIs in particular might serve as a better proxy for risky sexual behaviors and respect for one's body more generally.

In terms of clinical implications, these data can be used to identify women who are most at risk for disordered eating or risky sexual behaviors. If clinicians are aware that their clients are engaging in high levels of self-objectification and endorse having high levels of

body shame (or low levels of sexual self-efficacy) they may be more likely to inquire about disordered eating and risky sexual behaviors. Being informed of the possible interrelatedness of these two seemingly disparate behaviors, they may be more likely to inquire about risky sexual experiences for disordered eating clients, or vice versa. Additionally, finding these significant interactions allows identification of different points of intervention. For example, if longitudinal data support causal relations, one could choose to focus on lowering self-objectification practices or boosting body acceptance or sexual self-efficacy to decrease risky behaviors. In regards to the mediation findings, the significant models aid clinicians in understanding the way self-objectification, the mediator (or set of mediators: body shame and sexual self-efficacy) and the dependent variable of either disordered eating or risky sexual behaviors are connected. Of note, in almost every case, the mediators partially mediated the self-objectification/dependent variable relations, which support the need for identifying additional explanatory pathways.

In sum, the moderators/mediators generally adhered most closely to the dependent variables of related content (i.e., body shame with disordered eating, sexual self-efficacy with risky sexual behaviors). The moderation models showed more crossover, whereas the mediation models had the most conceptually consistent findings. These results point to the need to further explore the common factors that impact both disordered eating and risky sexual behaviors.

Table 1

Means and Standard Deviations of Primary Measures

Measure	<i>M</i>	<i>SD</i>	<i>Range</i>
OBCS-Body Surveillance	4.80	.98	1 – 7
OBCS-Body Shame	3.31	1.19	1 – 7
Sexual Self-Efficacy	8.94	1.60	1 – 10
Eating Attitudes Test-26	8.27	9.44	0 – 78
EDE-Q-Binge Eating Frequency	1.86	4.70	0 – 60
EDE-Q Vomiting Frequency	.28	1.92	0 – 29
EDE-Q-Weight Concern and Shape Concern	2.33	1.59	0 – 6
SEQ-Number of Different Sexual Partners in the Past Year	1.95	1.61	1 – 11
SEQ-Frequency of Use of Protection Against Pregnancy During Sexual Intercourse	4.56	.96	1 – 5

Note. OBCS = Objectified Body Consciousness Scale. EDE-Q = Eating Disorder Examination Questionnaire. SEQ = Sexual Experiences Questionnaire. Binge eating and vomiting frequencies refer to the number of episodes of the behavior in the past 28 days. The SEQ questions about number of sexual partners and use of protection were only asked of individuals who endorsed having consensual sexual intercourse in the past year. For all measures, higher scores indicate higher levels of the construct.

Table 2

Correlations among primary constructs

	1	2	3	4	5	6	7	8	9	10
1. BMI	-									
2. Body surveillance	.07	-								
3. Body Shame	.31***	.51***	-							
4. Sexual Self-Efficacy	-.07	-.20***	-.26***	-						
5. EAT-26	.11*	.56***	.60***	-.23***	-					
6. Frequency of Binge Eating	.12*	.23***	.30***	-.10*	.36***	-				
7. Frequency of Vomiting	.01	.15**	.23***	-.18***	.38***	.25***	-			
8. Weight & Shape Concern	.38***	.59***	.75***	-.24***	.70***	.40***	.24***	-		
9. Number of Sexual Partners	.05	.27***	.14*	-.36***	.30***	-.01	-.01	.22**	-	
10. Protection Against Pregnancy	-.03	-.04	-.07	.23**	-.05	.03	-.11	-.07	-.08	-

Note. Variables are continuous, with higher values reflecting higher levels of the construct. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Hierarchical Multiple Regression Analyses of the Interaction of Body Surveillance and Body Shame with Disordered Eating as Dependent Variables

