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### DOI

<https://doi.org/10.1037/pspi0000344>

### Link to record in KAR

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### Document Version

Author's Accepted Manuscript

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**Accepted, Uncorrected Manuscript**

Smile Pretty and Watch Your Back:

Personal Safety Anxiety and Vigilance in Objectification Theory

Rachel M. Calogero

Western University, Canada

Tracy L. Tylka

The Ohio State University, USA

Jaclyn A. Siegel

Western University, Canada

Afroditi Pina

University of Kent, United Kingdom

Tomi-Ann Roberts

Colorado College, USA

Author Note

Preregistered hypotheses and materials are available at  
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Data are available at [https://osf.io/x4gd5/?view\\_only=3811ca0a734f47918c7acedea0546d2b](https://osf.io/x4gd5/?view_only=3811ca0a734f47918c7acedea0546d2b).

Correspondence concerning this article should be addressed to Rachel M. Calogero, Western University, Department of Psychology, Westminster Hall, Third Floor, London, ON, N6A 5C2, Canada. Email: [rcaloger@uwo.ca](mailto:rcaloger@uwo.ca)

**The published version of this paper can be found here:**

Calogero, R.M. Tylka, T.L., Siegel, J.A., Pina, A., & Roberts, T-A. (2020). Smile pretty and watch your back: Personal safety anxiety and vigilance in objectification theory. *Journal of Personality and Social Psychology*. <http://dx.doi.org/10.1037/pspi0000344>

### Abstract

Objectification Theory posits that everyday encounters with sexual objectification carry a diffuse non-specific sense of threat that engenders personal safety anxiety in women. In this article, we provide direct evidence for this tenet across 5 studies and 1,665 participants using multiple methods. Study 1 ( $N = 207$ ) and Study 2 ( $N = 161$ ) explored and confirmed the factor structure of the Personal Safety Anxiety and Vigilance Scale (PSAVS), a measure of personal safety anxiety, and provided evidence for the reliability and construct validity of its scores. Study 3 ( $N = 363$ ) showed that personal safety anxiety is a conceptually different construct for women and men, and differentially mediated the relation between sexual objectification and restricted freedom of movement and the relation between self-objectification and restricted freedom of movement for women and women. Study 4 ( $N = 460$ ) included a comprehensive test of personal safety anxiety within an expanded Objectification Theory model, which supported personal safety anxiety as a mediator of the links from sexual and self-objectification to women's restricted freedom of movement. Study 5 ( $N = 474$ ) replicated these results while also adjusting for specific fears of crime and rape. Our findings offer a newly validated assessment tool for future research on safety anxiety, illuminate the real and lasting sense of threat engendered by everyday sexual objectification, and broaden understanding of the mental and physical constraints on women's lived experiences posited in Objectification Theory.

**Key words:** safety anxiety, sexual objectification, threat, scale validation, Objectification Theory

### **Introduction**

No aspect of well-being is more fundamental than freedom from personal harm motivated by hatred or fear of one's ascribed characteristics, that is, freedom from ideologically justified violence against one's person. Without such freedom it is impossible to implement other choices. To the extent that women's personal freedom is still restricted and denied, we can continue to speak of oppression.

- Sheffield (1987, p. 171)

Shoshana Roberts filmed her encounters of street harassment by men with a hidden camera when walking around New York City and documented an occurrence approximately every 6 minutes over a 10-hour period (Bliss & Roberts, 2014; Hollaback, 2014). When this public service announcement against street harassment went viral, Roberts received scores of rape threats online (McKinney, 2014). An epidemic of men groping women on trains in Tokyo led to the designation of subways and transit stations as women-only train cars to prevent the harassment (abcNews, 2005). Doris Chen's account of a man ejaculating on her in a carriage on the London Underground during her morning commute to work underscores the violability of women's personal space in public (Sanghani, 2014; see also Valenti, 2016). Rape threats and related misogynistic comments are increasingly prominent in a variety of social media (e.g., Twitter), and directed predominantly toward women (Hardaker & McGlashan, 2016).

Even in private spaces and amidst friends, partners and colleagues, girls and women are at risk of violation. In early adolescence, boys engage in unwanted contact and publicly humiliating treatment (e.g., slut shaming) toward girls in school, especially when their overtures have been rebuffed (Pascoe, 2011). One in five women report having experienced severe physical violence from an intimate partner (Centers for Disease Control, 2020). Every year, 600 American women are shot to death by intimate

partners and 4.5 million women alive today report that an intimate partner threatened them using a gun (Sorenson & Schut, 2018). Analyses of traits and attitudes among mass shooters show that hatred of women is common, and the online subculture of Incels (so-called “involuntary celibates”) is a striking example of men’s incitement of violence against women as backlash against gender equality (Flood, Dragiewicz, & Pease, 2018).

There is a very real threat in the air when it comes to the personal safety of girls and women. Objectification Theory posits that ubiquitous encounters with sexual objectification provide an ever-present reminder for women to feel concerned and worried about their safety and, in turn, to restrict their freedom of movement (Calogero, Tantleff-Dunn, & Thompson, 2011a; Fredrickson & Roberts, 1997). Research has established that acute experiences of gender-based violence and harassment can engender fear of rape (Fairchild & Rudman, 2008) and fear of rape has even been described as a “core” fear for women (Warr, 1985). Whereas fear is understood as a reaction to a specific, observable danger, anxiety is a more diffuse, unfocused, objectless, future-oriented feeling state (Barlow, 2002). Therefore, we theorize that chronic experiences of more everyday forms of objectifying interpersonal treatment, such as the harassment experienced by Shoshana Roberts, as well as chronic “second-hand” exposure to such treatment of women in media and marketing, likely contribute to anxiety by priming a non-specific sense of threat to girls’ and women’s personal safety. In the following studies, we developed a new scale to assess personal safety anxiety, the Personal Safety Anxiety and Vigilance Scale (PSAVS), and tested theoretically driven predictions for personal safety anxiety in relation to sexually objectifying experiences within a comprehensive and expanded objectification theory model.

### **The Objectification Theory Model**

Objectification Theory offers a testable framework for examining the consequences of sexual objectification for women—that is, “being treated as a body (or collection of body parts) valued predominantly for its use to (or consumption by) others” (Fredrickson & Roberts, 1997, p.174). Sexual objectification occurs along a spectrum that includes (but is not limited to) sexualized gazing,

unsolicited sexualized commentary, sexually objectifying media and pornography, sexual harassment and stalking, and contact sexual violence and rape (Davidson & Gervais, 2015; Fredrickson & Roberts, 1997; Roberts, Calogero, & Gervais, 2018; Swim, Hyers, Cohen, & Ferguson, 2001; Szymanski, Moffitt, & Carr, 2011). Objectification Theory proposes that sexual objectification experiences accumulate over time and foster a self-objectifying attitude, whereby girls and women psychologically and behaviorally invest in their appearance as a way of anticipating and managing how others will view and treat them (Roberts et al., 2018). Girls and women with higher trait and state levels of self-objectification tend to regard appearance as central to self-concept and vigilantly police their bodies and how they ‘look’ (Calogero, Tantleff-Dunn, & Thompson, 2011b; Calogero & Watson, 2009; McKinley & Hyde, 1996).

Over 20 years of research has found support for the theory’s main propositions: Self-objectification creates more opportunities for shame and anxiety about the body and fewer opportunities for bodily attunement and concentration, and this cascade of subjective experiences is associated with a heightened vulnerability to depressed mood, sexual dysfunction, and disordered eating (see Figure 1; Moradi & Huang, 2008; Roberts, et al., 2018; Tiggemann & Williams, 2012). A sizable research literature has also identified other maladaptive correlates and consequences of self-objectification in domains beyond those set out in the original objectification model in a variety of spheres of women’s lives (see Roberts et al., 2018).

Fredrickson and Roberts (1997) posited that women’s anxiety in relation to sexual and self-objectification contained two distinct components: appearance evaluation concerns and physical safety concerns. These could be considered manifestations of ambivalent sexism (Glick & Fiske, 1996) wherein appearance evaluation concerns are a reflection of more benevolent sexist stereotypes about sexy, attractive feminine appearance (e.g., girls and women should “smile pretty”), while concerns about safety are likely more an expression of hostile sexist assumptions about women’s “place” as lesser-than in the gender status quo (e.g., girls and women should “watch their backs”). Being vigilant

to, and balancing, both smiling pretty and watching one's back illustrates the way sexually objectifying treatment occurs along a continuum from seemingly benign commentary on girls' and women's appearance to gender-based violence (Fredrickson & Roberts, 1997). While studies have verified links between sexually objectifying treatment and specific fears of sexual violence (e.g., Fairchild & Rudman, 2008), to date, the more chronic personal safety anxiety predicted to be engendered in women in a cultural milieu of objectification has been given relatively little attention in the psychological literature (Calogero et al., 2019). Personal safety anxiety, as a manifestation of the threat of gender-based violence, warrants systematic investigation as a key existential component of being female-bodied in a sexually objectifying world.

### **Gender, Sexual Violence and Harassment**

Women comprise the vast majority of targets and men comprise the vast majority of perpetrators of sexual violence (Benoit, Shumka, & Vallance, 2010). Women are more likely than men to experience contact sexual violence, sexual coercion, non-contact sexual harassment, and stalking victimization (Smith et al., 2017). More than one third of men, for example, report perpetrating a sexual assault toward a woman (Koss, Gidycz, & Wisniewski, 1987) and 45% of women report experiencing sexual harassment at work (Pina, Gannon, & Saunders, 2009). In the 2011 Uniform Reporting Survey of Canada, women were 11 times more likely than men to be a victim of a sexual offense (Sinha, 2013). National and international studies show approximately 1 in 5 women in the U.S. report being raped in their lifetime (Black et al., 2011). Similarly, more than 1 in 5 women on U.S. college campuses have been raped or experienced an attempted rape (Muehlenhard, Peterson, Humphreys, & Jozkowski, 2017), and college women report experiences of sexual aggression more often than they can count (Papp & McClelland, 2020). One in 3 women will have experienced some form of contact sexual violence in their lifetime compared to 1 in 6 men (Smith et al., 2017). Nearly half of all female victims of rape first experienced sexual assault at the age of 17 or younger, and 1 in every 9 girls experience sexual abuse or assault from an adult before the age of 18 (Finkelhor, Turner,

Shattuck, & Hamby, 2014).

Women also report more routine experiences of unwanted and unsolicited sexual attention by men. A number of studies conducted over the past 25 years have identified street or stranger harassment as a quintessential female experience (Gardner, 1995). Nine out of 10 Canadian women have reported an experience of stranger harassment at least once in their lifetime (Lenton, Smith, Fox, & Morra, 1999). In a separate nationally representative sample in Canada, over 80% of women reported experiences of harassment by a male stranger in public (Macmillan, Nierobisz, & Welsh, 2000). In a sample of British women aged 18 to 34 living in London, England, 43% reported encounters of stranger harassment in the previous year (YouGov, 2012). Among a sample of U.S. college women, over 40% reported an experience of stranger harassment at least once a month (Fairchild & Rudman, 2008). In an Australian sample, women reported an average of one encounter of stranger harassment every two days over a 7-day period (Holland, Koval, Stratemeyer, Thomson, & Haslam, 2017). These objectively high rates of sexual violence and harassment against women may explain why women consistently report greater threats to physical safety than men do (Harris & Miller, 2000; Hoffman, Mair, Hunter, Prince, & Tebes, 2018).

### **Fear and Trembling**

While sexual violence constitutes the most traumatic end of sexual objectification, more routine sexually objectifying encounters include a wide range of situations and locations that signal the potential for sexually motivated bodily harm, and such experiences engender fear in women. In a study of university women in the UK (Donnelly & Calogero, 2018), experiences of stranger harassment were uniquely and positively linked to women's perceived likelihood of rape and intimate partner violence (two gender crimes whereby women are disproportionately the targets of sexual and physical violence and men the perpetrator) happening to them, and unrelated to perceived likelihood of burglary or human trafficking happening to them. Fairchild and Rudman (2008) found support for a model linking stranger harassment to self-objectification, self-objectification to fear of rape, and fear of rape to



restricted freedom of movement (i.e., in terms of how, when, and where the predominantly White female US college student participants would travel to avoid the threat of sexual violence). This study also demonstrated that active coping interacted with stranger harassment; women who experienced more frequent stranger harassment and used active strategies to cope with it reported lower self-objectification.

Another study found significant positive associations between interpersonal sexual objectification experiences and perceived risk and fear of crime in Black and White women, and the association between sexual objectification and fear of crime was fully explained by their perceptions of an overall greater perceived risk of crime (Watson, Marszalek, Dispenza, & Davids, 2015). Perceived risk of crime also fully mediated the relationship between sexual objectification experiences and psychological distress (i.e., depression, anxiety, stress) for Black women in this sample. In an ecological momentary assessment (EMA) study of Australian women on the emotional impact of objectification, interpersonal sexual objectification experiences as well as witnessing other women being objectified, increased self-objectification and its attendant negative emotional consequences, including anxiety (Koval et al., 2019). Finally, in an investigation of general anxiety (i.e., general somatic and panic symptoms) in predominantly White U.S. college women, street harassment predicted less perceived safety in both busy and isolated public settings, and higher general anxiety through perceived safety in secluded public spaces (Davidson, Butchko, Robbins, Sherd, & Gervais, 2016).

Everyday sexual objectification reinforces stereotypical gender roles and norms, specifically male agency and female passivity, whereby women endure unwanted male attention in public because it remains permissible for men to sexually harass women on the street. These encounters may serve as a perpetual reminder to women of their violability, requiring self-imposed vigilance across multiple spheres of daily life (Ferraro, 1996; Gordon & Riger, 1991; Kissling, 1991; Schafer, Huebner & Bynum, 2006; Sheffield, 1987; Warr, 1985; Yodanis, 2004). We posit that these encounters

accumulate to create a diffuse non-specific sense of threat that engenders personal safety anxiety in women. For the purpose of the present research, we returned to the original Objectification Theory framework, and sought to develop a specific measure of personal safety anxiety grounded in Objectification Theory in order to examine this existential element of women's lived experience in a sexually objectifying world.

### **An Expanded Objectification Theory Model**

To test our theoretically-driven hypotheses for the role of personal safety anxiety in the context of women's sexual objectification, we expanded the objectification theory model, incorporating three constructs that have not been examined systematically in past research on Objectification Theory: sexual objectification, personal safety anxiety, and restricted freedom of movement. In most tests of Objectification Theory to date, sexual objectification itself has not been directly examined (Roberts et al., 2018): rather, the focus has been on self-objectification in relation to the four subjective experiences (i.e., body shame, appearance anxiety, internal body awareness, and flow) and three mental health outcomes (i.e., disordered eating, depressed mood, and sexual dysfunction), as postulated in the original model (Tiggemann & Williams, 2012). In order to test safety anxiety as a unique subjective experience within the objectification theory model, sexual objectification itself must be included as the theoretical starting point for any of the proposed paths, especially the safety-related pathways. Further, we expected that self-objectification would connect sexual objectification to personal safety anxiety indirectly, because women who take this self-view experience their bodies as belonging less to them and more to others (Fredrickson & Roberts, 1997), and thus their own violability would be more salient to them.

