

## Demographic and sociocultural predictors of sexuality-related body image and sexual frequency: The U.S. Body Project I



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### ABSTRACT

Body image is a critical component of an individual's sexual experiences. This makes it critical to identify demographic and sociocultural correlates of *sexuality-related body image*: the subjective feelings, cognitions, and evaluations related to one's body in the context of sexual experience. We examined how sexuality-related body image differed by gender, sexual orientation, race, age, and BMI. Four items assessing sexuality-related body image were completed by 11,620 U.S. adults: self-perceived *sex appeal* of their body, *nude appearance satisfaction*, and the extent to which they believed that body image positively or negatively affected their *sexual enjoyment* and feelings of *sexual acceptability* as a partner. Men reported slightly less nude appearance dissatisfaction and fewer negative effects of body image on sexual enjoyment and sexual acceptability than women, but did not differ in reported sex appeal. Poorer sexuality-related body image was reported by people with higher BMIs, not in relationships, who had sex less frequently, among White compared to Black women and men, and among gay compared to heterosexual men. Data also revealed a subgroup of respondents who reported that their body image

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had a positive impact on their sex lives. The findings highlight a need for interventions addressing sexuality-related body image.

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## 1. Introduction

Body image may play a substantial role in the people's ability to have rich and satisfying sex lives. Body image is a complex construct that includes how a person feels, thinks about, and relates to the body's appearance, functionality, and performance (Tylka & Piran, 2019). Body image can be harmful to sexual health, but it can also be positive and protective, and extant literature finds weak to moderate associations between body image and sexual well-being (Ackard, Kearney-Cooke, & Peterson, 2000; Gillen & Markey, 2018). People with poor body image report less frequent sexual activity (Ackard et al., 2000; Faith & Schare, 1993; Wiederman, 2000), lower sexual satisfaction (Pujols, Meston, & Seal, 2010), less comfort communicating about sex (Ramseyer Winter, Gillen, & Kennedy, 2018), higher sexual anxiety (Blashill et al., 2016; Weaver & Byers, 2006), less comfort using condoms during sex (Parent & Moradi, 2015), and lower contraceptive use (Ramseyer Winter & Ruhr, 2017; Ramseyer Winter, Ruhr, Pevehouse, & Pilgrim, 2018), and lower likelihood of seeking sexuality-related health care (Ramseyer Winter, 2017).

Understanding the relation between body image and sexual experiences is therefore critical to promoting positive and healthy sexual experiences. Taking a broad view, we investigated how sexuality-related body image relates to constructs from well-established sociocultural models of body dissatisfaction, such as the tripartite influence model (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) and objectification theory (Fredrickson & Roberts, 1997). Then, narrowing in, we used a large sample of men and women varying in sexual orientation, body mass, race, age, and relationship status and took a rare and important look at the prevalence and predictors of specific features of body image that are connected to people's sex lives (i.e., internalized thinness and muscle ideals, sex appeal, acceptability as a partner, and nude appearance satisfaction). Furthermore, we also how these aspects of body image relate to the quality of, and frequency with which, they have sex.

### 1.1. Sexuality-related body image

Body image and sexual well-being exist at the intersection of feelings, thoughts, and behaviors relevant to the body (Cook-Cottone, 2019; Gillen & Markey, 2018). Body image can encompass sexual well-being insofar as it denotes the subjective (e.g., sexual satisfaction) and objective (e.g., sexual dysfunction and behaviors) connections to people's sex lives (Alatartseva & Barysheva, 2015; Cash, Maikkula, & Yamamiya, 2004; Oakley et al., 2014; Tylka & Piran, 2019; Vaillancourt-Morel et al., 2017; Yamamiya, Cash, & Thompson, 2006). Further, *sexual self-concept*, a subjective sense of self as a sexual being, includes feelings and perceptions about the body within the context of sex. To illustrate, Horne & Zimmer-Gembeck (2006) developed the Female Sexual Subjectivity Index (FSSI) that includes items assessing sexual body esteem, entitlement to sexual pleasure from self and partner, and self-efficacy in achieving sexual pleasure from a partner.

We propose the term *sexuality-related body image* to refer to the subjective feelings, cognitions, and evaluations related to one's body in the context of sexual experiences with another. In this paper, we explore four different aspects of this construct. Perceived *sex appeal* is a person's ability or likelihood of arousing sexual desire in others and is connected to people's perceptions of their appearance and attractiveness (Amos & McCabe, 2015, 2017). *Nude appearance*

*satisfaction* refers to a person's feelings and satisfaction regarding the appearance of their own body without clothes. Connected to sexual activity, *sexual acceptability* is a person's perception of how their body image impacts their acceptability as a sexual partner and *sexual enjoyment* is a person's perceptions of how their body image affects their enjoyment of their sex lives (Cash & Fleming, 2002). Notably, this definition is proposed in a U.S. context; not all constructs may function in the same fashion or be components of sexuality-related body image in other socio-political settings. For example, the degree to which upper-body nudity is linked to sexuality likely varies by context (Nelson & Paek, 2005).