Step and predictors	B	SE B	β	t (dfs)	ΔR^2
Step 1	DV=EAT-26				
Body Surveillance	3.52	.44	.36***	8.01 (2,374)	
Body Shame	3.33	.36	.42***	9.34 (2,374)	.45***
Step 2					
Body Surveillance x Body Shame	2.45	.26	.33***	9.29 (1,373)	.10***
Step 1	DV=Binge Eating Frequency				
Body Surveillance	.48	.27	.10	1.81 (2,415)	
Body Shame	1.01	.22	.25***	4.64 (2,415)	.10***
Step 2					
Body Surveillance x Body Shame	.17	.18	.05	.95 (1,414)	.00
Step 1	DV=Vomiting Frequency				
Body Surveillance	.09	.11	.04	.77 (2,419)	
Body Shame	.35	.09	.21***	3.83 (2,419)	.06***
Step 2					
Body Surveillance x Body Shame	.37	.07	.24***	5.09 (1,418)	.06***
Step 1	DV=Weight & Shape Concern				
Body Surveillance	.46	.06	.28***	8.02 (2,420)	
Body Shame	.80	.05	.60***	17.04 (2,420)	.61***
Step 2					
Body Surveillance x Body Shame	.12	.04	.09**	3.08 (1,419)	.01**

Note. ** $p < .01$. *** $p < .001$.

Table 4

Hierarchical Multiple Regression Analyses of the Interaction of Body Surveillance and Sexual Self-Efficacy with Disordered Eating as Dependent Variables

Step and predictors	B	SE B	β	t (dfs)	ΔR^2
Step 1	DV=EAT-26				
Body Surveillance	5.17	.41	.54***	12.70 (2,386)	
Sexual Self-Efficacy	-.74	.25	-.13**	-2.94 (2,386)	.33***
Step 2					
Body Surveillance x Sexual Self-Efficacy	-.96	.28	-.15***	-3.48 (1,385)	.02***
Step 1	DV=Binge Eating Frequency				
Body Surveillance	1.03	.23	.22***	4.54 (2,432)	
Sexual Self-Efficacy	-.18	.14	-.06	-1.26 (2,432)	.06***
Step 2					
Body Surveillance x Sexual Self-Efficacy	.02	.16	.01	.13 (1,431)	.00
Step 1	DV=Vomiting Frequency				
Body Surveillance	.23	.09	.12*	2.48 (2,436)	
Sexual Self-Efficacy	-.19	.06	-.16***	-3.34 (2,436)	.05***
Step 2					
Body Surveillance x Sexual Self-Efficacy	-.32	.06	-.25***	-5.13 (1,435)	.05***
Step 1	DV=Weight & Shape Concern				
Body Surveillance	.92	.06	.57***	14.66 (2,437)	
Sexual Self-Efficacy	-.13	.04	-.13***	-3.41 (2,437)	.37***
Step 2					
Body Surveillance x Sexual Self-Efficacy	-.06	.04	-.06	-1.39 (1,436)	.00

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

Table 5

Hierarchical Multiple Regression Analyses of the Interaction of Body Surveillance and Body Shame with Risky Sexual Behaviors as Dependent Variables

Step and predictors	B	SE B	β	<i>t</i> (<i>dfs</i>)	ΔR^2
Step 1 DV=Number of Sexual Partners					
Body Surveillance	.45	.13	.27***	3.44 (2,200)	
Body Shame	.00	.11	.00	0.00 (2,200)	.08***
Step 2					
Body Surveillance x Body Shame	.02	.09	.02	.25 (1,199)	.00
Step 1 DV=Use of Protection Against Pregnancy					
Body Surveillance	-.03	.08	-.03	-.35 (2,198)	
Body Shame	-.04	.06	-.05	-.65 (2,198)	.01
Step 2					
Body Surveillance x Body Shame	.02	.06	.02	.31 (1,197)	.00

Note. Only those participants who endorsed having had sexual intercourse in the past year were asked to report on their number of sexual partners and use of protection against pregnancy *** $p < .001$.

Table 6

Hierarchical Multiple Regression Analyses of the Interaction of Body Surveillance and Sexual Self-Efficacy with Risky Sexual Behaviors as Dependent Variables

Step and predictors	B	SE B	β	t (dfs)	ΔR^2
Step 1 DV=Number of Sexual Partners					
Body Surveillance	.32	.11	.20**	3.05 (2,208)	
Sexual Self-Efficacy	-.27	.06	-.31***	-4.77 (2,208)	.16***
Step 2					
Body Surveillance x Sexual Self-Efficacy	-.24	.07	-.25***	-3.51 (1,207)	.05***
Step 1 DV=Use of Protection Against Pregnancy					
Body Surveillance	.01	.07	.01	.16 (2,206)	
Sexual Self-Efficacy	.12	.04	.24***	3.39 (2,206)	.05**
Step 2					
Body Surveillance x Sexual Self-Efficacy	.01	.04	.02	.26 (1,205)	.00

Note. Only those participants who endorsed having had sexual intercourse in the past year were asked to report on their number of sexual partners and use of protection against pregnancy. ** $p < .01$. *** $p < .001$.