We also considered that safety anxiety could express itself in other ways beyond the three mental health risks posited in Objectification Theory. Specifically, precautionary behavior to stay safe in everyday life is also a gendered phenomenon. When asked to describe what they do on any given day to maintain their personal safety, women listed multiple strategies (e.g., checking backseat of car,

keeping keys between fingers, pretending to talk on cell phone), whereas men listed noticeably fewer strategies for keeping themselves safe (Fredrickson & Roberts, 1997). To be clear, men also experience sexual objectification and may feel anxious about their personal safety, but research has shown that women make adaptations to their routines and lifestyle because of safety concerns to a much greater degree than men do (Fisher, Sloan, & Wilkins, 1995). In particular, women restrict their mobility and free movement, such as staying indoors, not walking alone, or checking behind them, to avoid sexual harassment and violence (Pain, 1991). Despite the fact that restricted freedom of movement and corresponding precautionary behaviors are viewed as commonplace and inevitable for women, they warrant empirical attention and scrutiny. Self-imposed behavioral restrictions may seem subtle in form, but they accumulate for women and “may exert a considerable toll on their time, effort, and freedom” (Riger & Gordon, 1981, p. 87).

The original objectification theory framework focused on disordered eating, depressed mood, and sexual dysfunction as mental health concerns that occur at a disproportionately higher rate in women compared to men. These mental health domains share another common feature—they all operate in ways that constrain and limit women’s subjectivity and personhood. In our expanded objectification theory model, we included restricted freedom of movement alongside disordered eating, depressed mood, and sexual dysfunction, as part of a collection of mental and physical constraints on women’s lived experiences. Under this broader conceptual umbrella of constraint, we examine whether encounters of sexual objectification, self-objectification, and a cascade of gendered subjective experiences ultimately narrow important ways in which women experience and conduct their lives, whether it be through how they care for their bodies, feel emotion, feel pleasure, and/or move in the world.

### **Overview of Research**

The present article advances the social psychological literature on Objectification Theory (Fredrickson & Roberts, 1997) by providing evidence for personal safety anxiety as a theoretically

proposed existential experience linking encounters of sexual objectification and self-objectification to physical constraints on women's lives, essentially keeping them "in their place." The present article aims to (a) develop and validate a new scale to assess the construct of personal safety anxiety and (b) directly investigate personal safety as a phenomenological experience within a comprehensive and expanded objectification theory model that includes restricted freedom of movement as a unique constraint on women's lived experience (see Figure 1). We examine the construct validation of the Personal Safety Anxiety and Vigilance Scale (PSAVS) through tests of scale and theory validation across five studies (see Table 1), which also responds to the call for more rigorous and sound validity evidence for measurement scales used in the field of social psychology (see Flake, Pek, & Hehman, 2017, for review of validity evidence reported in JPSP articles).

In Studies 1 and 2, we explored and confirmed the factor structure of the PSAVS, and examined the internal and test-retest reliability, construct and criterion-related validity (distinguishing personal safety anxiety from both rape-specific fears and more general fearfulness), and measurement invariance over time of its scores. In Study 3, we compared the stability of the PSAVS across women and men, evaluated our core hypothesized model from sexual objectification to personal safety anxiety to restricted freedom of movement, and tested whether personal safety anxiety would mediate the pathway between sexual objectification and restricted freedom of movement for women and men. In Study 4, we examined personal safety anxiety within a comprehensive and expanded objectification theory model that included sexual objectification, personal safety anxiety, and restricted freedom of movement as a unique downstream physical constraint on women's lived experience. Finally, in Study 5, we conducted a preregistered replication of the expanded objectification model from Study 4 and adjusted the model for specific fears of crime and rape.

**Study 1: Personal Safety Anxiety and Vigilance –  
Scale Development and Construct Validity**

Study 1 had four aims. First, we developed potential PSAVS items that tap into the personal safety anxiety construct. We generated 33 items that comprehensively assessed safety anxiety and vigilance. Second, we sought external review of these items for content coverage and clarity, and then modified the items accordingly. Four scholars, who have published extensively in the areas of Objectification Theory and sexual violence, reviewed the items to ensure that they, as a group, adequately covered the breadth of the safety anxiety construct. Content experts suggested minor revisions to several items for clarity, adding items for content coverage, and deleting items that were redundant or tangential to the safety anxiety construct. After integrating the experts' feedback, the PSAVS contained 19 items, which are presented in Table 2. Third, using data garnered from an independent sample of online community women, we examined the factor structure of the PSAVS using exploratory factor analysis. Fourth, we estimated the internal consistency, construct (i.e., convergent, discriminant, and incremental) validity, and criterion-related validity of the PSAVS's scores.

It was expected that the PSAVS items would adhere to a unidimensional solution representing personal safety anxiety (H1) and that its items would be internally consistent (H2). In terms of construct and criterion-related validity evidence, we hypothesized that the PSAVS should be related to experiences of sexual objectification, other relevant objectification theory variables, rape-specific fears, and restricted freedom of movement (H3). More specifically, Objectification Theory posits that women who sexually objectified will experience heightened anxiety about their safety (Fredrickson & Roberts, 1997); thus, we expected the frequency of interpersonal experiences of sexual objectification would be positively related to scores on the PSAVS (H3a). The theory also posits that women who self-objectify and habitually monitor their bodies experience more personal safety anxiety; thus, we expected self-objectification would be positively related to scores on the PSAVS (H3b). Consistent with our expanded objectification theory model, we expected PSAVS scores would be positively related to behaviors that restrict freedom of movement in an attempt to improve personal safety (e.g.,

carrying keys in a defensive manner, checking the back seat of car for intruders, etc.) (H3c).

Furthermore, given their shared phenomenology within the context of sexual objectification, we expected the PSAVS would be positively related to specific fears of being raped by strangers or acquaintances (H3d). We also expected PSAVS scores would be positively related to other sociocultural attitudes toward appearance that reflect being the recipient of the male gaze, including thin-ideal internalization (H3e) and self-sexualization (H3f).

Conversely, PSAVS scores should be conceptually distinct from (i.e., not strongly related to) positive and negative affect (H4a, H4b), the emotion of fear specifically (H4c), body shame (H4d), anxiety related to appearance (H4e), and a general sense of relational power (H4f). Given that personal safety anxiety and negative affect both entail emotional distress, a small degree of overlap may be found between these two variables, but personal safety anxiety should be distinguishable from negative affect, including the more specific negative emotion of fear, and largely independent of positive affect. We propose that personal safety anxiety should be distinguishable from body shame and appearance anxiety; while all three of these subjective experiences include concerns about how one's body will be evaluated, safety anxiety encompasses a chronic vigilance to the threat of personal harm, and not only the threat of negative evaluation, in a sexually-objectifying milieu. Additionally, there should be construct independence between personal safety anxiety and perceptions of power within relationships, as women's personal safety anxiety should occur apart from the perception of low relational power and personal control (e.g., having ideas and opinions ignored). Support for these hypotheses would thereby yield discriminant validity evidence for the PSAVS.

The incremental validity of the PSAVS, and thus personal safety anxiety as a construct, was also explored. Personal safety anxiety is positioned in Objectification Theory as (a) engendered subjective experience that occurs as a result of exposure to encounters with sexual objectification and engaging in habitual self-objectification and (b) distinct from appearance anxiety. If personal safety anxiety is indeed a distinct construct in Objectification Theory, then the PSAVS should account for

unique variance in restricted freedom of movement above these variables. Furthermore, personal safety anxiety should be conceptually distinct from rape-specific fears and more specific than a general tendency to be fearful. Therefore, we hypothesized that PSAVS would explain unique variance in restricted movement above general fear, experiences of sexual objectification, self-objectification, and appearance anxiety, and would remain a significant predictor after accounting for rape-specific fears in the model (H6). These findings would highlight personal safety anxiety as a distinct form of anxiety that limits women's freedom to move about in the world.

## **Method**

**Participants and procedure.** We recruited participants from Amazon Mechanical Turk (MTurk), an online website whereby participants receive monetary compensation for completing surveys or other tasks (i.e., "HITs"). When compared to data gathered from college student samples, data gathered from MTurk have been shown to be more diverse and nationally representative, but just as psychometrically sound (Buhrmester, Kwang, & Gosling, 2011). U.S. citizens who had completed at least 500 HITs and had their previous HITs approved  $\geq 95\%$  of the time could view this study on the MTurk website, which was described to participants as a study involving the "perceptions and experiences of yourself and others." Interested participants signed up on the MTurk website and were directed to a link on Qualtrics to complete the survey. We were interested in only women's responses for the initial set of studies, given the disproportionately higher rates of sexual objectification and violence experienced by women compared to men. While men were allowed to take the survey and received credit for their responses, we only analyzed data from participants who identified as women. Measures were counterbalanced to control for order effects. Participants each received \$1.00 as remuneration.

We screened for duplicate data and erroneous data. Women were excluded if they completed the questionnaire more than once, failed a validity question (e.g., "Answer seldom to this item so we know you are paying attention") within the battery, terminated early, or had significant missing data

(i.e.,  $\geq 20\%$  of items missing on a given questionnaire). Approximately 9% of participants were excluded for these reasons, leaving 207 women (see Table 3 for demographic information). This sample size was sufficient to run exploratory factor analysis based on Bentler's (1990) guideline to include 5-10 participants for every 1 parameter. In the present study, 20 parameters were estimated, and thus 100-200 participants are recommended.

### **Measures.**

***Personal safety anxiety and vigilance.*** Participants were instructed, "For each item, please select the response that best matches your attitudes and experience," when answering the PSAVS items. The response scale provided to participants was *completely unlike me* (scored as 1), *unlike me* (2), *slightly unlike me* (3), *neither unlike me or like me* (4), *slightly like me* (5), *like me* (6), and *completely like me* (7).

***Rape-specific fears.*** Women responded to four questions pertaining to concerns about rape (Fairchild & Rudman, 2008), including two about their fear of being raped (i.e., "How afraid are you of being raped by a stranger?" and "How afraid are you of being raped by an acquaintance?") and two about their perceived likelihood of being raped (e.g., "How likely are you to be raped by a stranger?" and "How likely are you to be raped by an acquaintance?"). These items were rated on a 11-point scale ranging from *not at all afraid* (or *not at all likely*) (scored as 0) to *very afraid* (or *very likely*) (10). Given their similarity in wording and content, these four items were averaged to create a total score, with higher scores indicating greater rape-specific fears.

***Restricted freedom of movement.*** Participants were asked to indicate how often they engage in any of the following 10 strategies for personal safety that reflect restricted freedom of movement in their everyday environment: carry something to defend self, walk with another individual, plan route with safety in mind, stay home for fear of going out alone, carry keys in a defensive manner, avoid walking past strangers when alone, lock car doors when alone, check back seat of car for intruders, pretend to talk on cell phone when walking or waiting alone, and change routine or activities. This list



was developed for the purpose of this research, expanding on the movement behaviors indicated by Fairchild and Rudman (2008). A point was awarded for every strategy endorsed; thus, participants' scores could range from 0 to 10, with higher scores indicating more restricted freedom of movement.

***Interpersonal sexual objectification.*** The 15-item Interpersonal Sexual Objectification Scale (ISOS; Kozee, Tylka, Augustus-Horvath, & Denchik, 2007) assesses how often participants directly experience body evaluation by others through items such as “How often have you been whistled at while walking down a street?” and unwanted sexual advances through items such as “How often has someone grabbed or pinched one of your private body areas against your will?” ISOS items are rated along a 5-point scale ranging from *never* (scored as 1) to *almost always* (5) and averaged, with higher scores reflecting higher levels of sexual objectification. The internal consistency, 3-week test-retest reliability, and construct validity of its scores were upheld among college and community samples of women (Augustus-Horvath & Tylka, 2009; Kozee et al., 2007).

***Self-objectification.*** The 8-item Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996) measures the tendency to habitually monitor appearance. In this version, its items (e.g., “During the day, I think about how I look many times”) were rated along a 5-point scale ranging from *strongly disagree* (scored as 1) to *strongly agree* (5) and averaged, with higher scores reflecting greater self-objectification. The internal consistency, 2-week test-retest reliability, and construct validity of its scores were upheld among community, college, and MTurk samples of women (Augustus-Horvath & Tylka, 2009; McKinley & Hyde, 1996; Tylka & Iannantuono, 2016).

***Body shame.*** The 8-item Body Shame subscale of the OBCS (McKinley & Hyde, 1996) assesses experiencing shame as a result of not conforming to societal appearance standards. In this version, its items (e.g., “I feel like I must be a bad person when I don't look as good as I could”) were rated along a 5-point scale ranging from *strongly disagree* (scored as 1) to *strongly agree* (5) and averaged, with higher scores reflecting greater body shame. The internal consistency, 2-week test-

retest reliability, and construct validity of its scores were upheld among community, college, and MTurk samples of women (Augustus-Horvath & Tylka, 2009; McKinley & Hyde, 1996; Tylka & Iannantuono, 2016).

***Appearance anxiety.*** The 14-item brief version of the Appearance Anxiety Scale (Dion, Dion, & Keelan, 1990) measures the degree of worry and concern directed at the body's appearance. Its items (e.g., "I feel nervous about aspects of my physical appearance") are rated along a 5-point scale ranging from *never true of me* (scored as 1) to *almost always true of me* (5) and averaged, with higher scores corresponding to greater levels of appearance anxiety. The internal consistency, 2-week test-retest reliability, and construct validity of its scores were supported among university women (Dion et al., 1990).

***Thin-ideal internalization.*** The 9-item Internalization-General subscale of the Sociocultural Attitudes Toward Appearance Questionnaire-3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) assesses the extent to which individuals have internalized the thin media ideal as their personal standard (e.g., "I would like my body to look like the models who appear in magazines"). Its items are rated along a 5-point scale ranging from *definitely disagree* (scored as 1) to *definitely agree* (5) and averaged, with higher scores reflecting greater internalization. Internal consistency and construct validity of its scores have been upheld with college women (Thompson et al., 2004).

***Self-sexualization.*** The 10-item Self-Sexualization Behavior Questionnaire for Women (SSBQ-W; Smolak, Murnen, & Myers, 2014) measures the extent to which women engage in certain behaviors specifically to appear sexy. Its items (e.g., "Remove or trim genital hair?", "Wear a low-cut blouse or dress?") are rated along a 5-point scale ranging from *never* (scored as 1) to *always* (5) and averaged, with higher scores corresponding to higher self-sexualization. Internal consistency and construct validity of its scores have been upheld in samples of college women (Smolak et al., 2014).

***Negative and positive affect, general fear.*** The 10-item Negative Affect subscale and the 10-

item Positive Affect subscale from the Positive and Negative Affect Schedule-Expanded (PANAS-X; Watson & Clark, 1994; Watson, Clark, & Tellegen, 1988) gauged participants' level of negative and positive emotions, respectively. Participants rated the 10 negative (e.g., "distressed," "scared") and 10 positive (i.e., "interested," "excited") emotions along a 5-point scale ranging from *very slightly or not at all* (scored as 1) to *extremely* (5) in terms of how they tend to feel in general. Subscale items were averaged, with higher scores reflecting greater negative and positive affect, respectively. The internal consistency, 2-month stability, and construct validity of their scores were upheld among college women (Watson & Clark, 1994; Watson et al., 1988). We also used Watson and Clark's (1994) fear subscale, which only includes the four negative affect items of "afraid," "scared," "nervous," and "jittery" to assess participants' level of general fear.

**Relational power.** The 8-item Sense of Power Scale (Anderson, John, & Keltner, 2012) instructs participants to report the degree to which they feel a sense of power in their relationships with others. Each item begins with "In my relationships with others..." and sample endings include "I think I have a great deal of power" and "My ideas and opinions are often ignored" (reverse scored). Items are rated along a 7-point Likert scale ranging from *disagree strongly* (scored as 1) to *agree strongly* (7). Once appropriate items are reverse scored, items are averaged, and higher scores correspond to a higher sense of relational power. Internal consistency and construct validity of its scores have been upheld in samples of community adults (Anderson et al., 2012).