### 1.2. The tripartite model, objectification theory, and sexuality-related body image

Research and theory suggest that negative feelings about the body and sex stem, in part, from internalized messages from one's social environment. The tripartite influence model holds that there are three main sources of sociocultural influences on body image: family, peers, and media (Thompson et al., 1999). These sources of pressure encourage people to internalize, or accept as valid, the idea that thinness/leanness and muscularity/athleticism are ideals to aspire to in order to be considered attractive. Women are particularly likely to internalize the thin-ideal, and men the muscular-ideal (Schaeffer et al., 2015). The basic pathways of this model – from appearance pressures to internalization of these thin and muscular ideals to body dissatisfaction – have been supported across a variety of populations (Girard, Chabrol, & Rodgers, 2018; Rodgers & Chabrol, 2009; Rodgers, Chabrol, & Paxton, 2011; Thompson, Schaefer, & Menzel, 2012; Tylka, 2011; Tylka and Andorka, 2012).

Fredrickson & Roberts (1997) emphasized the importance of understanding the role that routine sexual objectification of women in shaping women's body image. The widespread emphasis on women's value stemming from their appearance causes women to engage in "surveillance" of their body – monitoring how they look to others. Women who more frequently engage in body surveillance report higher levels of disordered eating (Tylka & Hill, 2004), discomfort when not wearing make-up (Smith et al., 2017), appearance modification to appear "sexy" (Smolak, Murnen, & Myers, 2014), and consideration or pursuit of cosmetic surgery (Vaughan-Turnbull & Lewis, 2015).

The processes identified by the tripartite model and objectification theory likely have important influences on sexuality-related body image. Fredrickson & Roberts (1997) theorized that self-objectification obscures the ability to experience one's body as a subjective site, which corresponds with a disconnection from feelings of sexual arousal and excitement, body-related shame, and self-monitoring during sexual experiences. These processes ultimately contribute to sexual dysfunction and lower sexual satisfaction. In contrast, positive and fulfilling sexual experiences are achieved through mindfulness of bodily and sexual pleasure, positive body image, and access to sexual desires (Satinisky & Ramseyer Winter, 2019). Self-objectification and internalization of idealized body ideals can impair sexual experiences because sexually objectifying media messages contribute to the belief that sexual attractiveness is an important aspect of one's identity (McKenney & Bigler, 2016). Ultimately, the correlates of internalizing unrealistic body and sexual ideals, such as poor body image, self-objectification, and body surveillance, interfere with an individual's ability to be fully present in

the moment or enjoy the physical sensations and desires that make sexual experiences pleasurable (Satinsky & Ramseyer Winter, 2019). Indeed, across individuals, but for women in particular, people who are more satisfied with their bodies tend to report more positive sexual experiences (Gillen & Markey, 2018).

Several studies have found either direct or mediated links between women's appearance-related body surveillance and poorer sexual-wellbeing (Calogero & Thompson, 2009; Claudat & Warren, 2014; Claudat, Warren, & Durette, 2012; Sanchez & Kiefer, 2007; Steer & Tiggemann, 2008; Tiggemann & Williams, 2012; Vencill, Tebbe, & Garos, 2015). These findings connect the process of "spectatoring" during sexual activity identified by Masters & Johnson (1970), whereby people perceive themselves from a third-person perspective, fixating on body parts and evaluating the adequacy of their sexual functioning. This can lead to "cognitive distraction" during sex (Meana & Nunnink, 2006). Through the lens of objectification theory, this spectatoring and cognitive distraction during sexual activity – much like body surveillance – can take the focus off bodily sensations, inhibit pleasure and sexual satisfaction, and fuel concerns with sexual performance.

Similarly, internalization of appearance ideals identified by the tripartite model has been linked to greater anxiety with one's appearance during sexual activity (Calogero & Thompson, 2009; Vandenbosch & Eggermont, 2013; Vencill et al., 2015). Less explored is how perceived media, family, and peer pressures relate to these feelings, or how internalization of the muscle/athletic-ideal is connected to sexuality-related body image concerns. The current investigation fills this gap by examining how sociocultural pressures are linked to sexuality-related body image, while providing an opportunity to replicate and extend research on connections to body surveillance.

### 1.3. Demographic differences in sexuality-related body image

Some existing work has explored how sexuality-related body image differs across specific populations. However, more research is needed to understand how body image corresponds to sexual experiences and enjoyment, whether these relationships differ across gender, sexual orientation, race, age, relationship status and weight status. Due to the fact that there has been limited research directly on this phenomenon, we examined whether there were key demographic differences in general body satisfaction identified in the literature, and then used these findings as a basis for our expectations regarding demographic variation in sexuality-related body satisfaction. Exploration of demographic variables contributes to an understanding of the effects of variation from the Western-culture's White, heterosexual, cisgender, thin and lean ideal impacts sexuality-related body image among those who identify as men and women.

#### 1.3.1. Gender differences

Consistent with objectification theory, there are robust gender differences in overall body satisfaction, which may contribute to gender differences in sexuality-related body image. In national studies, for example, women report lower satisfaction with their weight than do men (Fallon, Harris, & Johnson, 2014; Frederick, Peplau, & Lever, 2006; Frederick et al., 2016b, 2020; Peplau et al., 2009). Apart from Fallon et al. (2014), these studies reveal that women experience less satisfaction with their overall appearance. These sex differences are consistently found in studies of college students (Frederick, Forbes, Grigorian, & Jarcho, 2007; Forbes & Frederick, 2008) and in meta-analyses examining physical-appearance related self-esteem (Gentile et al., 2009) and thinness-oriented dissatisfaction (Karazsia, Murnen, & Tylka, 2017). There is a systematic gender difference, but it is also important to note that many men report body dissatisfaction. The past research on gender differences in general body image suggests that more women than men will express sexuality-related body dissatisfaction.