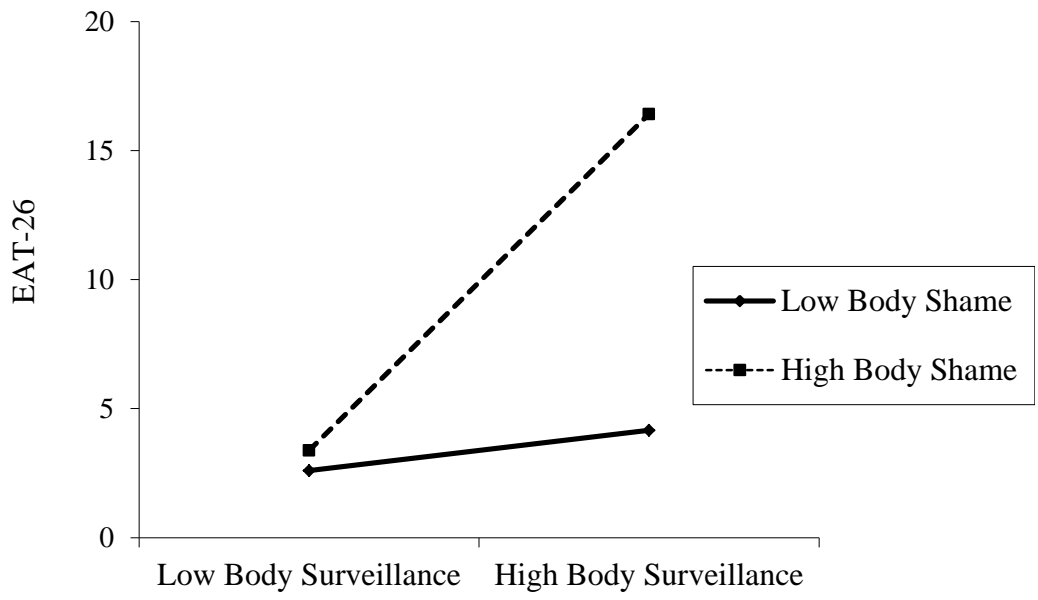


Figure 1. Interaction between body surveillance and body shame with the dependent variable of the EAT-26 scores.

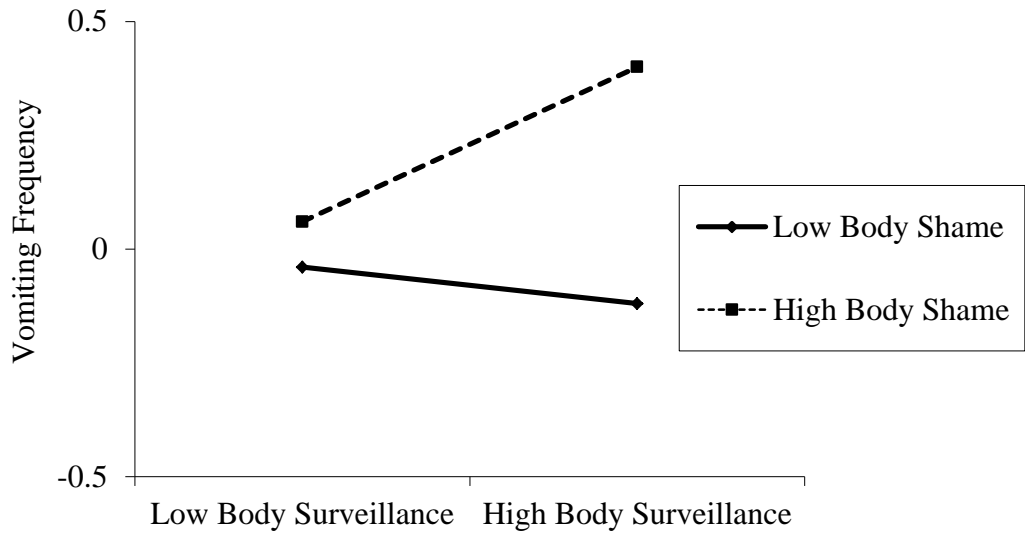


Figure 2. Interaction between body surveillance and body shame with the dependent variable of vomiting frequency.