## Results

**Preliminary analyses.** According to Little's MCAR analyses, data were missing completely at random  $\chi^2(3056) = 3144.78, p = .129$ . Thus, we used multiple imputation (i.e., fully conditional specification, calculated via SPSS 25.0) to estimate missing values. Variable means, standard deviations, and alphas are presented in Table 4.

**Exploring the PSAVS's factor structure.** Exploratory factor analyses with Principal Axis Factoring were conducted on the 19 PSAVS items using SPSS 25.0. Given that the PSAVS was

hypothesized to be unidimensional, we used quartimax rotation. We planned to retain an item if it had (a) a factor loading of at least .50 on a primary factor, (b) cross-loading(s) less than .30, and (c) correlations  $\leq .30$  in the off-diagonal area of the anti-image correlation matrix, suggesting low item redundancy (Brown, 2006; Tabachnick & Fidell, 2007).

The size of the Kaiser-Meyer-Olkin measure of sampling adequacy ( $KMO = .946$ ) suggested that the 19 PSAVS items had adequate common variance for factor analysis, and the significance of Bartlett's test of sphericity,  $\chi^2(171) = 2614.73, p < .001$ , indicated that the correlation matrix was factorable (Tabachnick & Fidell, 2007). Parallel analysis<sup>1</sup>, used to inform the number of factors to extract, indicated that one factor was interpretable. Factor loadings for all exploratory analyses are included in Table 2.

Two items (Items 17 and 18) had factor loadings below .50 on this factor and were excluded from consideration. The off-diagonal area in the anti-image correlation matrix revealed six item pairs that contained item redundancies (i.e.,  $r_s > -.30$ ). We extracted one item from each pair, with item choice being based on the size of the factor loadings and item content and clarity. Thus, Items 2, 4, 5, 10, 13, and 16 were removed. A factor analysis on the 11 remaining items revealed a unidimensional solution, accounting for 52.99% of the total item variance; however, the anti-image correlation matrix revealed that an additional three pairs contained item redundancy: Items 6, 7, and 9 were consequently removed. The final eight items yielded a unidimensional solution that accounted for 56.03% of the total item variance, with no large item redundancies. These findings uphold H1, yielding preliminary evidence that the PSAVS has a unidimensional factor structure. The remaining analyses were conducted with these eight PSAVS items.

**PSAVS means.** The 8-item PSAVS total score mean was 4.17 ( $SD = 1.48$ ) on a 7-point scale,

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<sup>1</sup>The rationale behind parallel analysis is that the factors underlying a measure should account for more variance than is expected by chance. Therefore, factor analysis is performed on the actual data as well as multiple sets of random data (in this case, 10,000) that have the same dimensions as the actual data set. If the eigenvalue generated from the analysis of the actual data exceeds the corresponding pooled eigenvalue from the analysis of the random data, then that factor may be interpretable (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

and individual item mean scores ranged from 3.24 ( $SD = 2.01$ ; Item 19) to 5.16 ( $SD = 1.83$ ; Item 12). All items and the total score did not exceed a skewness value  $> |0.96|$  and/or kurtosis value  $> |1.33|$ , values which indicate that the PSAVS total and item scores were normally distributed.

**Internal consistency.** Cronbach alpha was .88 for the 8-item PSAVS. This value upholds the internal consistency of the PSAVS's scores for community women, supporting H2.

**Convergent, discriminant, and criterion-related (concurrent) validity.** As illustrated in Table 4, the 8-item PSAVS was positively related to interpersonal sexual objectification (supporting H3a), self-objectification (supporting H3b), restricted freedom of movement (supporting H3c), and rape-specific fears (supporting H3d). In addition, the PSAVS was positively related to other sociocultural attitudes toward appearance, including thin-ideal internalization (supporting H3e) and self-sexualization (supporting H3f). The PSAVS was also conceptually and empirically distinct from relevant constructs related to affect and Objectification Theory. Specifically, the PSAVS was unrelated to positive affect and significantly but weakly related to negative affect, supporting H4a and H4b. PSAVS demonstrated small significant correlations with general fear (supporting H4c), body shame (supporting H4d), and appearance anxiety (supporting H4e). PSAVS was unrelated to a sense of relational power (supporting H4f).

**Incremental validity.** As illustrated in Table 5, the significant increment in  $R^2$  at Step 3 supported the PSAVS's unique contribution to restricted freedom of movement (12.9%) above general fear, interpersonal sexual objectification, self-objectification, and appearance anxiety, and rape-specific fears, supporting Hypothesis 6. Rape-specific fears did not account for unique variance in restricted freedom of movement. The overall model accounted for 28.2% of the variance in restricted movement,  $F(6, 170) = 11.14, p < .001$ .

## Discussion

The results of Study 1 reveal a coherent 8-item scale that measures the extent to which women experience anxiety related to personal safety. Women varied in their degree of personal safety anxiety;

however the mean PSAVS score was above the scale mid-point, indicating a moderate degree of personal safety anxiety characterized this sample of women. The PSAVS demonstrated internal consistency as well as convergent, concurrent, and discriminant validity. These findings support the distinctiveness of personal safety anxiety from general fear, other key objectification theory constructs, and rape-specific fears, as well as provide initial support for the PSAVS's distinctive contributions within the objectification theory framework. Collectively, these findings are consistent with the tenets of Objectification Theory, providing preliminary support for the construct validity of the PSAVS.

### **Study 2: Personal Safety Anxiety and Vigilance Scale – CFA, Construct Stability and Fidelity**

Study 2 had two stages. First, we examined whether the PSAVS's unidimensional factor structure would be confirmed in an independent sample of community women. We hypothesized that the PSAVS would yield a unidimensional solution via confirmatory factor analysis (CFA; H1). Second, given that personal safety anxiety is not conceptualized as a fleeting state but as lingering anxiety (Fredrickson & Roberts, 1997; Sheffield, 1987), we estimated the equivalence of the PSAVS's scores completed three weeks apart. Furthermore, we expected that the meaning of the construct itself would not change for women during this period. According to Kline (2005), the recommendation for test-retest reliability of stable constructs is “the maximal interval possible without undue cost” (p. 170). We considered a 3-week lapse between administrations of the scale to be sufficient because this interval is long enough to minimize recency and memory effects, but short enough to minimize the possibility for true change to occur in people's personal safety anxiety (Cattell, Eber, & Tatsuoka, 1970). Between 2- and 4-weeks appears to be a standard time interval for test-retest reliability. We expected PSAVS scores would be equivalent (H2a) and the personal safety construct invariant over a 3-week period (H2b), upholding test-retest reliability.

### **Method**

**Participants and procedure.** We recruited participants from MTurk. We restricted the sample to U.S. citizens who had completed at least 100 MTurk HITs and had their previous work approved at

least 98% of the time. This study was described to all participants as “a survey about your perceptions of safety.” Self-identifying women provided their consent and completed the 8-item PSAVS (see Appendix A) online via Survey Monkey. Participants who identified as male were channeled to a different survey of approximately equal length and analyzed independently of the present study. Participants each received \$1.00 as remuneration. Participants also completed a “3-week follow-up study about perceptions of safety” for an additional \$2.00 bonus payment. They were not informed that they would be taking the PSAVS again or that the purpose of this study was to understand whether perceptions of safety were stable over time. Twenty days after completing the first administration, participants were contacted (via their MTurk ID code) through the MTurk system with the informed consent and survey link. They were asked to complete the survey within three days, if they were still interested. We matched these data to prior PSAVS item scores using participants’ MTurk ID code.

Women were excluded if they completed the questionnaire battery more than once, completed Study 1, failed the embedded validity question, failed to complete the PSAVS the second time, terminated early, or had significant missing data. Approximately 10% of cases were excluded based on these criteria, leaving a final sample size of 161. The final sample size was sufficient to run a CFA based on the 5-10 participants for every 1 parameter guideline (Bentler, 1990). Thus, because 16 parameters were estimated in the present study, a sample of at least 80-160 is recommended. See Table 3 for demographic information.

**Measures.** Participants completed the eight-item PSAVS to assess personal safety anxiety and vigilance at both time points (see Appendix A).

## Results

**PSAVS means.** No PSAVS item was missing across participants; thus, missing data did not have to be estimated. The 8-item PSAVS total score mean was 4.65 ( $SD = 1.18$ ) at Time 1 and 4.63 ( $SD = 1.14$ ) at Time 2. Furthermore, mean item scores did not exceed skewness  $> |1.48|$  and/or kurtosis value  $> |2.16|$ , which indicate that the PSAVS item scores would not pose problems in the CFA.

**Internal consistency.** Cronbach alphas were .86 for the 8-item PSAVS (Time 1 data) and .85 (Time 2 data). These values further uphold the internal consistency of the PSAVS's scores.

**Confirming the PSAVS's factor structure.** Mplus Version 6.12 (Muthén & Muthén, 1998-2011) with maximum likelihood estimation was used to confirm the PSAVS's factor structure using Time 1 data. Adequacy of model fit was determined via consensus among the comparative fit index (CFI), standardized root-mean square residual (SRMR), and root mean square error of approximation (RMSEA). Values around  $\geq .95$  for CFI,  $\leq .08$  for SRMR, and  $\leq .06$  for RMSEA indicate a good fit of the model to the data, whereas values between .90-.94 for CFI, .09-.10 for SRMR, and .07-.10 for RMSEA indicate an acceptable fit (Hu & Bentler, 1999). We specified each PSAVS item to load on a personal safety anxiety latent factor. Findings from this CFA indicated that each item was significant and loaded onto the latent factor (see Table 2), accounting for 51.09% of its variance, and the overall model provided a good fit to the data (CFI = 1.00, SRMR = .035, RMSEA = .007 [90% CI = .000-.068],  $\chi^2(20) = 20.16$ ,  $p = .448$ ).

**Test-retest reliability and construct fidelity.** Test-retest reliability and the fidelity of the personal safety anxiety construct were examined across two measurement occasions. First, an intraclass correlation coefficient (ICC) and paired sample  $t$ -test were used to estimate the invariance of the PSAVS's scores across the 3-week period. The ICC was .826 ( $p < .001$ ), and scores on the PSAVS did not increase or decrease over the 3-week time period,  $t(160) = 0.39$ ,  $p = .695$ , demonstrating the dependability of the PSAVS, and upholding H2a. Second, measurement invariance analyses were used to determine whether the personal safety anxiety construct was invariant for Time 1 and Time 2 (that is, the meaning of the construct should not change for women over this time period). Three levels of invariance were examined: configural, factor loading, and intercept; these findings are presented in Table 6. The configural invariant model provided an acceptable-to-good fit to the data. Factor loading invariance was also achieved, given that the factor loading invariant model did not differ significantly from the configural invariant model,  $\Delta\chi^2(7) = 3.7$ ,  $p = .814$ , and changes in fit indices (i.e.,  $\Delta\text{CFI} = -$



.004,  $\Delta$ SRMR = .008,  $\Delta$ RMSEA = .009) were within Chen's (2007) recommendations for factor loading invariance. Last, intercept invariance was also supported, given that the intercept invariant model did not differ significantly from the factor loading invariant model,  $\Delta\chi^2(8) = 4.94, p = .764$ , and model fit changes (i.e.,  $\Delta$ CFI = -.003,  $\Delta$ SRMR = .003,  $\Delta$ RMSEA = .008) were within Chen's recommendations for intercept invariance. Therefore, for Time 1 and Time 2, the latent personal safety anxiety constructs were similar, the magnitudes of the factor loadings relating each PSAVS item to the personal anxiety constructs were similar, and the intercepts of the regression relating each item to the personal anxiety constructs were similar, indicating that the meaning of the personal safety anxiety construct was dependable for women over time, supporting H2b. These findings reveal strong support for the invariance of the PSAVS scores over a 3-week period, upholding H2.

### **Discussion**

Overall, these findings lend further support for the psychometric soundness of the PSAVS. CFA confirmed the unidimensional structure of the PSAVS. The invariance of the PSAVS was also demonstrated over a 3-week period, suggesting that personal safety anxiety is not transient but is unchanging in its meaning and lingers for women over time. Mean PSAVS scores for this sample at both time points were above the scale midpoint, again indicating that a moderate degree of personal safety anxiety characterized the experience of these women. The remaining studies in this article focus on testing the theoretical linkages for personal safety anxiety within our expanded objectification theory model.

### **Study 3: Participant Gender Comparisons of Personal Safety Anxiety**

Study 3 centered on the examination of personal safety anxiety as a gendered subjective experience, whereby women, compared to men, are more anxious and perceive more danger in ambiguous situations (Harris & Miller, 2000). Consistent with Objectification Theory, we examined the equivalence of the PSAVS across women and men and tested a hypothesized model linking sexual objectification to restricted freedom of movement through self-objectification, body shame, and

personal safety anxiety in women and men. First, we examined whether personal safety anxiety is a similar construct for women and men to determine whether this subjective experience varied between the gender groups using measurement invariance analyses (H1). If personal safety anxiety is similar between women and men, then we planned to test for mean differences with the expectation that women would report higher personal safety anxiety compared to men. We also compared women and men on the other variables included in the hypothesized model. We predicted more restricted freedom of movement for women compared to men (H2a), and based on past research, we also expected higher levels of interpersonal sexual objectification (H2b), self-objectification (H2c), and body shame (H2d) for women compared to men.

Second, informed by Objectification Theory and the findings from Studies 1 and 2, we evaluated the fit of the data to our hypothesized model for women and men, whereby interpersonal sexual objectification and self-objectification both predict personal safety anxiety, and personal safety anxiety operates alongside body shame as a subjective experience to predict restricted freedom of movement. The phenomenological experience of body shame could also manifest in restricting voluntary movement and activity where public evaluation may be anticipated (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Siegel, Huellemann, Calogero, & Roberts, 2020). The linking of self-objectification to well-being outcomes through body shame also represents a core mediation model in Objectification Theory (Schaefer et al., 2018). Therefore, we included body shame as an additional subjective experience that may account for variance in this behavior alongside safety anxiety. Given the hypothesized model for women and men was derived from Objectification Theory and centers on women's lived experiences, we hypothesized that the model would provide a good fit for women's data, with the theoretical pathways supported (H3), while it would not provide a good fit for men's data. We further evaluated differences in the pathways between women and men via multiple group analysis, with the expectation that the strength of the model pathways involving personal safety anxiety would be different between women and men (H4).

Third, we tested whether personal safety anxiety would mediate the pathway between interpersonal sexual objectification and restricted freedom of movement (H5a) and the pathway between self-objectification and restricted freedom of movement (H5b) for women and men, thereby providing a more specific gender test of personal safety anxiety in relation to sexual objectification. We predicted that these mediation analyses would be significant for women but not men (H5c).

## Method

**Participants and procedure.** We recruited participants from MTurk. Workers who were U.S. citizens and had their previous work approved at least 95% of the time could view the HIT, which was described as a study about how we “evaluate ourselves, others, and our social experiences.” Those who chose to participate were directed to a Qualtrics link that housed the measures in counterbalanced order, with the demographics presented last. Participants were debriefed at the end of the study and each received \$1.00 as remuneration.