#### 1.3.2. Sexual orientation differences

Consistent with objectification theory, people attempting to attract male romantic partners (e.g., gay men, heterosexual women) likely face more objectification and greater appearance-related pressures than people attempting to attract female romantic partners (e.g., heterosexual men, lesbian women). Although both men and women value appearance in a long-term partner, men especially prioritize physical attractiveness when selecting long-term partners (Bailey, Gaulin, Agyei, & Gladue, 1994; Buss & Schmitt, 1993; Fales et al., 2016). This suggests that people who typically seek male partners will experience more sexualization and concerns about how they appear to potential romantic partners than people who typically seek female partners. This pattern brings into question the unique ways in which bisexual men and women might be impacted by desires of potential partners of different sexes and sexual orientations, which could lead bisexual men and women to have to juggle multiple different appearance norms and expectations from members of these groups (Chmielewski & Yost, 2013). Furthermore, gay, lesbian, and bisexual men and women face minority-related stresses and stigma that can harm mental health (Meyer, 2003). This can cause greater susceptibility to poorer body image and disordered eating among sexual minority women (Watson, Grotewiel, Farrell, Marshik, & Schneider, 2015) and sexual minority men (Brewster, Sandil, DeBlaere, Breslow, & Eklund, 2017), particularly when that stigma is combined with greater sociocultural appearance concerns and objectification (Frederick et al., 2022).

Consistent with this proposal, meta-analyses and national studies find that gay men report greater affective body dissatisfaction than heterosexual men, with effect sizes that are small or small-to-moderate (Dahlenburg, Gleaves, Hutchinson, & Coro, 2020; Frederick, Sandhu, Morse, & Swami, 2016b; Frederick et al., 2020; Morrison, Morrison, & Sager, 2004; Peplau et al., 2009). Sexual minority men, including bisexual men, tend to exhibit more disordered eating patterns (Murray et al., 2017). However, there were typically no differences or only small differences between heterosexual and lesbian women in these studies. Importantly, there is a paucity of research focused on body image among bisexual men and women, making it difficult to draw any firm conclusions about these groups.

Systematic demographic differences emerge more reliably when evaluating sociocultural appearance concerns, with gay men reporting feeling more judged on their appearance and thinking about their appearance more routinely throughout the day (Frederick & Essayli, 2016). Gay men (but not bisexual men) reported higher body surveillance than heterosexual men in the current national dataset used for this paper (Frederick et al., 2022). Results for lesbian women have been mixed, with lesbian women reporting lower body surveillance than heterosexual women in two studies (Engeln-Maddox, Miller, & Doyle, 2011; Frederick et al., 2022) but higher body surveillance in another study (Kozee & Tylka, 2006).

In specifically assessing sexuality-related body image, a study of 2512 gay, lesbian, and heterosexual men and women revealed that gay men (42%) were most likely to report negative effects of their body image on their sex lives, followed by heterosexual women (30%), lesbian women (27%), and heterosexual men (22%; Peplau et al., 2009). These findings, combined with the more general pattern that gay men tend to report greater body dissatisfaction than heterosexual men, suggest that gay men are at elevated risk for experiencing sexuality-related body dissatisfaction.

#### 1.3.3. Body Mass Index (BMI)

Consistent with the proposal that internalization of the thin-ideal is widespread, national studies consistently find that men and women with higher body masses report poorer body image than their thinner counterparts (Fallon et al., 2014; Frederick et al., 2006, 2007, 2016b, 2020; Kruger, Lee, Ainsworth, & Macera, 2008; Peplau

et al., 2009; Swami, Tran, Stieger, & Voracek, 2015). Some research finds, however, that people with a very low BMI, particularly men, report increased dissatisfaction as well, suggesting the association of body mass to men's body evaluations may be curvilinear (Frederick et al., 2007, 2016b). In one study, BMI was linked to poorer body image, which was related to both men and women's sexual well-being (Milhausen, Buchholz, Opperman, & Benson, 2015). Internalized weight bias, agreeing with and applying weight-based stereotypes to oneself and devaluing oneself based on body weight, may contribute to lower sexuality-related body image (Pudney, Himmelstein, Puhl, & Foster, 2020).

#### 1.3.4. Racial differences

Meta-analyses consistently find that Black women report greater body satisfaction than do White women (Grabe & Hyde, 2006; Roberts, Cash, Feingold, & Johnson, 2006), although Black women face appearance-related pressures and prejudice that can have an impact on appearance concerns that are not assessed with standard body image measures. Beyond the consistent White-Black difference, meta-analyses find no other racial differences in body satisfaction among White, Black, Asian, and Hispanic women (Grabe & Hyde, 2006). Results comparing White and Asian women, however, have been less consistent. Multiple studies find that Asian women reported lower body image on a specific measure – feeling less attractive (low appearance evaluation) – compared to White women (Frederick et al., 2007; Forbes & Frederick, 2008; Frederick, Kelly, Latner, Sandhu, & Tsong, 2016a) and less satisfaction with their breast size (Forbes & Frederick, 2008) and with the appearance of their face (Frederick et al., 2016a). These aspects of appearance concerns might heighten Asian women's concerns about how their appearance is judged by dating and sex partners, increasing sexuality-related body dissatisfaction.