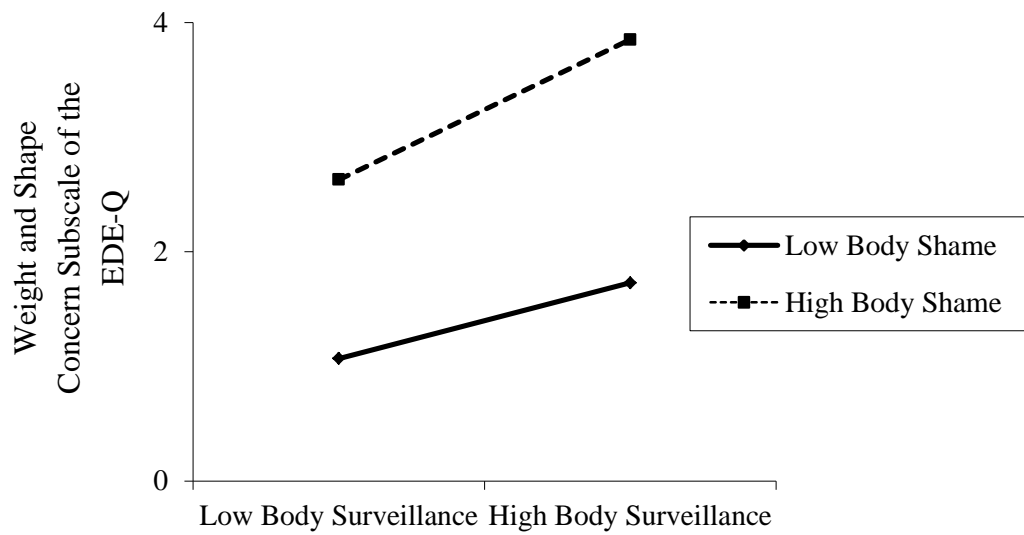


Figure 3. Interaction between body surveillance and body shame with the dependent variable of the combined Weight and Shape Concern subscales of the EDE-Q.

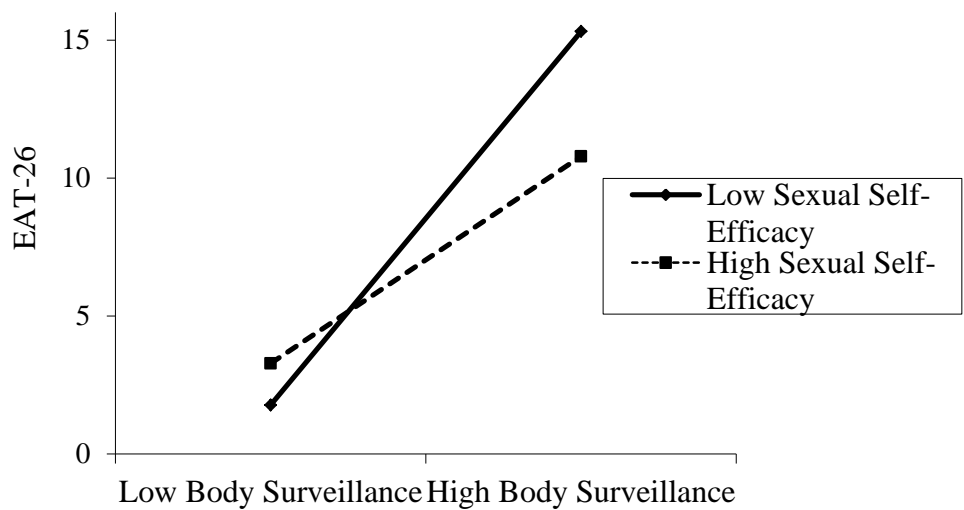


Figure 4. Interaction between body surveillance and sexual self-efficacy with the dependent variable of EAT-26 scores.