Of the 252 workers who participated, 10 were excluded for failing the validity check and three were excluded for failing to respond to most of the items, leaving a sample size of 239 for the analyses (175 women, 64 men). To increase the sample size for men, we added an additional 164 men to the sample whose data were collected in the first study (alongside the data from women), but had not yet been analyzed; see Study 1 for the procedure. Of these additional men, 26 were excluded for failing to respond to two or more items within a single scale, 10 were excluded for failing to complete the PSAVS and/or the measure of restricted freedom of movement, and four were excluded for failing the validity check, leaving an additional 124 men for the analyses. We confirmed that the additional sample of men did not differ from the original sample of men in terms of age,  $F(1, 186) = 0.22, p = .643$ , personal safety anxiety,  $F(1, 186) = 0.18, p = .673$ , or restricted freedom of movement,  $F(1, 186) = 0.01, p = .920$ . The sample sizes for women and men each exceeded the 60-120 participants needed for the minimum case-to-parameter ratio of 5-10:1 (Bentler, 1990; Kline, 2010).

The final combined sample consisted of 363 participants, including 175 women ( $M_{\text{age}} = 38.59$ ,

$SD = 13.09$ ) and 188 men ( $M_{age} = 36.96$ ,  $SD = 13.12$ ) who did not differ significantly in age,  $t(356) = 1.18$ ,  $p = .240$ ). See Table 3 for demographic information.

**Measures.** The 8-item PSAVS (assessing personal safety anxiety), 15-item ISOS (assessing interpersonal sexual objectification), and 8-item Surveillance and 8-item Body Shame subscales of the OBC were administered, along with the 10 items assessing restricted freedom of movement; these measures are fully described in Study 1.

## Results

**Preliminary analyses.** According to Little's MCAR analyses, data were missing completely at random  $\chi^2(577) = 381.63$ ,  $p = 1.00$ , with the individual missing data points only accounting for 0.07% of the data. Thus, we used multiple imputation (i.e., fully conditional specification, calculated via SPSS 25.0) to estimate the few missing data points for the scales. Skewness and kurtosis values were  $\leq |0.81|$  and  $\leq |0.47|$ , respectively, for scale/subscale scores and  $\leq |0.81|$  and  $\leq |1.31|$ , respectively, for PSAVS items. These values would not pose problems in the planned analyses. Table 7 includes the variable means, standard deviations, alphas, effect sizes, and intercorrelations for Study 3.

**Equivalence of personal safety anxiety construct across women and men.** Measurement invariance analyses determined the extent to which the personal anxiety construct is similar between women and men based on the overall model fit (configural invariance), similarity of magnitudes of item-factor loadings (factor loading invariance), and similarity of intercepts relating items to the personal anxiety factor (intercept invariance). Table 6 includes the model fit indices. The configural invariance model provided a sub-par fit to the data, indicating the same items do not load on the same latent construct for women and men. The factor loading invariance model significantly differed from the configural invariance model,  $\Delta\chi^2(7) = 19.91$ ,  $p = .006$ , changes in fit indices (i.e.,  $\Delta CFI = -.014$ ,  $\Delta SRMR = .025$ ,  $\Delta RMSEA = .002$ ) were not within Chen's (2007) recommendations for factor loading invariance, and the model fit indices were poor. Intercept invariance also was not obtained, as the intercept invariant model differed significantly from the factor loading invariant model,  $\Delta\chi^2(8) =$

70.99,  $p < .001$ , and model fit changes (i.e.,  $\Delta CFI = -.069$ ,  $\Delta SRMR = .079$ ,  $\Delta RMSEA = .019$ ) were inconsistent with Chen's recommendations for intercept invariance. Overall, these findings provide strong evidence that the personal safety anxiety construct is conceptually and empirically different for women and men, upholding H1.

**Gender differences in model variables.** Given measurement non-invariance, we could not compare women's and men's mean scores on personal safety anxiety. As hypothesized, women scored higher than men on restricted freedom of movement,  $t(361) = 7.29$ ,  $p < .001$ , with a large degree of difference (H2a). Additionally, women also scored higher than men on interpersonal sexual objectification,  $t(361) = 7.00$ ,  $p < .001$ , and self-objectification,  $t(361) = 2.40$ ,  $p = .017$ , with the degrees of difference being large (H2b) and moderate (H2c), respectively. The hypothesis that body shame would be significantly higher in women than men,  $t(361) = 0.41$ ,  $p = .680$ , was not supported (H2d).

**Evaluation of hypothesized model.** We conducted latent variable structural equation modeling, via Mplus Version 6.12 (Muthén & Muthén, 1998-2011) with maximum likelihood estimation to examine whether the hypothesized model fit the data for women and men. For each latent variable, we created three parcels by conducting an EFA on the items of the respective scale, rank ordering the items by their factor loadings, and then successively assigning (from the highest to the lowest loading) the items to one of the three parcels (Russell, Kahn, Spoth, & Altmaier, 1998). Items within each parcel were then averaged, and the three total parcel scores were used to estimate the latent variable. All parcels loaded on their respective latent factor (all  $ps < .0001$ ). Skew and kurtosis values were  $\leq |0.57|$  and  $\leq |1.06|$ , respectively, for women's data and  $\leq |1.72|$  and  $\leq |2.25|$ , respectively, for men's data.

Adequacy of model fit was determined by consensus among the CFI, SRMR, and RMSEA fit indices (Hu & Bentler, 1999). Prior to analyzing the structural model, we analyzed the measurement model for women and men. The measurement model provided an adequate fit to both women's data,

CFI = .939, SRMR = .059, RMSEA = .088 (90% CI = .070, .106),  $\chi^2(67) = 157.79$ ,  $p < .001$ , and men's data, CFI = .959, SRMR = .066, RMSEA = .070 (90% CI = .051, .088),  $\chi^2(67) = 128.08$ ,  $p < .001$ . Thus, we proceeded to examine the structural models.

The hypothesized structural model provided an adequate fit to the data for women, CFI = .941, SRMR = .059, RMSEA = .085 (90% CI = .068, .103),  $\chi^2(70) = 158.55$ ,  $p < .001$ , and men, CFI = .948, SRMR = .093, RMSEA = .076 (90% CI = .059, .094),  $\chi^2(70) = 146.81$ ,  $p < .001$ , upholding H3. Yet, the pattern of significant paths was different for women and men (see Figure 2 for standardized paths). For women, all hypothesized paths were significant except for the path from body shame to restricted freedom of movement. For men, two paths were nonsignificant: the path from interpersonal sexual objectification to objectification and the path from self-objectification to personal safety anxiety. For the multiple group analysis, we ran an invariant model (where all paths were constrained to be equal) to a variant model (in which all paths were freely estimated). The invariant model, CFI = .924, SRMR = .090, RMSEA = .090 (90% CI = .078, .101),  $\chi^2(155) = 375.12$ ,  $p < .001$ , was significantly different from the variant model, CFI = .926, SRMR = .080, RMSEA = .090 (90% CI = .078, .102),  $\chi^2(149) = 361.96$ ,  $p < .001$ ;  $\Delta\chi^2(6) = 13.16$ ,  $p = .041$ , suggesting that the models fit differently for women and men. To examine which paths were different, we compared the invariant model to six different models, each allowing only one path to vary (the other five paths were held invariant). One of these comparisons was significant, suggesting that the path from self-objectification to personal safety anxiety was different in strength for women and men,  $\Delta\chi^2(1) = 5.32$ ,  $p = .021$ , with a stronger path evident for women (see Figure 2). The remaining paths were similar in strength between women and men. Therefore, H4 was partially supported, as one of six pathways was significantly stronger for women.

**Mediation.** For both women's and men's data, we examined our hypothesis of whether personal safety anxiety mediated the path between interpersonal sexual objectification and restricted freedom of movement. We used Shrout and Bolger's (2002) bootstrap procedures to estimate the

significance of the indirect effect, which indicates mediation. More specifically, we specified Mplus to create 10,000 bootstrap samples from the data set by random sampling with replacement, and then generate indirect effects. Upholding H5a, personal safety anxiety mediated the path between interpersonal sexual objectification and restricted freedom of movement for women (indirect effect  $\beta = .228$ ,  $p < .001$ ,  $B = .065$ ,  $SE = .019$  [99% CI = .024, .123]). This mediation analysis was also significant for men (indirect effect  $\beta = .289$ ,  $p < .001$ ,  $B = .071$ ,  $SE = .024$  [99% CI = .018, .144]). For women, personal safety anxiety also mediated the path between self-surveillance and restricted freedom of movement (indirect effect  $\beta = .243$ ,  $p < .001$ ,  $B = .071$ ,  $SE = .024$  [99% CI = .018, .144]), thereby supporting H5b. This analysis was not significant for men (indirect effect  $\beta = .039$ ,  $p = .414$ ,  $B = .008$ ,  $SE = .010$  [99% CI = -.016, .038]). Given that both mediation analyses were significant for women (as expected), and one was unexpectedly significant for men, H5c was partially supported.

## Discussion

The findings in Study 3 support the hypothesis that women and men do not experience personal safety anxiety equivalently, and therefore their PSVAS scores cannot be directly compared. In terms of gender group comparisons for the other variables in the model, women reported more restricted movement compared to men. Women also reported more frequent experiences of interpersonal forms of sexual objectification, and higher self-objectification. No gender group differences were observed in the degree of body shame reported.

For women, we also observed the expected chain of variables from interpersonal sexual objectification to self-objectification to body shame that is consistent with Objectification Theory, and the hypothesized chain from self-objectification to personal safety anxiety to restricted freedom of movement. We did not, however, observe the expected link from body shame to restricted freedom of movement for women, which further distinguishes the role of safety-based concerns from body shame in women's self-imposed restrictions on their everyday movement. For men, we did not observe a link from self-objectification to restricted movement through personal safety anxiety or body shame.

Notably, the critical pathway tested from sexual objectification to personal safety anxiety to restricted movement was supported in both gender groups, as well as the indirect effect of sexual objectification on restricted movement through personal safety anxiety. These findings suggest that sexual objectification has the potential to produce safety anxiety and restricted movement in anyone who experiences this kind of treatment. As we also observed, however, the pattern of variable means indicate that women encounter sexual objectification more often in their daily lives, experience more diffuse feelings of anxiety about their personal safety in public and private, and impose more behavioral restrictions on their everyday movements to keep themselves safe. The pattern of means observed here, along with the measurement's noninvariance, underscore the proposition in Objectification Theory that personal safety anxiety may not be unique to women, but it is a gender-related subjective experience that disproportionately affects them (Fredrickson & Roberts, 1997; Harris & Miller, 2000). Men's experience of personal safety anxiety warrants further independent investigation.

#### **Study 4: Comprehensive Test of an Expanded Objectification Model**

This study constitutes a comprehensive test of the objectification theory model as depicted in Figure 1. We examined the pathways from sexual objectification to self-objectification, self-objectification to each of the five subjective experiences (i.e., personal safety anxiety, body shame, appearance anxiety, interoceptive awareness, flow), and each of the subjective experiences to each of the four mental and physical constraint variables (i.e., restricted freedom of movement, disordered eating, depressed mood, sexual functioning). Thus, this model included all postulated variables and the links among them within a single framework and study. Notably, this study also afforded a comprehensive test of the generality of the relations among all of the variables named in the original objectification theory model, using alternative, and in several instances more robustly validated, measures of the objectification theory variables. Given the focus of this study was on the role of personal safety anxiety, we center the presentation of our hypotheses related to personal safety anxiety



and restricted movement in order to highlight the most novel tests in this study.

First, past research has not routinely included sexual objectification in tests of the objectification theory model, with sexual objectification absent entirely from the model (Tiggemann & Williams, 2012) or only examined in relation to one mental or physical constraint variable (e.g., Calogero, Pina, Park, & Rahemtulla, 2010; Kozee et al., 2007). Given that an accumulation of sexually objectifying experiences is proposed to lay the groundwork for self-objectification and the chain of consequences (Moradi & Huang, 2008), and we argue that personal safety anxiety occurs because everyday sexual objectification signals the potential for personal boundary violation, it was critical to include sexual objectification in a comprehensive test of our hypotheses related to personal safety anxiety. Given the findings from Study 1 and 3, and our own conceptualization of personal safety anxiety as a response to sexual objectification, we added a direct path from sexual objectification to personal safety anxiety. Consistent with Objectification Theory, we hypothesized that experiences of sexual objectification would be directly and positively associated with self-objectification (H1) and indirectly associated with personal safety anxiety through self-objectification (H2), as well as directly linked to personal safety anxiety (H3). We used the *Self-Objectification Beliefs and Behaviors Scale* to assess self-objectification, which encompasses two core components of an objectified self-perspective—internalizing an outsider’s view of the body and regarding one’s body as representing the self (Lindner & Tantleff-Dunn, 2017). This scale represents a more coherent indicator of self-objectification compared to previous measures, including the Self-Objectification Questionnaire (Fredrickson et al., 1998) and the OBCS-Surveillance Scale (McKinley & Hyde, 1996), thus overcoming key limitations and critiques of commonly used measures of self-objectification (Calogero, 2011).

Second, in our expanded objectification theory model, we included restricted freedom of movement alongside disordered eating, depressed mood, and sexual dysfunction, as part of a constellation of mental and physical constraints on women’s lived experiences. Under this broader

conceptual umbrella of constraint, we examined whether encounters of sexual objectification, self-objectification, and a cascade of subjective experiences ultimately narrow important ways in which women experience and conduct their lives, such as staying indoors, not walking alone, or checking behind them (Pain, 1991). We expected a direct and positive link from personal safety anxiety to restricted freedom of movement after considering the contributions of the other four subjective experiences in the model (H4). We added paths from the other four subjective experiences to restricted freedom of movement to examine these relations, however we did not specify specific hypotheses for these pathways. We also added paths from personal safety anxiety to the other three constraint variables (see Moradi & Huang, 2008), which were not explicitly delineated in Objectification Theory, but rather implied through the more general linking of subjective experiences to the mental health risks. We did not have specific hypotheses for these pathways.

Third, we expected that personal safety anxiety would mediate the relations between sexual objectification and restricted freedom of movement (H5) as well as self-objectification and restricted freedom of movement (H6). While evidence was accrued for these mediation relationships in Study 3, the present study places these pathways within the context of the full set of Objectification Theory variables, and employs alternative measures of the Objectification Theory variables to examine the generality of these relations. We also hypothesized a serial mediation model, whereby sexual objectification would be linked to restricted freedom of movement via self-objectification and personal safety anxiety (H7). This linkage was of particular interest in the current study.

Finally, consistent with Objectification Theory and past research (Fredrickson & Roberts, 1997; Tiggemann & Williams, 2012), we expected to find support for the pathways from self-objectification to the other four subjective experiences, and from the other four subjective experiences to the other three constraint variables. Specifically, we expected a direct and positive link from self-objectification to body shame (H8a) and appearance anxiety (H8b), and a direct negative link from self-objectification to interoceptive awareness (H8c) and flow (H8d). We also expected a direct and

positive link from body shame and appearance anxiety, respectively, to disordered eating (H9a, H9b), depressed mood (H10a, H10b), and sexual functioning (H11a, H11b); and a direct and negative link from interceptive awareness and flow, respectively, to disordered eating (H9c, H9d), depressed mood (H10c, H10d), and sexual functioning (H11c, H11d).

## **Method**

**Participants and procedure.** We recruited participants from MTurk. Workers who were U.S. citizens and had their previous work approved at least 95% of the time could view the HIT, which was described as a study about personal and social wellness. We invited women only to complete the survey, and we confirmed the self-identified gender of the participants at the beginning and end of the survey. Those who chose to participate were directed to a Qualtrics link, which housed the measures in counterbalanced order, with the demographics presented last. Participants were debriefed at the end of the study and each received \$2.00 as remuneration.