Investigations of sexuality-related body image suggest similar racial patterns to those found using general body evaluations. For example, in a study of 1105 college women, Black women reported higher sexuality-related body satisfaction than White, Asian, and Hispanic women (Claudat et al., 2012). Racial minority women are particularly likely to face sexualization and exoticification of their physical features, further heightening attention to their appearance (Javier & Belgrave, 2019; Newman, 2019).

Empirical investigations of racial differences in male body image are rare and produce inconsistent findings. For example, Bucchianeri et al. (2013) found no differences by race, whereas other research revealed Asian men experienced poorer body image than other racial groups (Kelly, Cotter, Tanofsky-Kraff, & Mazzeo, 2015). National samples suggest Black men report greater body satisfaction than do White men (Frederick et al., 2020).

#### 1.3.5. Age

Age is generally unrelated to body dissatisfaction (Fallon et al., 2014), or only weakly related, with older people reporting slightly greater body dissatisfaction (Frederick et al., 2016b, 2020). Older women, however, report less body surveillance than do younger women (Greenleaf, 2005; McKinley et al., 2006a, 2006b; Tiggemann & Lynch, 2001). Given these conflicting findings, it was unclear whether age would be related to sexuality-related body image.

#### 1.3.6. Relationship status

People in relationships generally experience less body image-related self-consciousness during sex (Sanchez & Kiefer, 2007; Steer & Tiggemann, 2008; Wiederman, 2000). For example, among a sample of 116 women, women in an exclusive relationship reported less self-consciousness during sexual activity than those not in an exclusive relationship (Steer & Tiggemann, 2008). One possible explanation is that being involved in committed relationships brings comfort and intimacy and less concerns about appearance being

judged, which enhances body image. For example, receiving appearance-based compliments from a romantic partner can boost body satisfaction (Markey & Markey, 2006). Alternatively, it is possible that those who are confident in their bodies or are more conventionally attractive are especially likely to attract partners.

#### 1.4. Goals of current study and hypotheses

The current study investigated the links of sexuality-related body image to demographic factors (gender, sexual orientation, body mass, race, age, relationship status), tripartite model constructs, objectification theory constructs, and sexual frequency in a national sample of U.S. adults. Due to the rare opportunity afforded by this large national dataset, in this paper we provide a detailed and comprehensive summary of the prevalence and predictors of sexuality-related body image.

The specific hypotheses were as follows. Based on the existing literature documenting gender differences in body image, combined with the specific objectification pressures faced by women, we expected that women would report poorer sexuality-related body image than men. Consistent with this prior research, we expected gay men to report poorer sexuality-related body image than heterosexual men and we anticipated fewer differences to emerge between lesbian women and heterosexual women. Consistent with previous research, we expected that men and women with higher BMIs would report poorer sexuality-related body image, but that some people with very low BMIs might also report more sexuality-related body dissatisfaction.

Consistent with existing research, we expected that Black men and women would report better sexuality-related body image than White men and women, and that Asian men and women might report the poorest body image. We did not expect differences between Hispanic and White men and women, respectively.

We expected that if there was a relationship between age and sexuality-related body image, it would be in the direction of older people reporting slightly lower sexuality-related body image. Based on existing research, we expected that men and women who were not in a relationship with someone and not dating one or more people would report the poorest sexuality-related body image.

Finally, consistent with objectification theory and the tripartite model, we expected that people who engaged in greater body surveillance, internalized appearance ideals, and perceived more appearance-related pressures would report poorer sexuality-related body image and lower sex frequency. We expected that these psychological constructs would be related to poorer body image across for people regardless of BMI.

## 2. Method

### 2.1. Participants

Data were drawn from the U.S. Body Project I, described below in the Procedures section. The sample was restricted to include only participants who completed the full survey and who fit the following criteria: (a) reported currently living in the United States; (b) completed all key body image items; (c) were ages 18–65 years; (d) had body mass index (BMI) ranging from 14.50 to 50.50 based on self-reported height and weight. Age and BMI restrictions were placed on the sample to prevent outliers or mis-entered values from having undue influence on the effect size estimates. After applying the inclusion criteria, the analyzed sample included 11,620 participants. Key demographics are shown in Table 1. The current paper relies on a national sample with participants from all 50 states, but it is not a nationally representative sample. For example, compared to a nationally representative sample, the current sample contains more participants with a college degree, slightly fewer heterosexual