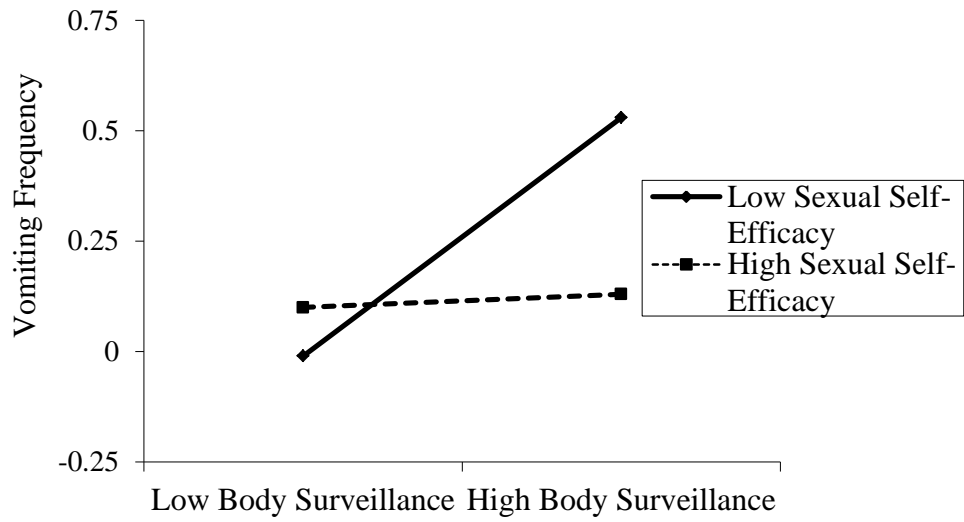


Figure 5. Interaction between body surveillance and sexual self-efficacy with the dependent variable of vomiting frequency.

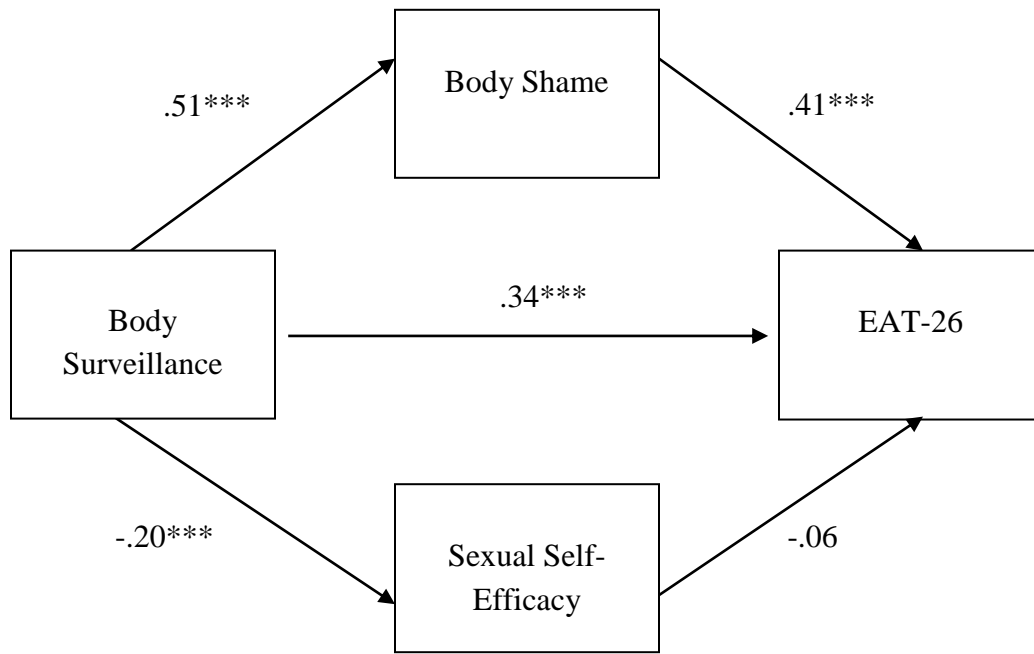


Figure 6. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and EAT-26 scores. Path values represent standardized regression coefficients. $^{***}p < .001$.