After providing consent and prior to the start of the survey, participants confirmed their gender. If they indicated any gender other than ‘woman/female,’ they were directed out of the survey. A total of 501 women completed the survey. We screened for duplicate data and erroneous data. Women were excluded if they completed the questionnaire more than once, failed a validity question (e.g., “Answer seldom to this item so we know you are paying attention”) within the battery, terminated early, or had significant missing data (i.e.,  $\geq 20\%$  of items missing on a given questionnaire). Approximately 8.2% ( $n = 41$ ) was excluded for these reasons, leaving 460 women. This sample size was sufficient to estimate the 92 parameters in the hypothesized structural equation model, given a 5:1 participant-to-parameter ratio (Bentler, 1990; Kline, 2010). See Table 3 for demographic information.

## **Measures**

Participants completed the 8-item PSAVS to assess personal safety anxiety and vigilance, the 10 items assessing restricted freedom of movement described previously, and the measures detailed

below in counterbalanced order to provide a comprehensive assessment of the key variables postulated in Objectification Theory.

**Sexual objectification.** Participants completed the Stranger Harassment Index (SHI) to assess a broad range of sexually harassing behaviors in public (Fairchild & Rudman, 2008; derived from the Sexual Experiences Questionnaire by Fitzgerald, Gelfand, & Drasgow, 1995), which has demonstrated reliability and validity. The SHI assesses the occurrence and frequency of nine different behaviors from strangers that range in severity (i.e., catcalls, whistles, or stares from a stranger; unwanted sexual attention or interaction from a stranger; unwanted touching, stroking, or hugging from a stranger). Its items are rated in terms of how often the behavior has been experienced over the past year (1 = *never*; 2 = *once*; 3 = *once per month*; 4 = *2-4 times per month*; 5 = *every few days*; 6 = *every day*) and then averaged, with higher scores reflecting more frequent experiences of stranger harassment.

**Self-objectification.** The 14-item Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) measures the tendency to view oneself as a sexual object. Its items (“My physical appearance is more important than my personality”; “My body is what gives me value to other people”) were rated along a 5-point scale ranging from *strongly disagree* (scored as 1) to *strongly agree* (5) and averaged, with higher scores reflecting greater self-objectification. The internal consistency, 2-week test-retest reliability, and construct validity of its scores were upheld among college and MTurk samples of women (Lindner & Tantleff-Dunn, 2017).

**Appearance anxiety.** The 16-item Social Appearance Anxiety Scale (SAAS; Hart et al., 2008) measures anxiety about being negatively evaluated by others because of one’s overall appearance, including body shape. Its items (e.g., “I worry people will judge the way I look negatively”) are rated along a 5-point scale ranging from *not at all* (scored as 1) to *extremely* (5) and averaged, with higher scores corresponding to greater social appearance anxiety. The internal consistency, 4-week test-retest reliability, and construct validity of its scores were supported among university students (Hart et al., 2008).

**Body shame.** The Body-Focused Shame and Guilt Scale (BIGGS; Weingarden, Renshaw, Tangney, & Wilhelm, 2016) presents 13 scenarios where one's body is on public display for evaluation. Each scenario is followed by three potential responses that correspond to the three subscales: body shame, body guilt, and externalization of blame. Participants rate all three responses along a 5-point scale ranging from *very unlikely* (scored as 0) to *very likely* (4). Only the body shame responses were analyzed for this study. Higher subscale scores correspond to greater shame. Its internal consistency, 4-week test-retest reliability, and construct validity has been supported among university students and clinical samples (Weingarden et al., 2016).

**Dispositional flow.** The 9-item SHORT Dispositional Flow Scale (DFS; Jackson, Martin, & Eklund, 2008) measures the nine dimensions of Csikszentmihalyi's (1990) conceptualization of flow, including challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on task, sense of control, loss of self-consciousness, time transformation, and autotelic experience. Its items are rated along a 5-point scale ranging from *never* (scored as 1) to *always* (5) and averaged, with higher scores corresponding to greater dispositional flow. The factor structure, internal consistency, and construct validity of its scores were supported among participants in work, sport, school, and music settings (Jackson et al., 2008). In the present study, two items were found to have very low inter-item correlations and were deleted.<sup>2</sup>

**Interoceptive awareness.** We administered three of the subscales of the 32-item Multidimensional Assessment of Interoceptive Awareness (MAIA; Mehling et al., 2012) : Noticing (4 items; "I notice when I am uncomfortable in my body"), emotional awareness (5 items; "When something is wrong in my life I can feel it in my body"), and body listening (3 items; "I listen to my body to inform me about what to do"). Its items are rated along a 6-point scale ranging from *never* (scored as 0) to *always* (5), combined across subscales, and averaged, with higher scores

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<sup>2</sup> The two items deleted from the SHORT Dispositional Flow subscale were Item 2 ("I do things spontaneously and automatically without having to think" = .047) and Item 8 ("The way time passes seems to be different from normal" = .152).

corresponding to greater interoceptive awareness. The factor structure, internal consistency, and construct validity of its scores were supported among university students and instructors (Mehling et al., 2012).

**Disordered eating.** The 26-item Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) measures disordered eating attitudes and behaviors. Its items (e.g., “I have gone on eating binges where I feel that I may not be able to stop”) are rated along a 6-point scale ranging from *never* (scored as 1) to *always* (5) and averaged, with higher scores corresponding to greater disordered eating. The internal consistency, 3-week test-retest reliability, and construct validity of its scores were supported among women (Mazzeo, 1999). In the present study, five items were found to have very low inter-item correlations and were deleted.<sup>3</sup> Most of these items are on the Oral Control subscale, which has been shown to have low internal reliability in nonclinical samples of women (Tylka & Calogero, 2019).

**Depressed mood.** The 20-item Center for Epidemiologic Studies Depression Scale-Revised (CESD; Eaton, Smith, Ybarra, Muntaner, & Tien, 2004) measures depressive symptoms over the past week or longer. Its items (e.g., “Nothing made me happy”) are rated along a 5-point scale ranging from *not at all or less than one day* (scored as 0) to *nearly every day for two weeks* (4) and averaged, with higher scores corresponding to greater depression. The internal consistency and construct validity of its scores have been widely supported (Eaton et al., 2004).

**Sexual functioning.** The Female Sexual Function Index (FSFI; Rosen et al., 2000) measures six components of sexual functioning, including desire, arousal, orgasm, satisfaction, lubrication, and pain. Only the desire (2 items), arousal (4 items), orgasm (3 items), and satisfaction (3 items) items were used for the purpose of the current study. We did not include ‘lubrication’ or ‘pain’ subscales, as these items were more intrusive and less relevant to the variable of interest. Following prior research

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<sup>3</sup> The five items deleted from the EAT-26 included Item 5 (“I cut my food into small pieces”), Item 8 (“I feel that others would prefer if I ate more”), Item 13 (“Other people think I am too thin”), Item 19 (“I display self-control around food”), and Item 26 (“I enjoy trying rich new foods” [reversed]).

(Steer & Tiggemann, 2008; Tiggemann & Williams, 2012), we modified the items slightly to assess women's general sexual functioning rather than their experience over the past four weeks. Its items are rated along a 5-point scale ranging from *almost never or never/very dissatisfied* (scored as 1) to *almost always or always/very satisfied* (5), with higher scores indicating better sexual functioning. The internal consistency, 4-week test-retest reliability, and construct validity of its scores were supported among women (Rosen et al., 2000).

## Results

**Preliminary analyses.** Data were missing completely at random,  $\chi^2(12641) = 11755.19$ ,  $p = 1.00$ , and missing individual data points accounted for only 0.16% of the data. Multiple imputation (i.e., fully conditional specification, calculated via SPSS 24.0) was therefore used to estimate the missing data points. Skewness values were  $\leq |1.43|$  and kurtosis values were  $\leq |1.46|$  for the mean scores, indicating that no transformations were needed. Table 8 includes the variable means, standard deviations, alphas, and intercorrelations for Study 4. Notably, the PSAVS was significantly correlated with all of the model variables in the expected directions, except for the nonsignificant association with sexual functioning.

**Evaluation of hypothesized model.** We conducted latent variable structural equation modeling via Mplus Version 6.12 (Muthén & Muthén, 1998-2011) with maximum likelihood estimation to examine whether the hypothesized model in Figure 1 fit the data. For each latent variable, we created three parcels via the procedure specified by Russell et al. (1998); see Study 3 for details of this procedure. These parcels were used to estimate the latent variable. Skew and kurtosis values for these parcels were  $\leq |1.79|$  and  $\leq |3.25|$ , respectively.

Model fit was determined once again by consensus among the CFI, SRMR, and RMSEA fit indices (Hu & Bentler, 1999). The measurement model, including only item parcels loading on their respective latent variable, provided a good fit to the data, CFI = .963, SRMR = .036, RMSEA = .052 (90% CI = .048, .056),  $\chi^2(440) = 985.49$ ,  $p < .001$ . All parcels loaded on their respective latent factor

(all  $ps < .0001$ ).

The structural model, which examined the fit of the hypothesized model depicted in Figure 1, also provided a good fit to the data, CFI = .956, SRMR = .056, RMSEA = .056 (90% CI: .051, .060),  $\chi^2(452) = 1092.51, p < .001$ . Importantly, sexual objectification was directly associated with self-objectification (supporting H1) and personal safety anxiety (supporting H3) as well as indirectly associated with personal safety anxiety through self-objectification (supporting H2). Moreover, personal safety anxiety was directly linked to restricted freedom of movement, above any contributions made by the other subjective experiences, including appearance anxiety, body shame, interoceptive awareness, and flow (supporting H4).

The specified direct path from self-objectification to interoceptive awareness was nonsignificant (not supporting H8c); however, the remaining pathways linking self-objectification to the other subjective experiences were significant, supporting H8a, H8b, and H8d. Ten specified direct paths that connected subjective experiences to constraint variables were nonsignificant: personal safety anxiety was not linked to disordered eating, depression, or sexual functioning; appearance anxiety and body shame were not linked to restricted freedom of movement; interoceptive awareness and flow were not linked to disordered eating (not supporting H9c and H9d, respectively); body shame and interoceptive awareness were not linked to depressed mood (not supporting H10a and H10c, respectively); and body shame was not linked to sexual functioning (not supporting H11a). See Figure 3 for standardized path coefficients.

**Tests of mediation.** Last, we examined indirect effects that could reveal whether personal safety anxiety functions as an independent mediating mechanism linking experiences of both sexual- and self-objectification to restricted freedom of movement. We also examined a serial mediation model that linked sexual objectification to self-objectification to personal safety anxiety to restricted freedom movement. We specified Mplus to create 10,000 bootstrap samples from the data by random sampling with replacement and generate indirect effects. Each indirect effect was significant. Specifically,



personal safety anxiety mediated the pathway from sexual objectification to restricted freedom of movement,  $\beta = .105, p < .001$  (99% CI: .001, .225), and self-objectification to restricted freedom of movement,  $\beta = .147, p < .001$  (99% CI: .032, .274), supporting Hypotheses 5 and 6, respectively. Furthermore, self-objectification and personal safety anxiety serially mediated the pathway from sexual objectification to restricted freedom of movement,  $\beta = .047, p < .001$  (99% CI: .010, .097), upholding H7.

**Distinction between personal safety anxiety and restricted freedom of movement.** Given the strong path found between personal safety anxiety and restricted freedom of movement (see Figure 3), we conducted a principal-axis factoring EFA with direct oblimin rotation ( $\delta = 0$ ) to determine whether the PSAVS items and the restricted movement items would load on different factors. Parallel analysis supported two factors. All restricted movement items except one loaded on the first factor, which accounted for 42.03% of the total variance (factor loadings of the nine remaining items ranged from .40 to .76).<sup>4</sup> All PSAVS items loaded on the second factor, which accounted for an additional 7.96% of the total variance (factor loadings ranged from (.42 to .77). There were no cross loadings greater than .22. These findings support personal safety anxiety and restricted freedom of movement as separate constructs.

## Discussion

The results of Study 4 provided strong evidence for the core pathways of interest in the expanded Objectification Theory model. Specifically, we found support for the pathways from sexual objectification to self-objectification to personal safety anxiety to restricted freedom of movement, and from sexual objectification to personal safety anxiety to restricted freedom of movement. We also observed support for personal safety anxiety as a mediator of the pathways from sexual and self-objectification to restricted freedom of movement. Notably, while we observed a strong link between

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<sup>4</sup> The restricted freedom of movement item “avoid going out at night alone” loaded more highly with the PSAVS items (.41) than the restricted freedom of movement items (.27).

personal safety anxiety and restricted movement, we demonstrated their independence as psychological constructs. Moreover, although we did not have specific hypotheses for personal safety anxiety in relation to the other constraint variables, or for the other subjective experiences in relation to restricted freedom of movement, our model did not reveal significant pathways among these variables, with one exception. The subjective experience of flow was directly connected to restricted freedom of movement. The flow scale contained items that assess a sense of control and concentration during activities, which may correspond with the cognitive effort and energy required for enacting self-imposed restrictions on movement. Further research is needed to clarify which components of flow experiences might be linked to restricted freedom of movement.

We found mixed support for the remaining objectification theory pathways. As expected, sexual objectification predicted self-objectification, and self-objectification predicted all of the subjective experiences except for interoceptive awareness. Among the subjective experiences, appearance anxiety was the most consistent predictor of the other constraint variables, with direct positive effects on disordered eating and depressed mood, and a direct negative effect on sexual functioning. Interoceptive awareness had a direct positive effect on depressed mood and sexual functioning, but no direct effect on disordered eating. Flow had a direct negative effect on depressed mood and a direct positive effect on sexual functioning, but also no direct effect on disordered eating. Body shame had a direct positive effect on disordered eating only. Overall, personal safety anxiety was the most important subjective experience for restricted freedom of movement, appearance anxiety was the most important subjective experience for depressed mood, body shame was the most important subjective experience for disordered eating, and interoceptive awareness demonstrated the strongest link to sexual functioning. Interoceptive awareness, however, was not connected upstream to sexual or self-objectification, and therefore the interpretation for the role of interoceptive awareness would seem to fall outside of the objectification theory model framework.

In operational terms, this study contained a number of notable strengths. The measure of sexual

objectification used in this study, the SHI, assesses core dimensions of what it means to objectify someone (Langton, 2009; Nussbaum, 1995), such as denying them subjectivity (e.g., unwanted sexual attention), being violable (e.g., unwanted touching), treating them in terms of how they look (e.g., catcalls, whistles), and reducing their identity to a body or body part (e.g., sexual commentary). As one variant of dehumanization, our findings indicate that being treated more often as a sexual thing instead of a person was related to all four mental and physical constraints. We included a new measure of self-objectification, the SOBBS (Lindner & Tantleff-Dunn, 2017), which circumvents many of the criticisms laid against extant measures of this construct (see Calogero, 2011). In addition to the broader index of sexual objectification mentioned above, our measures of body shame, appearance anxiety, flow, and interoceptive awareness relied on broader and more robustly validated indicators of these variables. The use of alternative operationalizations provided a more stringent conceptual test of the expanded objectification theory model.

Overall, these findings indicate a specific pathway for personal safety anxiety in the Objectification Theory model, with this diffuse feeling of dread and worry about one's safety occurring as a response to non-specific threats of sexual objectification and self-objectification, and as a predictor of the restrictions women impose on their everyday movement in the world.