**Table 1**  
Demographics.

Demographics	Overall	Men	Women	Demographics	Overall	Men	Women
Age ( <i>M, SD</i> )	34.1 (10.7)	33.0 (10.0)	34.1 (10.7)	BMI ( <i>M, SD</i> )	27.6 (6.3)	27.5 (5.6)	27.6 (6.3)
Years in U.S. ( <i>M, SD</i> )	33.1 (11.3)	32.0 (10.5)	33.1 (11.3)	Relationship (% <i>, N</i> )			
Gender (% <i>, N</i> )				Married	38.3 (4450)	32.3 (1712)	43.3 (2738)
Men	45.6 (5293)	–	–	Cohabiting	17.2 (1997)	15.0 (793)	19.0 (1204)
Women	54.4 (6327)	–	–	Widowed	0.6 (69)	0.3 (18)	0.8 (51)
Race (% <i>, N</i> )				Dating One Person	17.8 (2073)	20.0 (1060)	16.0 (1013)
White	75.2 (8742)	74.5 (3945)	75.8 (4797)	Dating Multiple People	2.4 (281)	3.2 (168)	1.8 (113)
Hispanic	4.0 (470)	5.0 (265)	3.2 (205)	Not Currently Involved	23.7 (2750)	29.1 (1542)	19.1 (1208)
Black	6.7 (774)	5.6 (297)	7.5 (477)	Orientation (% <i>, N</i> )			
Asian	6.1 (714)	7.0 (370)	5.4 (344)	Heterosexual	88.3 (10264)	92.0 (4869)	85.3 (5395)
Indian	0.3 (34)	0.3 (16)	0.3 (18)	Gay or Lesbian	3.5 (407)	3.7 (194)	3.4 (213)
Native American	0.5 (55)	0.5 (26)	0.5 (29)	Bisexual	6.8 (792)	3.7 (194)	9.5 (598)
Pacific Islander	0.1 (16)	0.1 (6)	0.2 (10)	Asexual	0.5 (56)	0.2 (9)	0.7 (47)
White-Hispanic	1.9 (225)	2.0 (108)	1.8 (117)	Other	0.9 (101)	0.5 (27)	1.2 (74)
White-Black	0.8 (90)	0.5 (29)	1.0 (61)	BMI (% <i>, N</i> )			
White-Asian	1.0 (119)	1.0 (54)	1.0 (65)	Lowest BMI (Underweight)	1.6 (190)	1.2 (64)	2.0 (126)
White-Middle Eastern	0.9 (110)	0.9 (45)	1.0 (65)	Low BMI (Normal Weight)	39.0 (4535)	36.2 (1918)	41.4 (2617)
Other	2.3 (271)	2.3 (132)	2.2 (139)	Medium BMI (Overweight)	31.3 (3632)	36.8 (1947)	26.6 (1685)
In College (% <i>, N</i> )	17.4 (2021)	18.7 (988)	16.3 (1033)	High I BMI (Obese I)	15.1 (1755)	15.4 (815)	14.9 (940)
Born In U.S. (% <i>, N</i> )	94.0 (10923)	94.1 (4981)	93.9 (5942)	High II BMI (Obese II)	7.2 (840)	6.5 (343)	7.9 (497)
				High III BMI (Obese III)	5.7 (668)	3.9 (206)	7.3 (462)

Note. In the top part of the table, the first number represents the mean, and the second number in parentheses represent the standard deviation. For example, the overall mean age for the sample is 34.1 ( $SD = 10.3$ ). In the remainder of the table, the first number represents the percentage of participants, and the second number in parentheses represents the sample size. For example, 75.2% of the sample was White (8742 participants).

participants, lower average BMI, and more Whites. For more detailed demographics and a discussion of how the current sample compares to nationally representative datasets, please see section 2.1.1 of Frederick et al. (2022).

## 2.2. Procedure and overview of The U.S. Body Project I

The first author's university institutional review board approved the study. Adult participants were recruited via Amazon Mechanical Turk, a widely used online panel system used by researchers to access adult populations (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Kees, Berry, Burton, & Sheehan, 2017; Paolacci, Chandler, & Ipeirotis, 2010; Robinson, Rosenzweig, Moss, & Litman, 2019). Participants were paid 51 cents for taking the survey. The survey was advertised with the title "Personal Attitudes Survey" and the description explained that "We are measuring personal attitudes and beliefs. The survey will take roughly 10–15 min to complete." The general wording of the advertisement was used to avoid selectively recruiting people particularly interested in body image. After clicking on the advertisement, the participants read a consent form providing more details about the content of the study, including that it would contain items related to sex, love, work, and appearance. They were then given the option to continue with the

survey or exit. A total of 13,518 people clicked on the survey, 12,571 answered the first question, and 12,151 completed the full survey Table 2.

After providing informed consent, participants completed the numerical textbox questions (e.g., hours per week worked, number of times in love, sex frequency per week, longest relationship), followed by appearance evaluation (Cash, 2000), the SATAQ-4 (Schaefer et al., 2015), face satisfaction (Frederick et al., 2016a), overweight preoccupation (Cash, 2000), body image quality of life (Cash & Fleming, 2002), body surveillance (McKinley & Hyde, 1996), and finally demographics.

This manuscript is part of a series of papers emerging from The U.S. Body Project I. This project invited over twenty body image and eating disorder researchers, four sexuality researchers, and six computational scientists to apply their content and data-analytic expertise to the dataset. This project resulted in the following set of 11 papers for this special issue.