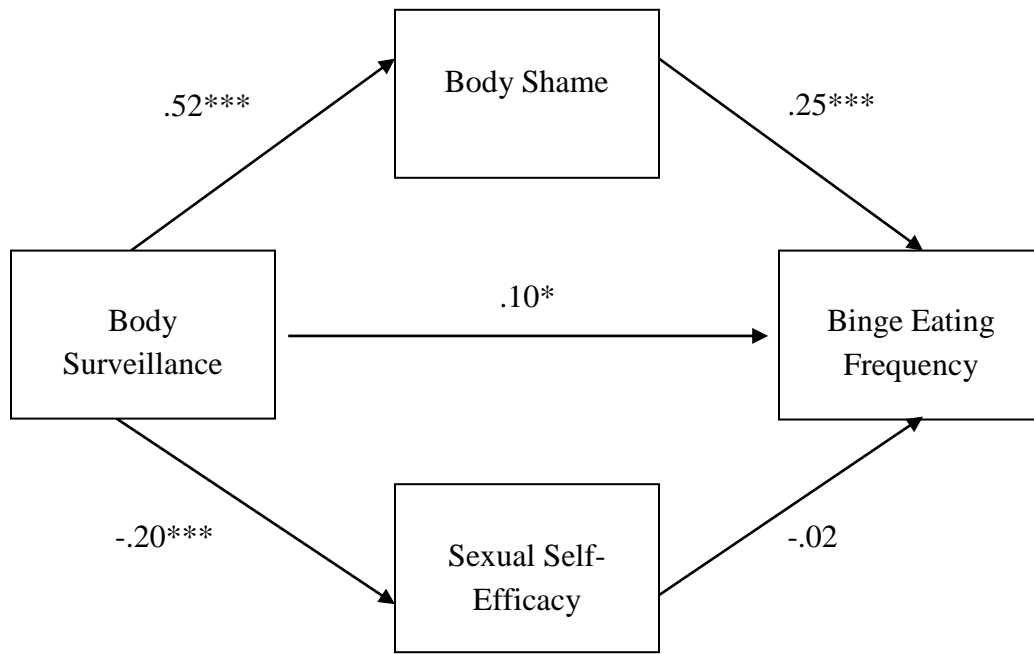


Figure 7. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and binge eating frequency. Path values represent standardized regression coefficients. * $p < .05$. *** $p < .001$.

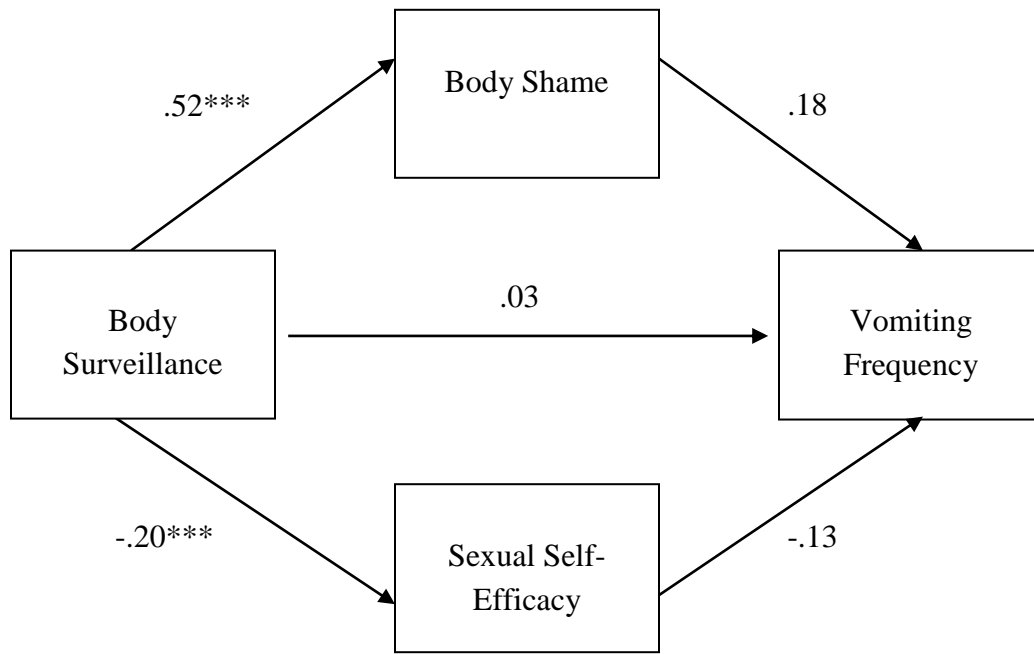


Figure 8. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and vomiting frequency. Path values represent standardized regression coefficients. $*** p < .001$.