#### **Study 5: Preregistered Replication and Extension of the Expanded Objectification Model**

This study constitutes a pre-registered replication and extension of the expanded objectification theory model tested in Study 4. We again examined the pathways from sexual objectification to self-objectification, self-objectification to each of the subjective experiences (i.e., personal safety anxiety, body shame, appearance anxiety, interoceptive awareness, flow), and each of the subjective experiences to each of the mental and physical constraint variables (i.e., restricted freedom of movement, disordered eating, depressed mood, sexual functioning). Importantly, we adjusted the model for fear of crime and rape-specific fears to determine the unique contribution of personal safety anxiety when controlling for these related factors, which represents a novel extension of the model.

Similar to Study 4, we examined whether personal safety anxiety and restricted freedom of movement would emerge as distinct factors when their respective items were examined together in a factor analysis, to determine whether this important finding could be replicated; therefore, we reexamined the same hypotheses as Study 4. We further explored whether the items of personal safety anxiety, fear of crime, and rape-specific fears would emerge as distinct factors, lending additional support for the uniqueness of personal safety anxiety as a construct.

### **Method**

Prior to data collection, this study was preregistered at the Open Science Framework.

Preregistered hypotheses and materials are available at

[https://osf.io/4k7q8/?view\\_only=6ff3e48d4b6448a8b681d3d467affeec](https://osf.io/4k7q8/?view_only=6ff3e48d4b6448a8b681d3d467affeec).

Data are available at [https://osf.io/x4gd5/?view\\_only=3811ca0a734f47918c7acedea0546d2b](https://osf.io/x4gd5/?view_only=3811ca0a734f47918c7acedea0546d2b).

**Participants and procedure.** We recruited participants from Prolific Academic. Only women were provided with a Qualtrics link to complete the survey, and we verified their gender within the survey. Measures were presented in counterbalanced order, with the demographics and covariates presented last. Participants were debriefed at the end of the study and each received \$2.00 as remuneration. A total of 481 participants completed the survey and passed the embedded validity checks. Six participants did not self-identify as women and one indicated to not use their data, leaving 474 participants whose data were analyzed. This sample size was sufficient to estimate the hypothesized structural equation model. See Table 3 for demographic information.

### **Measures**

Participants completed the same measures as in Study 4 and responded to the four rape-specific fear items described in Study 1. New to Study 5 was the assessment of fear of crime. We used Ferraro's (1995) Fear of Crime Scale (FCS), which contains 10 items that assess "an emotional response of dread or anxiety to crime or symbols that a person associates with crime" (Ferraro, 1995, p. 24). Participants are asked, "How much are you afraid of each of the following ten things?" and

reply along a 4-point scale ranging from 1 (*very unafraid*) to 4 (*very afraid*) to the items (e.g., “being attacked by someone with a weapon,” “have someone break into your home while you are there,” “being murdered”). The reliability and validity of its scores have been supported with community adults (Chadee & Ditton, 2005; Ferraro, 1995).

## Results

**Preliminary analyses.** Data were missing completely at random,  $\chi^2(11746) = 11074.13, p = 1.00$ , and missing individual data points accounted for only 0.12% of the data. Multiple imputation (i.e., fully conditional specification, calculated via SPSS 24.0) was therefore used to estimate the missing data points. Table 9 includes the variable means, standard deviations, alphas, and intercorrelations for Study 5. Notably, the PSAVS was significantly correlated with all of the model variables in the expected directions, except for the nonsignificant association with sexual functioning.

**Evaluation of hypothesized model.** Similar to Study 4, we conducted latent variable structural equation modeling via Mplus Version 6.12 (Muthén & Muthén, 1998-2011) with maximum likelihood estimation to examine whether the hypothesized model in Figure 1 fit the data. We created three parcels via the procedure specified by Russell et al. (1998) to estimate each latent variable, with one exception: for rape-specific fears, we used its four items to estimate the latent variable. There were two parcels with severe positive skew and kurtosis assessing stranger harassment, and these parcels were transformed using a Log 10 transformation.

The measurement model, including only item parcels loading on their respective latent variable, provided a good fit to the data, CFI = .955, SRMR = .042, RMSEA = .050 (90% CI = .046, .053),  $\chi^2(662) = 1442.06, p < .001$ . All parcels loaded on their respective latent factor (all  $ps < .0001$ ). The structural model adjusted for fear of crime and rape-specific fears by including pathways from each covariate to the mental and physical constraint variables. This structural model provided a good fit to the data, CFI = .943, SRMR = .055, RMSEA = .056 (90% CI: .052, .058),  $\chi^2(686) = 1665.79, p < .001$ . See Figure 4 for the standardized paths. All paths that were significant in the Study 4 data were

significant in Study 5, with the exception of three: interoceptive awareness no longer predicted depressed mood or sexual functioning and appearance anxiety no longer predicted sexual functioning. No paths were significant in Study 5 that were nonsignificant in Study 4. More specifically, sexual objectification was directly related to self-objectification (supporting H1) and to personal safety anxiety (supporting H3) and indirectly through self-objectification (supporting H2). Personal safety anxiety was also uniquely linked to restricted freedom of movement (supporting H4) above the contributions made by the covariates as well as the remaining subjective experiences of appearance anxiety, body shame, interoceptive awareness, and flow. Of note, neither fear of crime nor rape-specific fears contributed unique variance to restricted movement or any other mental and physical constraint variable.

In addition, the findings from Study 4 for the remaining objectification theory model pathways were replicated in the current study, with two exceptions. In Study 4, appearance anxiety was linked to sexual functioning and interoceptive awareness was linked to depressed mood and sexual functioning, whereas these pathways were not significant in Study 5 (not supporting H11b, H10c, and H11c, respectively). All other pathways were consistent with Study 4, indicating direct links from sexual objectification to self-objectification to all of the subjective experiences (except interoceptive awareness), and then from the subjective experiences to the constraint variables. See Figure 4 for standardized path coefficients.

**Tests of mediation.** As in Study 4, we specified Mplus to create 10,000 bootstrap samples from the data by random sampling with replacement and generate indirect effects, which were significant. Personal safety anxiety mediated the pathways from sexual objectification to restricted freedom of movement,  $\beta = .107, p < .001$  (99% CI: .033, .192), and self-objectification to restricted freedom of movement,  $\beta = .142, p < .001$  (99% CI: .037, .258), supporting H5 and H6, respectively. Self-objectification and personal safety anxiety also serially mediated the pathway from sexual objectification to restricted freedom of movement,  $\beta = .024, p < .001$  (99% CI: .006, .055), upholding

H7.

**Distinction between personal safety anxiety and restricted freedom of movement.** We also determined whether Study 4's findings regarding the distinction between personal safety anxiety and restricted freedom of movement could be replicated with in an independent sample. As before, we conducted a principal-axis factoring EFA with direct oblimin rotation ( $\delta = 0$ ) to determine whether the PSAVS items and the restricted freedom of movement items would load on different factors. Indeed, parallel analysis supported two factors. All personal safety anxiety items loaded on the first factor, which accounted for 37.94% of the total variance (factor loadings ranged from .48 to .87, no cross-loading greater than .24). Eight of the 10 restricted freedom of movement items loaded on the second factor, which accounted for an additional 8.42% of the total variance (factor loadings ranged from (.35 to .73, cross-loadings for these eight items were below .20).<sup>5</sup> There were no cross loadings greater than .22. Overall, these findings largely confirm that personal safety anxiety and restricted freedom of movement are separate constructs.

**Distinction between personal safety anxiety, fear of crime, and rape-specific fears.** Last, we determined whether the items assessing personal safety anxiety, fear of crime, and rape-specific fears would load on different factors, thereby supporting their distinction as constructs. A principal-axis factoring EFA with direct oblimin rotation ( $\delta = 0$ ) was conducted, and parallel analysis revealed three factors. All fear of crime items loaded on the first factor, which accounted for 42.53% of the variance (factor loadings ranged from .59 to .83, all cross-loadings  $< .24$ ). All personal safety anxiety items loaded on the second factor, which accounted for an additional 12.75% of the variance (factor loadings ranged from .50 to .77, all cross-loadings  $< .18$ ). Three of the four rape-specific fears items loaded on the third factor, which accounted for an additional 7.15% of the variance (factor loadings ranged from .52 to .71, cross-loadings  $< .25$ ). The remaining rape-specific fear item loaded

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<sup>5</sup> Similar to Study 4, the item "avoid going out at night alone" loaded more highly on the factor containing the PSAVS items (.44) than the restricted freedom of movement items (.20). Additionally, the item "avoid walking past strangers when alone" loaded fairly evenly on both factors (.40, .37).

with both the other rape-specific fears items (.46) and the fear of crime items (.43). These findings support the distinctiveness of personal safety anxiety from specific fears of crime and rape.

## **Discussion**

In Study 5, we replicated the pattern of findings from Study 4 and provided additional evidence for the unique role of personal safety anxiety in the expanded objectification theory model. With the exception of three pathways (noted above), the expanded model was upheld in an independent sample. Of particular interest was the distinctiveness of the contribution by personal safety anxiety in the model when rape-specific fears and fear of crime were included as covariates. Replicating and extending Study 4, we demonstrated that personal safety anxiety is a distinct construct from restricted freedom of movement, rape-specific fears, and fear of crime. Moreover, personal safety anxiety predicted women's self-imposed constraints on their everyday movement after adjusting the model for rape-specific fears and fear of crime. Supporting and extending Objectification Theory, Study 4 and 5 provide evidence that the non-specific sense of threat implied in sexually objectifying encounters both directly and indirectly engenders personal safety anxiety in women.

## **General Discussion**

Objectification theory research has made valuable contributions to the psychology of women (Roberts et al., 2018; Tiggemann & Williams, 2012). In this article, we addressed one of the outstanding questions in the objectification theory literature—whether part of the phenomenology of feminine embodiment is a chronic and diffuse safety anxiety engendered in women as a response to living in a sexually objectifying cultural milieu. Across five studies, women reported high levels of personal safety anxiety in relation to everyday experiences of sexual objectification and self-objectification, and consistently reported self-imposed restrictions on everyday movement. Moreover, the evidence gathered from this program of research collectively supports the substantive, structural, and external validity of the PSAVS to measure this unique construct (see Table 1). Consistent with Objectification Theory, the presence of safety anxiety in women reflects the degree to which



significant portions of women's conscious attention may become devoted to a non-specific sense of threat to their boundary integrity. Taken together, the present findings support our expanded objectification theory model (see Figure 1), illuminating a specific role for personal safety anxiety in the context of sexual and self-objectification, and how an accumulation of these experiences constrains key domains of women's lived experiences.

The two initial studies provided reliability evidence and construct validation for a newly developed measurement tool, the PSAVS, to assess a diffuse and chronic form of anxiety related to physical and bodily safety (Studies 1-2). We demonstrated that the PSAVS is internally consistent, produces the same scores over time, relates to theoretically relevant variables, and is not simply a measure of general fear, rape-specific fears, or appearance anxiety. Half of the items specifically capture the degree of safety anxiety felt in uncontrolled public spaces (e.g., when walking on the street, day-to-day environment, when someone is checking them out) and the other half specifically capture the degree to which safety anxiety 'sticks' with them (past experiences of feeling personally threatened enter my mind) and is felt even when a direct threat is not present (feel concerned about safety when alone). The third study examined the gendered nature of personal safety anxiety within the context of Objectification Theory. Our analysis revealed similar pathways from sexual objectification to personal safety anxiety to restricted freedom of movement for women and men, indicating that the relationships among these variables are not specific or unique to women; experiencing sexual objectification is associated with increased personal safety anxiety and restricted movement for both genders. However, the measurement variance across the gender groups indicated that the 8-item PSAVS is not assessing the same construct in women and men. Moreover, the large mean differences between women and men in sexual objectification experiences and restricted freedom of movement indicate that women have these experiences more often, upholding the hypothesis that personal safety anxiety is related to being feminine-bodied in a sexually-objectifying world. More research is needed to better understand the nature and measurement of personal safety anxiety in men.

The fourth and final studies positioned personal safety anxiety as an independent explanatory mechanism within the expanded objectification theory model. The PSAVS was significantly correlated with all of the objectification theory model variables in the expected directions in both studies, except for sexual functioning, revealing the general relevance of personal safety anxiety within the objectification theory network of associations. Critically, personal safety anxiety was connected upstream to sexual and self-objectification and downstream to restricted freedom of movement and mediated their connections with each other. Personal safety anxiety was not connected to any of the other constraint variables, suggesting the safety-related pathways are specific streams within the objectification theory model that may operate alongside yet independently from the other constraint variables. Heightened personal safety anxiety in conjunction with sexual and self-objectification underscores the sense of threat imbued in those experiences for women above rape-specific fears and a more general fear of crime, and uniquely predicts the degree to which women impose behavioral constraints on their everyday movement to feel safer.

More broadly, higher levels of personal safety anxiety and restricted freedom of movement, in relation to sexual and self-objectification, directly challenge the supposition put forward by some researchers that experiences of sexual objectification are benign (e.g., Bogaert & Brotto, 2014; Fisher, Lindner, & Ferguson, 2017). If sexually objectifying treatment were benign or even benevolent (i.e., complimentary), then we would not expect to observe the sense of threat to safety manifested in personal safety anxiety in relation to those experiences. When recipients have no choice in the encounter, risk escalating the encounter if they decline a “compliment” or worse, “talk back” in reprimand, and/or impose behavioral restrictions and strategies to avoid these encounters, the argument that sexual objectification is a sincere form of flattery and harmless does not appear viable.

Moreover, this expansion of the objectification theory framework to encompass a multitude of constraints and restrictions on women’s lived experiences helps integrate aspects of the wider Objectification Theory literature. Early research on Objectification Theory revealed constraints on

women's motor performance (e.g., throwing a softball; Fredrickson & Harrison, 2005) and cognitive performance (e.g., math test; Fredrickson et al., 1998; Gay & Castano, 2010) as a function of self-objectification (for review, see Quinn, Chaudoir, & Kallen, 2011). Other research found that women spent less time talking to a male interaction partner compared to their male counterparts talking to a female interaction partner under objectifying conditions (Saguy, Quinn, Dovidio, & Pratto, 2010). This form of self-silencing also represents a behavioral constraint on women that could be explored in relation to personal safety anxiety. These outcomes are not mental health risks per se, but fit within our expanded model as other ways that women come to embody objectifying situations and constrain themselves and their lived experiences. Moreover, it is plausible that restricted freedom of movement imposes further economic and social constraints on women's lives by limiting their access to certain work, recreation, and living spaces, and this could also be examined in future research.

The last two studies also largely provided support for the other specified pathways in the objectification theory model. The critical pathways from sexual objectification to self-objectification, and from self-objectification to the subjective experience variables were supported and replicated. The one exception was the pathway from self-objectification to interoceptive awareness, which was not significant in either study. Notably, none of the subjective experiences showed linkages with every outcome variable posited by Objectification Theory, suggesting some subjective experiences may be more relevant than others to different forms of constraint. Appearance anxiety was only connected to sexual functioning in Study 4, whereas it was connected to depressed mood and disordered eating in both studies, and not connected to restricted movement. Body shame was connected to disordered eating in both studies and not connected to depressed mood, sexual functioning, or restricted movement in either study. Flow was connected to depressed mood, sexual functioning, and restricted movement in both studies, and not connected to disordered eating in either study. Interoceptive awareness was connected to depressed mood and sexual functioning, but not disordered eating or restricted movement in Study 4, and not connected to any of the constraint variables in Study 5. Given

that interoceptive awareness was not linked to sexual or self-objectification in our studies, further research is warranted to understand the role of this specific subjective experience in Objectification Theory. Overall, the subjective experience of body shame was consistently connected to constraints on eating, whereas appearance anxiety and flow were consistently connected to constraints on mood and affect. Flow was also consistently connected to constraints on sexual functioning, but less reliable associations were observed for this constraint variable overall. Collectively, these patterns suggest possible refinements to the Objectification Theory model to clarify the more nuanced pathways observed in these studies.