The first two papers examine how demographic factors (gender, sexual orientation, BMI, age, ethnicity) are related to body satisfaction and overweight preoccupation (Frederick, Crerand, et al., 2022) and to measures derived from objectification theory and the tripartite influence model, including body surveillance, thin-ideal and muscular/athletic ideal internalization, and perceived peer, family,

**Table 2**  
Zero-order correlations among predictor variables and sexuality-related body image variables.

	<i>Sex Appeal</i> My body is sexually appealing		<i>Nude Appearance Satisfaction</i> I like the way I look without my clothes on		<i>Sexual Acceptability</i> Body image affects: My feelings of acceptability as a sexual partner		<i>Sexual Enjoyment</i> Body image affects: My enjoyment of my sex life		<i>Sex Frequency</i> Sex frequency per week	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
BMI	-0.40***	-0.46***	-0.40***	-0.47***	-0.25***	-0.28***	-0.22***	-0.29***	-0.06***	-0.06***
Age	-0.10***	-0.12***	-0.09***	-0.15***	-0.03*	.02	-0.04*	-0.04***	-0.08***	-0.15***
Education	.05***	.09***	.03*	.09***	.05***	.06***	.04***	.05***	.00	-0.05***
Body Surveillance	-0.15***	-0.22***	-0.23***	-0.29***	-0.23***	-0.34***	-0.21***	-0.30***	-0.03*	-0.01
Thin-Ideal	-0.09***	-0.23***	-0.14***	-0.26***	-0.10***	-0.21***	-0.08***	-0.21***	.02	-0.01
Muscle-Ideal	.25***	.10***	.19***	.09***	.18***	.09***	.17***	.06***	.13***	.06***
Peer Pressure	-0.16***	-0.24***	-0.17***	-0.21***	-0.16***	-0.21***	-0.13***	-0.22***	.03*	-0.02
Media Pressure	-0.19***	-0.23***	-0.23***	-0.27***	-0.20***	-0.28***	-0.18***	-0.25***	-0.03*	-0.07***
Family Pressure	-0.18***	-0.28***	-0.18***	-0.27***	-0.16***	-0.25***	-0.14***	-0.25***	.01	-0.04**
Overweight Preoccupation	-0.26***	-0.33***	-0.31***	-0.40***	-0.22***	-0.27***	-0.20***	-0.25***	.00	-0.01
Sex Appeal	-	-	-	-	-	-	-	-	-	-
Nude Appearance	.76***	.75***	-	-	-	-	-	-	-	-
Sexual Acceptability	.58***	.58***	.57***	.55***	-	-	-	-	-	-
Sexual Enjoyment	.53***	.53***	.52***	.51***	.84***	.86***	-	-	-	-
Sex Frequency (all participants)	.26***	.22***	.24***	.20***	.30***	.18***	.36***	.27***	-	-
Sex Frequency (subsample in relationships)	.22***	.20***	.21***	.19***	.23***	.22***	.30***	.27***	-	-

Note. \*\*\**p* < .001, \*\**p* < .01, \**p* < .05. The values represent the zero-order correlations among predictor variables and each of the sexuality related variables (top part of table), and also among the sexuality variables (bottom part of table). For example, men with higher BMIs were less likely to agree their body was sexually appealing (*r* = -0.40), and men who liked how they looked with their clothes off (nude appearance) were more likely to feel their body was sexually appealing (*r* = 0.76).

and media pressures (Frederick, Pila, et al., 2022). The second set of papers examine how these measures and demographic factors predict sexuality-related body image (current paper) and face satisfaction (Frederick, Reynolds, et al., 2022).

The third set of papers use structural equation modelling to examine the links between sociocultural appearance concerns and body satisfaction among women and across BMI groups (Frederick, Tylka, Rodgers, Pennesi, et al., 2022), among men and across different BMI groups (Frederick, Tylka, Rodgers, Convertino, et al., 2022), across racial groups (Frederick, Schaefer, et al., 2022) and across sexual orientations (Frederick, Hazzard, Schaefer, Rodgers, et al., 2022).

The fourth set of papers focus on measurement and statistical issues by examining measurement invariance of the scales across different demographic groups (Hazzard, Schaefer, Thompson, Rodgers, & Frederick, 2022) and conducting a psychometric evaluation of an abbreviated version of the Body Image Quality of Life Inventory (Hazzard, Schaefer, Thompson, Murray, & Frederick, 2022). Finally, the last paper uses machine learning modelling to compare the effectiveness of nonlinear models versus linear regression for predicting body image outcomes (Liang et al., 2022).

### 2.3. Demographic variables

Participants self-reported their age, height in feet and inches, weight in pounds, sexual orientation, highest level of education, current relationship status, race (10 options where they could check all that apply), sex, and current U.S state. Key details about the demographics can be viewed in Table 1.

BMI was calculated from self-reported height and weight. Participants were divided into the traditional Center for Disease Control BMI categories: Underweight (14.5–18.49), Normal or Healthy (18.5–24.9), Overweight (25–29.9), Obese I (30–34.9), Obese II (35–39.9), and Obese III (40.0–50.50). We hasten to add that these widely used categories were chosen as a heuristic so that the BMI results could be compared to existing studies, and do not represent

uniform endorsement of the categories by the entire authorship team in terms of semantic accuracy or as clear indicators of a person’s health status (e.g., see Tomiyama, Hunger, Nguyen-Cuu, & Wells, 2016). To avoid any stigmatizing effects of these labels, we instead label these BMI groups as Lowest (Underweight), Low (Normal), Medium (Overweight), and High (Obese) BMI groups from this point forward.