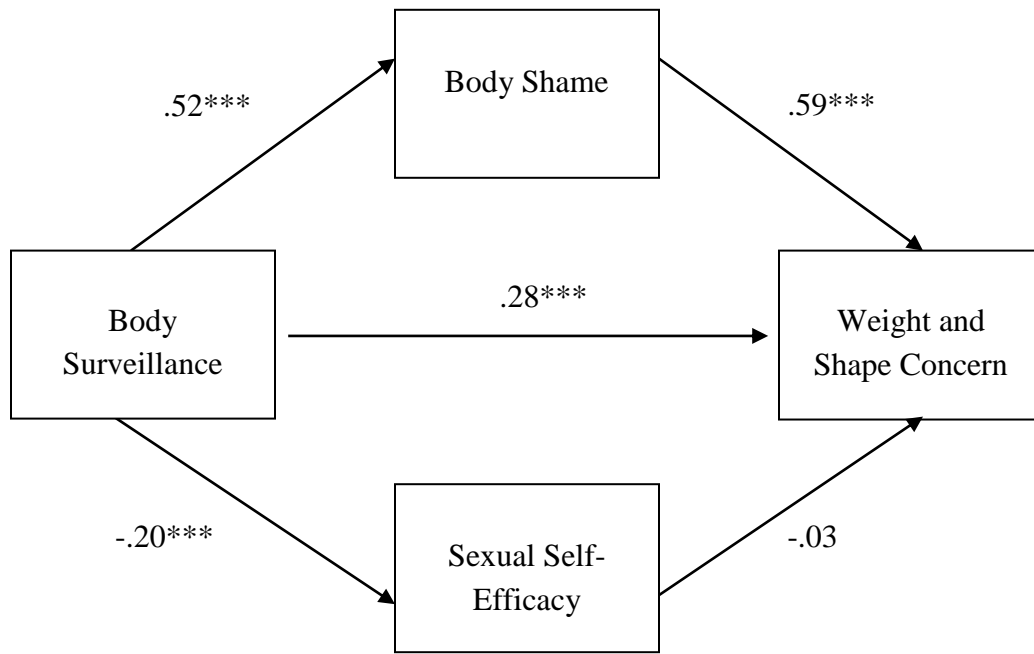


Figure 9. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and weight and shape concern. Path values represent standardized regression coefficients. *** $p < .001$.

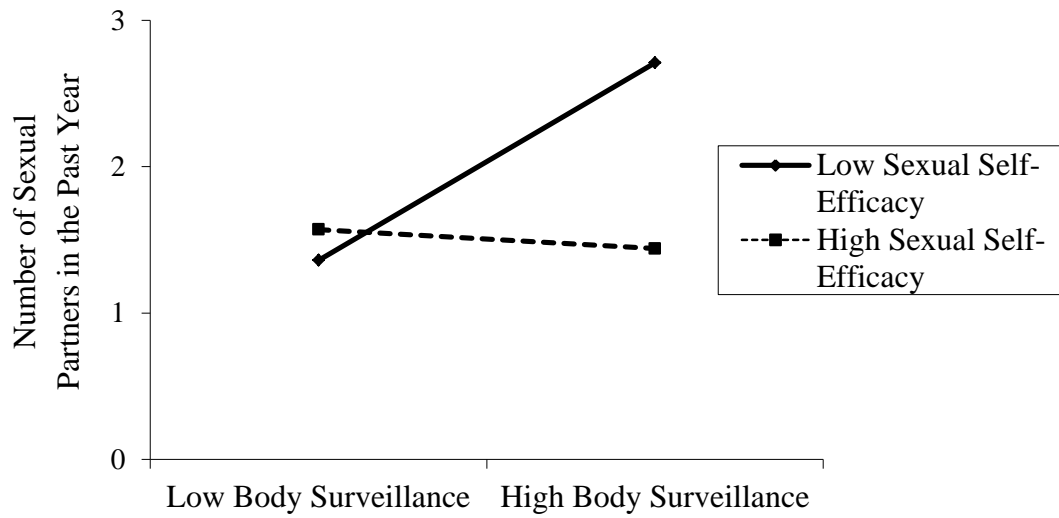


Figure 10. Interaction between body surveillance and sexual self-efficacy with the dependent variable of number of sexual partners in the past year.