Our findings may also shed light on the potential fusion of appearance-based concerns and safety-based concerns in women, as posited in Objectification Theory (Fredrickson & Roberts, 1997). We found a small reliable correlation between personal safety anxiety and appearance anxiety in each of the studies where the association was tested (Study 1, 4, and 5), and self-objectification positively predicted both personal safety anxiety and appearance anxiety. These patterns suggest that women's psychological and behavioral investment in their appearance fosters both evaluation and existential concerns about how they will be treated. In a cultural climate that values women's appearance above all other attributes and where sexual objectification begins early (Zurbriggen & Roberts, 2013), physical beauty serves as a form of social currency for women (Calogero Tylka, Donnelly, McGetrick, & Leger, 2017; Unger, 1979). An objectified self-perspective may be adopted to navigate and attenuate the threat of personal boundary violation primed in sexually objectifying encounters so as to be the recipient of "positive" male attention (Calogero & Jost, 2011; Hopkins-Doyle, Sutton, Douglas, & Calogero, 2019). Feminine embodied experience may, in other words, be characterized by a balancing act of smiling pretty while at the same time watching one's back. Studies suggest that getting the balance right is key to maintaining the gender status quo, as women's self-sexualizing can be met with backlash when perceived as an agentic bid for dominance (Infanger, Rudman, & Sczesny, 2016).

### **Limitations and Future Considerations**

Our findings should be considered in light of our studies' limitations. A primary aim of this research was to elucidate one particular gendered strand of phenomenological experience that women tend to embody more frequently than men. Our focus on women in this series of studies does not imply that men do not experience personal safety anxiety or vigilantly surveil their safety in the face of perceived threats, nor does it imply that they are immune to experiences of sexual objectification. While the markedly lower levels of sexual objectification and restricted freedom of movement reported by men in Study 3 suggest that these experiences are less prominent for men, experiences of sexual objectification were related to personal safety anxiety when they did occur. Future research should continue to investigate personal safety anxiety in other social and gender identity groups, as well as consider potential personality and individual difference variables that might amplify personal safety anxiety.

The samples in the present study are limited in their generalizability. The majority of participants identified as White, and all data were collected online from the U.S through either MTurk or Prolific Academic. Although we tend to agree with objectification theorists who posit that being feminine-bodied creates a nearly universal experience around sexual objectification for those who identify as girls and women regardless of race, ethnicity, religion, economic status, cultural background, and sexual orientation (Fredrickson & Roberts, 1997), research on women's safety-related attitudes and behaviors has relied predominantly on the experiences of cisgender White young women to inform our understanding of safety concerns, producing a critical knowledge gap in the literature. Participants also self-selected into these studies, which may have led to biases in the sample, such that only those interested in sharing their perceptions of personal safety and well-being enrolled and completed the questionnaires. Researchers need to explore the PSAVS among various ethnic, socioeconomic, sexual orientation, gender identity, ability/disability, and stigmatized groups to determine whether it yields evidence of reliability and validity among diverse samples and contexts.

Second, we assessed sexual objectification through interpersonal encounters with strangers via

the ISOS (Studies 1 and 3) and the SHI (Studies 4 and 5) measures, such as experiencing catcalls, whistles, leers, and unwanted sexual advances. Researchers should consider whether the present findings for personal safety anxiety would also extend to online encounters of stranger, peer, and acquaintance sexual harassment and trolling. In addition, researchers need to test more directly the impact of other forms of sexual harassment, such as sexually motivated compliments or criticisms on personal safety anxiety and restricted freedom of movement. Indeed, appearance-related compliments and criticisms are associated with negative outcomes such as self-objectification, illustrating that even seemingly innocuous compliments have detrimental consequences for women (Calogero, Herbozo, & Thompson, 2009). Relatedly, it is also unknown the extent to which women are aware of the covariation of their appearance and personal safety concerns, in that both forms of anxiety were linked to sexual and self-objectification, and to each other, which could be an avenue for future exploration.

Third, aligning with Objectification Theory, we focused on the singular experience of sexual objectification as the environmental threat to safety in the present research. However, we envision the scale would have wider applicability and use beyond these particular samples and domains, especially for marginalized and minority social groups. Women of color face a form of racialized sexual harassment whereby experiences of racial and sexual harassment cannot be readily separated, and may uniquely predict personal safety anxiety among these women (Buchanan & Ormerod, 2002; Velez, Campos, & Moradi, 2015). Transgender people face regular interpersonal and structural violence for being trans (Bauer & Scheim, 2015), and report avoiding public spaces or situations where they anticipate harassment and violence, even moving their homes in order to be safer (Scheim, Bauer, & Pyne, 2013). Higher weight people, especially women, face verbal and physical threats of violence for being fat in every setting where it has been examined: the home, workplace, school, healthcare, restaurants, and even movie theaters (Meadows & Calogero, 2018). The PSAVS would allow for more direct analysis of the safety repercussions of socio-environmental threats, and the degree to which personal safety anxiety and vigilance become a kind of phenomenological posture for members of

marginalized groups who encounter them.

Finally, the current set of studies were theoretically driven, but correlational in design, and thus no inferences can be made about the directionality of the links between personal safety anxiety, restricted freedom of movement, and the other variables investigated in these studies. Prospective and other experimental studies on sexual objectification, personal safety anxiety, restricted freedom of movement, and mental health outcomes are needed.

### **Concluding Remarks**

Women's sense of personal safety and security in a culture that routinely sexually objectifies them has received scant attention in the empirical literature. We offer strong evidence for a psychometrically supported scale to assess personal safety anxiety (i.e., the PSAVS) in future research, and support an expansion of the objectification theory model to include sexual objectification, personal safety anxiety, and restricted freedom of movement. Everyday sexual objectification provides a constant reminder to women that their boundaries are violable, engendering a diffuse feeling of personal safety anxiety and a number of other limiting subjective experiences. The cognitively taxing psychic balancing act of smiling pretty while also watching one's back, combined with the restrictions on the spaces women feel they can safely occupy, reveal the gendered power dynamics of sexual objectification, and further underscore the harm of this cultural practice (Calogero & Tylka, 2014; Kaschak, 1992; Nielsen, 2006). Consistent with Sheffield's (1987) observation more than 25 years ago, everyday sexual objectification and the personal safety anxiety that accompanies it limit women from being able to move and live freely in the world, and a systemic barrier to gender equality remains firmly in place.

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## Appendix A

### Personal Safety Anxiety Scale (PSAVS; Final Version)

Permission to use this measure is not required. However, we do request that you notify the corresponding author via email if you use the Personal Safety Anxiety Scale in your research. Please seek permission if any item is modified.

For each item, the following response scale should be used: Completely Unlike Me (scored as 1), Unlike Me (2), Slightly Unlike Me (3), Neither Like Me Nor Unlike Me (4), Slightly Like Me (5), Like Me (6), Completely Like Me (7).

***Directions for participants:*** For each item, please select the response that best matches your attitudes and experience. Each item is rated on a continuum ranging from “completely unlike me” to “completely like me.”

1. I feel nervous about my safety when I am alone.
2. I have thoughts about my safety when I notice someone checking out my body/body parts.
3. I never worry about my personal safety.\*
4. I would feel uncomfortable walking alone on the street at night.
5. I check behind me when I am walking alone to see if someone is there.
6. When alone, past experiences where I have felt personally threatened enter my mind.
7. I share my concerns about my personal safety with others.
8. In general, I do not worry about my safety in my day-to-day environment.\*

\*Reverse score.

***Scoring Procedure:*** Reverse score Items 3 and 8, and then average participants' responses to Items 1-8.

Table 1

*Validity Evidence Overview Across the Five Studies*

Type of Validity	Study 1	Study 2	Study 3	Study 4	Study 5
<b>Substantive Validity</b>					
Item generation	X				
Expert review of items	X				
<b>Structural Validity</b>					
EFA	X				
CFA		X			
Measurement invariance		X	X		
<b>Reliability</b>					
Internal consistency	X	X	X	X	X
Test-retest reliability		X			
<b>External Validity</b>					
Convergent validity	X		X	X	X
Discriminant validity	X			X	X
Incremental validity	X				X
Criterion-related validity	X		X	X	X
Known groups validity			X		
Tests of mediation			X	X	X
Tests of theoretical models			X	X	X

*Note.* EFA = exploratory factor analysis; CFA = confirmatory factor analysis.

Table 2

*Personal Safety Anxiety and Vigilance Scale (PSAVS) Standardized Item-Factor Loadings: Studies 1 and 2*

Factor analysis type PSAVS version	Study 1		Study 2
	Exploratory		Confirmatory
	19-item	8-item	8-item
<b>1. I feel nervous about my safety when I am alone.</b>	<b>.85</b>	<b>.82</b>	<b>.76</b>
2. I worry about being physically harmed.	.84		
<b>3. I have thoughts about my safety when I notice someone checking out my body / body parts.</b>	<b>.80</b>	<b>.78</b>	<b>.69</b>
4. I worry that aspects of my appearance will attract unwanted attention.	.66		
5. I am concerned about my safety during the night.	.86		
6. I notice that I walk faster when I am worried about my physical safety.	.66		
7. I worry that if I were sexually assaulted nothing would be done about it.	.62		
<b>8. I <u>never</u> worry about my physical safety. (reverse)</b>	<b>.55</b>	<b>.54</b>	<b>.66</b>
9. If I need to go out of my house at night, I often try to have a male friend accompany me.	.70		
10. I feel nervous about my safety in areas that do not have good lighting.	.80		
<b>11. I would feel uncomfortable walking alone on the street at night.</b>	<b>.58</b>	<b>.54</b>	<b>.49</b>
<b>12. I check behind me when I am walking alone to see if someone is there.</b>	<b>.75</b>	<b>.76</b>	<b>.65</b>
13. I avoid situations because I am concerned about my physical safety.	.77		
<b>14. When alone, past experiences where I have felt physically threatened enter my mind.</b>	<b>.77</b>	<b>.77</b>	<b>.73</b>
<b>15. I share my fears about my personal safety with others.</b>	<b>.72</b>	<b>.74</b>	<b>.59</b>
16. Most days I think about how to keep myself safe.	.77		
17. I feel safe walking alone at night. (reverse)	.38		
18. I feel as safe with a group of girlfriends as I do with a male companion. (reverse)	.25		
<b>19. In general, I do <u>not</u> worry about my safety in my day-to-day environment. (reverse)</b>	<b>.66</b>	<b>.65</b>	<b>.72</b>

*Note.* For Study 1,  $N = 207$ . For Study 2,  $N = 161$ . Items that are bolded were retained in the final version of the PSAVS.



Table 3

*Overview of Demographic Information Across the Five Studies*

Demographic Variables	Study 1 ( <i>N</i> = 207)	Study 2 ( <i>N</i> = 161)	Study 3 ( <i>N</i> = 363)	Study 4 ( <i>N</i> = 460)	Study 5 ( <i>N</i> = 474)
<b>Age</b>					
Mean ( <i>SD</i> )	39.78 (13.89)	35.23 (11.02)	37.73 (13.11)	36.95 (11.51)	34.58 (12.77)
Age Range	18 - 79	19 - 83	19 - 77	19 - 79	18 - 82
<b>Ethnicity</b>					
White/Caucasian	162 (78.3%)	119 (73.9%)	280 (77.2%)	350 (76.1%)	320 (67.5%)
Black/African American	19 (9.2%)	17 (10.6%)	35 (9.6%)	50 (10.9%)	40 (8.4%)
Hispanic/Latin American	8 (3.9%)	7 (4.3%)	12 (3.3%)	12 (2.7%)	29 (6.1%)
Asian/Pacific Islander	8 (3.9%)	11 (6.8%)	25 (6.9%)	30 (6.5%)	54 (11.4%)
Native American	2 (1.0%)	1 (0.6%)	4 (1.1%)	3 (0.7%)	1 (0.2%)
Multiracial	0%	6 (3.7%)	0%	13 (2.8%)	19 (4.0%)
Arab	0%	0%	0%	2 (0.4%)	0%
Other/not listed	7 (3.4%)	0%	6 (1.7%)	0%	11 (2.3%)
Did not report	1 (0.5%)	0%	1 (0.3%)	0%	0%
<b>Relationship Status</b>					
Single	60, (29.0%)	39 (24.2%)	167 (46.0%)	112 (24.3%)	164 (34.6%)
Married/domestic partnership	84 (40.5%)	67 (41.6%)	109 (30.0%)	234 (50.9%)	154 (32.5%)
Long-term relationship	28 (13.5%)	44 (27.3%)	33 (9.1%)	54 (11.7%)	103 (21.7%)
Divorced	26 (12.6%)	6 (3.7%)	39 (10.7%)	22 (4.8%)	21 (4.4%)
Separated	4 (1.9%)	4 (2.5%)	9 (2.5%)	5 (1.1%)	10 (2.1%)
Engaged	0%	0%	0%	21 (4.6%)	15 (3.2%)
Widowed	4 (1.9%)	1 (0.6%)	6 (1.7%)	10 (2.2%)	4 (0.8%)
Did not report	1 (5%)	0%	0%	2 (0.4%)	3 (0.6%)
<b>Education</b>					
Less than high school	3 (1.5%)	1 (0.6%)	19 (5.2%)	2 (0.5%)	5 (1.1%)
Secondary school	91 (44.0%)	87 (54.0%)	122 (33.6%)	167 (36.3%)	217 (45.8%)
Associate's degree	0%	0%	0%	46 (10.0%)	0%
Bachelor's degree	85 (41.1%)	60 (37.2%)	173 (47.7%)	185 (40.2%)	185 (39.1%)
Graduate education	28 (13.5%)	12 (7.4%)	49 (13.5%)	58 (12.6%)	65 (13.7%)
Did not report	0%	1 (0.6%)	0%	2 (0.4%)	2 (0.4%)

## Figure Captions.

*Figure 1.* The hypothesized structural model of an expanded Objectification Theory framework that includes personal safety anxiety and restricted freedom of movement. Bolded pathways indicate the components of the expanded objectification model that have not been previously examined in a comprehensive test of Objectification Theory. Full model examined in Study 4 and 5.

*Figure 2.* The hypothesized model exploring personal safety anxiety and restricted freedom of movement within the context of sexual and self-objectification for women and men in Study 3. Ovals represent latent constructs. Standardized path coefficients are presented. Women's path coefficients are on the top, with men's on the bottom. For simplicity, manifest variables (i.e., scale parcels) are not included in the model. All manifested variables loaded significantly on their latent construct. Personal safety anxiety and body shame were allowed to correlate in the model. \*\*\* $p < .001$ .