Participants were asked to indicate their “current relationship status” and were provided with a list of options. For some analyses, several of these options were collapsed and coded as the person currently being in a relationship: “Dating one person,” “Married,” “Cohabiting/living with one person.” The remaining categories were “Widowed,” “Dating multiple people,” and “Not currently involved with anyone.” The “dating multiple people” option could be included as being “in a relationship,” but we have kept this group separate because there are some distinct and interesting sexuality-related body image findings for this group, as described later in the results section.

### 2.4. Outcome measures: sexuality-related body image and sex frequency

To measure sexuality-related body image, we drew four items from two validated measures of body image that have showed high reliability and validity in past research (items described below). The items selected were chosen because they explicitly addressed sexuality, perceived sex appeal, and people’s feelings about their appearance without clothes on. In addition to having face validity, we examined whether the four items were connected by an underlying factor. An exploratory factor analysis with principal axis factoring revealed only one factor with an eigenvalue greater than 1.0. The factor explained 72% of the variance, and the factor loadings for all items were high (0.74–0.87). For data analyses, we treated each item individually instead of averaging them because they each assess different aspects of sexuality-related body image.

#### 2.4.1. Sexuality-related appearance evaluation: sex appeal and nude appearance satisfaction

We analyzed two items from the seven-item Appearance Evaluation subscale of the Multidimensional Body-Self Relations Questionnaire (Brown, Cash, & Mikulka, 1990; Cash, 2000). The overall subscale measures feelings of physical attractiveness and satisfaction with one's appearance.

The two items pertaining to sexual attractiveness were: *Sex Appeal* "My body is sexually appealing" and *Nude Appearance Satisfaction* "I like the way I look without my clothes on." Responses were recorded on a 5-point Likert scale (1 = *Definitely Disagree*; 2 = *Mostly Disagree*; 3 = *Neither Agree nor Disagree*; 4 = *Mostly Agree*; 5 = *Definitely Agree*). In most cases, we analyzed each of these items individually.

#### 2.4.2. Reported effects of body image on quality of sex life: sexual acceptability and sexual enjoyment

We used two items from the 19-item Body Image Quality of Life Inventory to assesses participant's beliefs about how their body image affects their sex lives (Cash & Fleming, 2002). The two sexuality-related items asked participants to report how their feelings about their appearance affect their: *Sexual Acceptability* "feelings of acceptability as a sexual partner" and *Sexual Enjoyment* "enjoyment of my sex life." Participants indicated whether their feelings about their appearance had a negative effect, no effect, or positive effect on various aspects of their lives on a 7-point Likert scale (1 = *Very Negative Effect*, 2 = *Moderate Negative Effect*, 3 = *Slight Negative Effect*, 4 = *No Effect*, 5 = *Slight Positive Effect*, 6 = *Moderate Positive Effect*, 7 = *Very Positive Effect*). We analyzed each of these items individually.

#### 2.4.3. Sex frequency per week

Participants were asked "How many times do you have sex per week?" and responded by entering a number. Answers ranged from - 1 to 25. We were puzzled by the one person who had - 1 sexual experiences per week and excluded this participant from analyses using this variable. Overall, 99.4% of people fell between 0 and 10. To minimize the mathematical influences of outliers, we recoded everyone who reported greater than 10 times as "10."

A total of 26% of participants reported "0" and this varied substantially by relationship status. A sexual frequency of 0 per week was most common among those not currently involved with anyone (73%) and widowed (59%), and least common among those cohabiting (8%), married (10%), dating one person exclusively (14%), dating multiple people (13%).

### 2.5. Psychological measures

#### 2.5.1. Objectified body consciousness scale – body surveillance subscale

Participants completed the Body Surveillance Scale, which assesses the extent to which people monitor how they appear to others (McKinley & Hyde, 1996). The scale contains eight items (e.g., "During the day, I think about how I look many times"). Responses were recorded on a 7-point Likert scale (1 = *Strongly Disagree*; 7 = *Strongly Agree*). Items were averaged into a scale, with higher scores indicating greater body surveillance ( $\alpha = 0.86$ , overall sample; 0.84, men; 0.86, women).

#### 2.5.2. Sociocultural attitudes towards appearance Questionnaire-4

The Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4; Schaefer et al., 2015) contains subscales with four items assessing appearance-related pressures from family ( $\alpha = 0.91$ , overall sample; 0.89, men; 0.92, women), peers ( $\alpha = 0.93$ , overall sample; 0.92, men; 0.94, women), and media (e.g., "I feel pressure from the media to look in better shape;"  $\alpha = 0.97$ , overall sample; 0.95, men; 0.97, women). The thin-ideal internalization subscale consists of five items but one item was inadvertently

omitted ("I want my body to look like it has little fat"), leading us to average the remaining four items (e.g., "I want my body to look very thin;"  $\alpha = 0.84$ , overall sample; 0.79, men; 0.87, women). These four items were connected by one underlying factor (Hazzard et al., 2022b). The muscular/athletic internalization measure included five items (e.g., "It is important for me to look athletic;" "I spend a lot of time doing things to look more muscular;"  $\alpha = 0.92$ , overall sample; 0.90, men; 0.91, women). Responses were recorded on 5-point Likert scales (1 = *Definitely Disagree*; 5 = *Definitely Agree*). The items were averaged for each subscale, and higher scores indicated greater internalization or pressures.