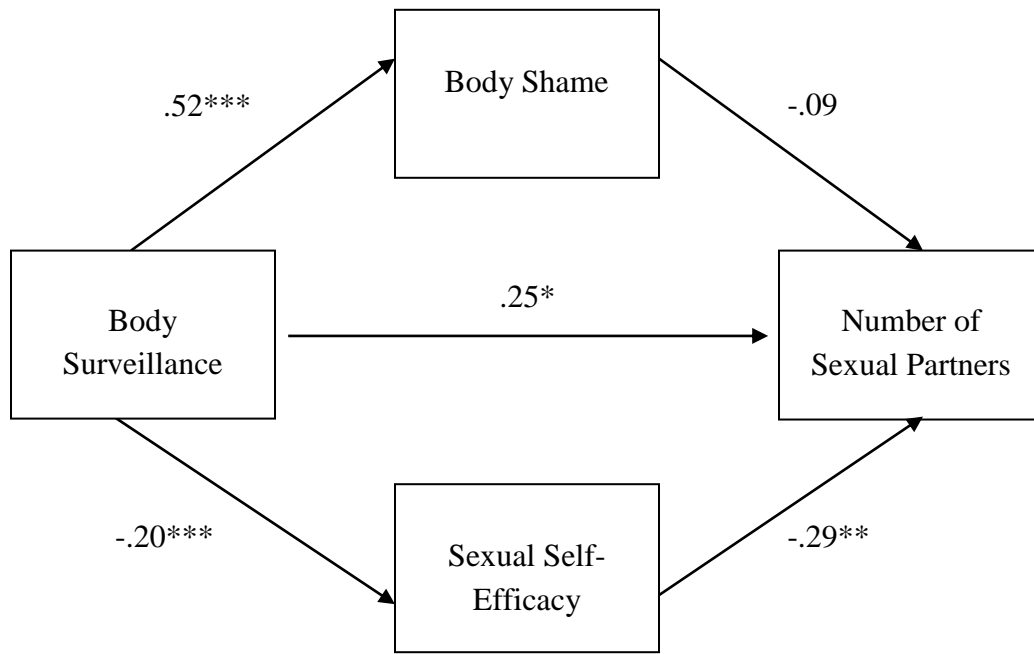


Figure 11. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and number of sexual partners in the past year. Path values represent standardized regression coefficients.

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

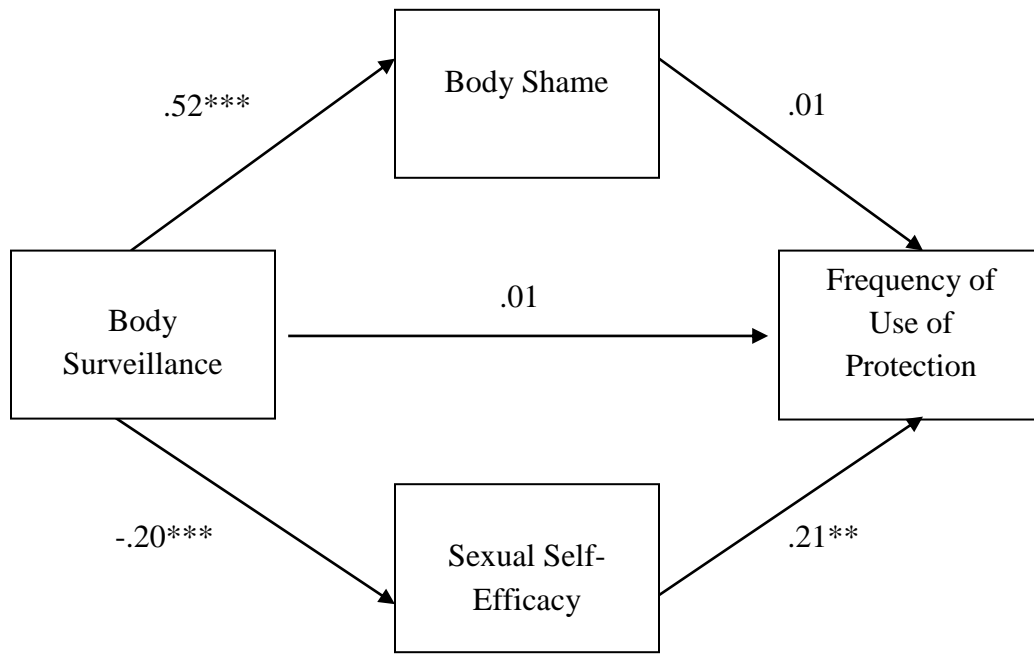


Figure 12. Body shame and sexual self-efficacy as mediators of the relation between body surveillance and frequency of use of protection against pregnancy. Path values represent standardized regression coefficients. ** $p < .01$. *** $p < .001$.

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