*Figure 3.* The final structural model including personal safety anxiety and restricted freedom of movement within the Objectification Theory framework examined in Study 4. Ovals represent latent constructs. For simplicity, manifest variables (i.e., scale parcels) are not included in the model. All manifested variables loaded significantly on their latent construct. Standardized path coefficients are presented. Personal safety anxiety, appearance anxiety, body shame, interoceptive awareness, and flow were allowed to correlate. Restricted freedom of movement, restricted eating, restricted affect, and restricted sexual functioning were also allowed to correlate. Of note, personal safety anxiety was related to the other subjective experiences of appearance anxiety (.15), shame (.12), and interoceptive awareness (.24), and restricted freedom of movement was correlated with disordered eating (.10). \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

*Figure 4.* The final structural model including personal safety anxiety and restricted freedom of movement within the Objectification Theory framework examined in Study 5, adjusting for rape-specific concerns and fear of crime. Ovals represent latent constructs. For simplicity, manifest variables (i.e., scale parcels) are not included in the model. All manifested variables loaded significantly on their latent construct. Standardized path coefficients are presented. Personal safety anxiety, appearance anxiety, body shame, interoceptive awareness, and flow were allowed to correlate. Restricted freedom of movement, restricted eating, restricted affect, and restricted sexual functioning were also allowed to correlate. Of note, personal safety anxiety was related to the other subjective experiences of appearance anxiety (.22), shame (.13), and interoceptive awareness (.39). \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

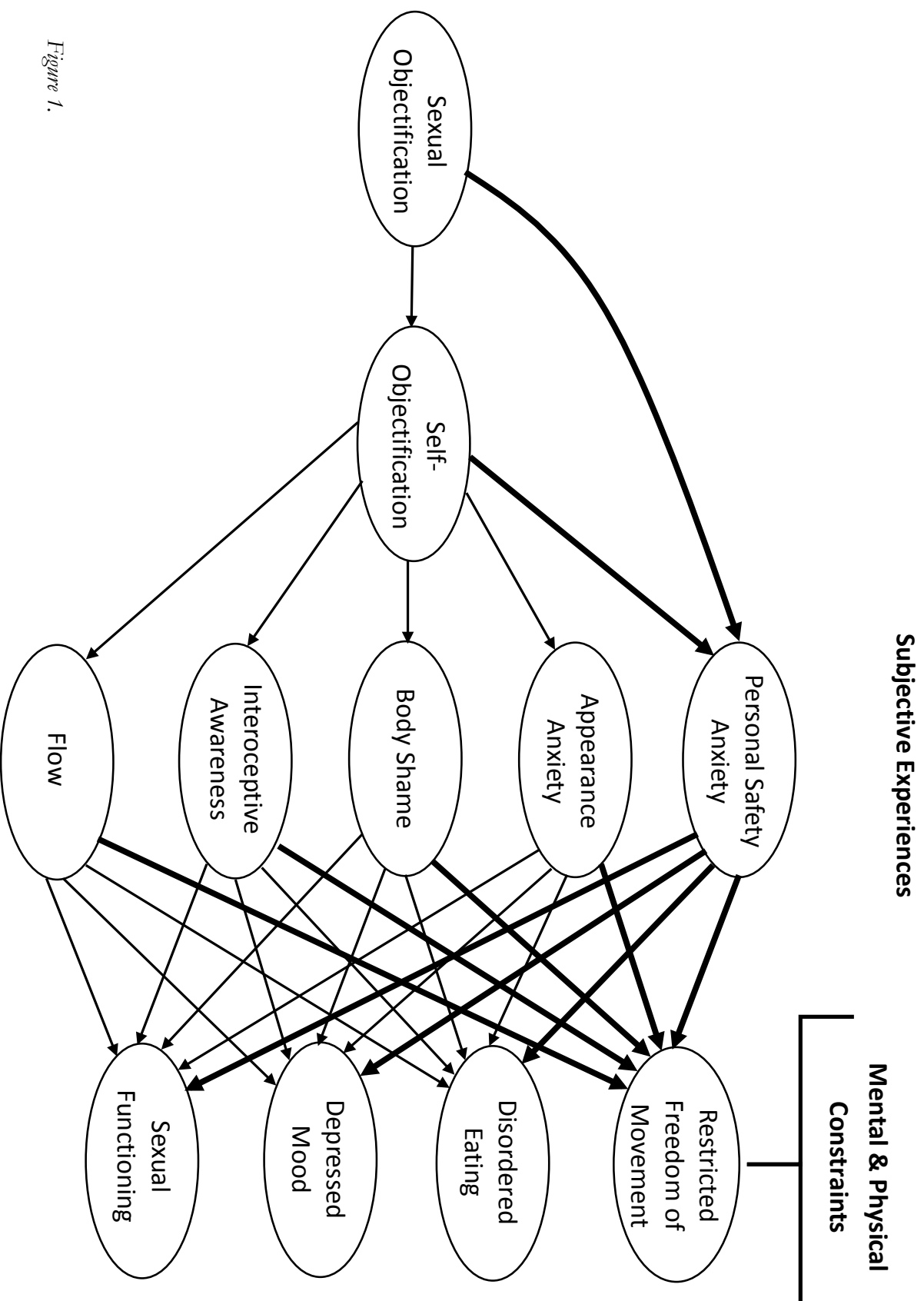


Figure 1.

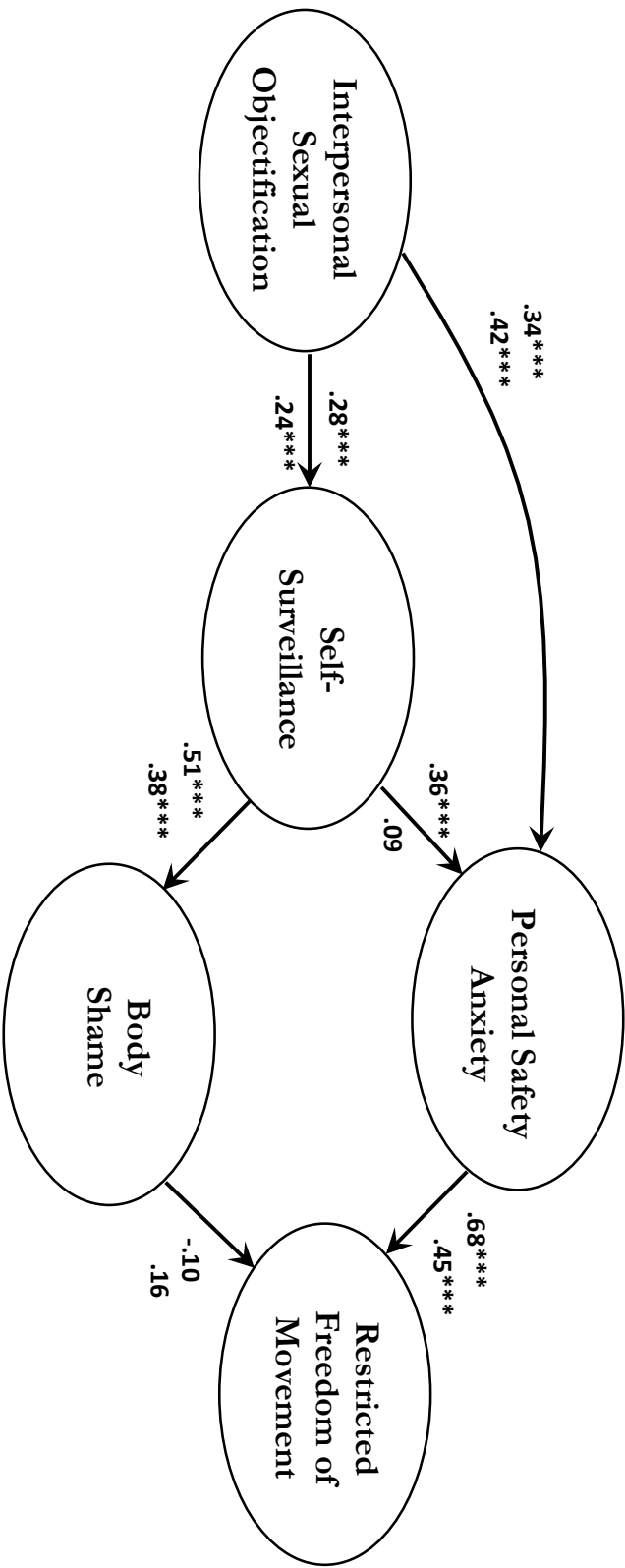


Figure 2.

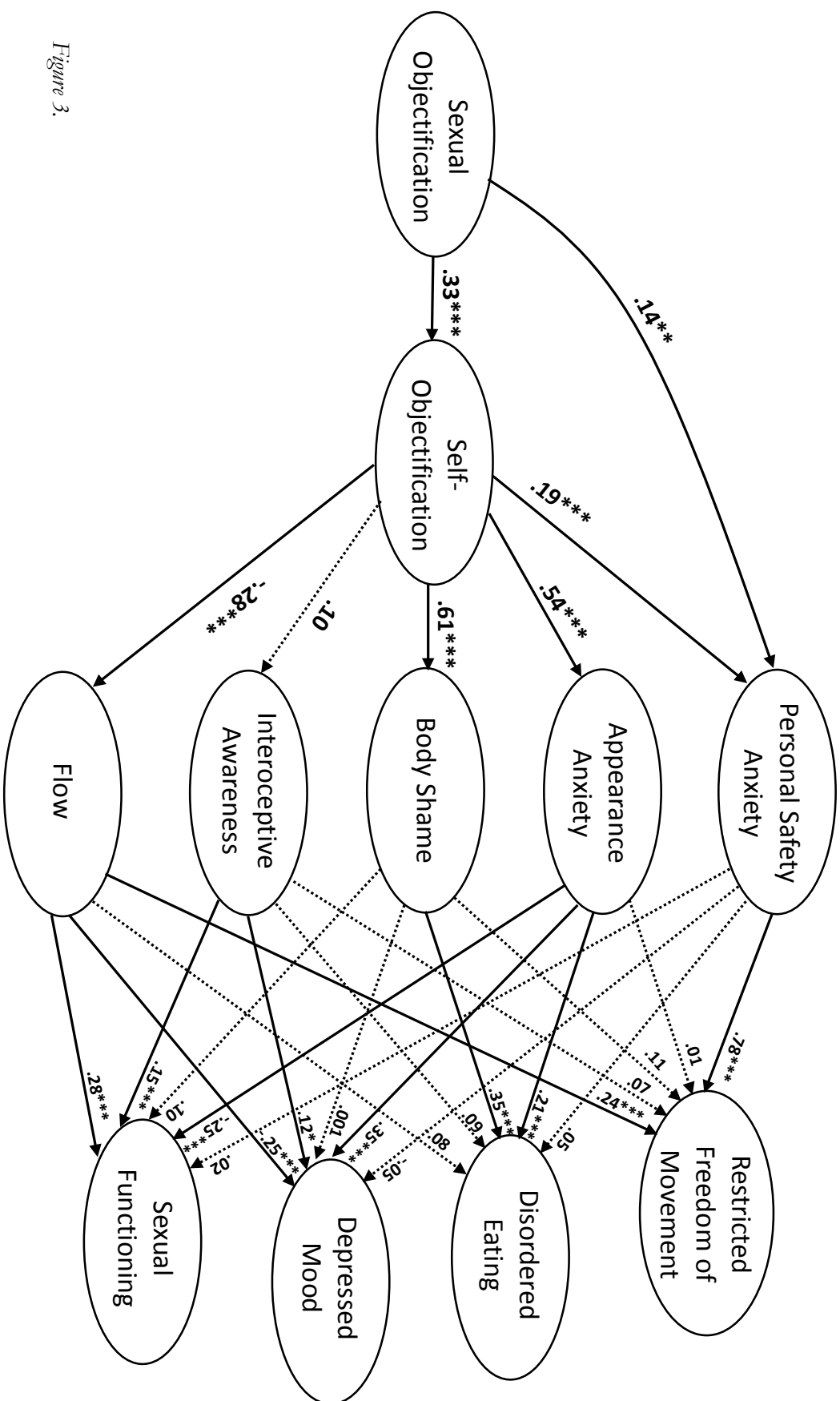


Figure 3.

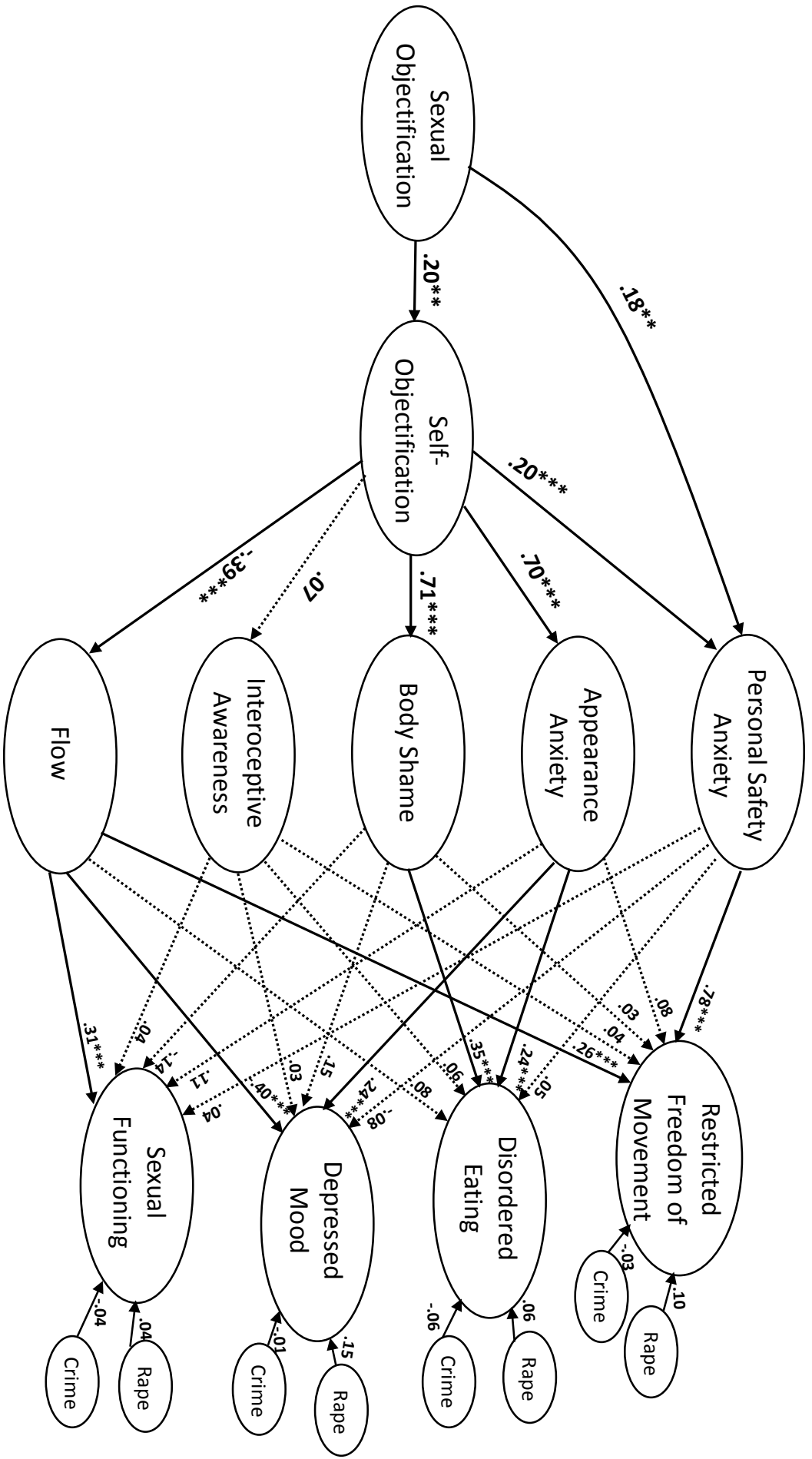


Figure 4.