#### 2.5.3. Multidimensional body-self relations questionnaire – overweight preoccupation subscale

Participants completed the Overweight Preoccupation subscale of the Multidimensional Body-Self Relations Questionnaire (Brown et al., 1990; Cash, 2000). This scale measures fat anxiety, weight vigilance, dieting, and eating restraint (e.g., "I am on a weight loss diet"). Responses to the first three questions were recorded on a 5-point Likert scale (1 = *Definitely Disagree*; 5 = *Definitely Agree*), whereas the last question was recorded on a different scale (1 = *Never*, 5 = *Very Often*). Items were averaged into a composite, with higher scores indicating greater overweight preoccupation ( $\alpha = 0.80$ , overall sample; 0.78, men; 0.79, women).

#### 2.5.4. Face image satisfaction measure

Participants completed the Face Image Satisfaction Measure (Frederick et al., 2016a). This scale assesses how happy people feel with their face overall and specific aspects of their face. This scale contains four items. Three of them begin with the stem "I feel happy with the appearance of my..." followed by aspects of the face (face overall, nose, eyes). The final item reads "I am happy with the shape of my face."

Participants responded on a 5-point Likert scale (1 = *Definitely Disagree* to 5 = *Definitely Agree*). Items were averaged into a scale, with higher scores indicating feeling happier with the appearance of one's face. Internal reliability was high in the overall sample and among men and women ( $\alpha = 0.84$ , overall sample; 0.86, men; 0.82, women).

### 2.6. Overview of data analytic approach

#### 2.6.1. Effect sizes

What is considered a small, moderate, or large effect size can vary dramatically based on the research question of interest. As a very rough guide, Cohen (1988) suggests that effect size  $d$  can be interpreted as small (0.20), moderate (0.50), or large (0.80). These values correspond to Pearson's  $r$  correlations of .10, .24, and .37. Ferguson (2009, p. 533) suggested somewhat higher thresholds for what should be considered the "recommended minimum effect size representing a 'practically' significant effect for social science data" ( $d = 0.41$ ;  $\beta$  or  $r = .20$ ). With very large sample sizes, it is possible for even very small effects to be statistically significant at traditional thresholds. Furthermore, many statistical tests were conducted, raising the risk of Type I errors.

We therefore note in the tables whether effects were significant at the  $p < .05$ , .01, or .001 levels, we encourage readers to focus on the results significant at the  $p < .001$  level, and we emphasize effect sizes when presenting results. Following Ferguson's guidelines, we place special emphasis on effects identified as being practically significant by Ferguson's guidelines ( $r$  or  $\beta > |.19|$ ). Those guidelines may be viewed as fairly strict for determining a meaningful effect sizes, so we also placed special emphasis on any effect sizes that were  $d > |0.29|$ . Furthermore, we highlight any statistically significant findings that meet Cohen's threshold for a "small" effect: Cohen's  $d > |0.19|$ ,  $r$  and  $\beta > |.09|$ . We are not aware of clear heuristics for interpreting effect sizes in percentages, and elected to highlight results greater than 8% points in this manuscript.

2.6.2. Frequency distributions and percentages

We utilized the full continuous measure for some analyses (regressions; t-tests). Consistent with past research, to present the prevalence of low and high body satisfaction, we also present frequency distributions showing the percentage of participants falling on different points on the Likert scale (e.g., Cash & Henry, 1995; Fallon et al., 2014; Frederick et al., 2007, 2016a; Peplau et al., 2009). Specifically, we indicate the percentages of participants who tended report disagreeing versus being neutral versus agreeing with items from the Appearance Evaluation scale. We also indicate the percentages of participants who reported negative effects versus no effect versus positive effects on items from the Body Image Quality of Life Inventory. This reporting strategy maximizes the accessibility of the findings to the lay public, clinicians, and scientists, in conjunction with the more advanced statistical analyses.

For the two items from the Appearance Evaluation scale (*Sex Appeal*; *Nude Appearance Satisfaction*) reported on a five-point Likert scale, we calculated the percentage of people who fell below the midpoint of the Likert scale (Disagree/Low: scores of 1 or 2), at the midpoint (Neutral: 3), or systematically above the midpoint (Agree/High: 4 or 5). For the two items from the Body Image Quality of Life Inventory (*Sexual Acceptability*; *Sexual Enjoyment*) reported on a seven-point scale, we recoded this as Negative/Low (scores of 1–3), No effect (4), or Positive/High (5–7).

Table 3a

Multiple regression analyses with demographic factors predicting sexuality-related body image and sex frequency.

	Sex Appeal			Nude Appearance Satisfaction			Sexual Acceptability		
	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$
Gender	-0.02	–	–	-0.24 ***	–	–	-0.16 ***	–	–
BMI	-0.43 ***	-0.33 ***	-0.50 ***	-0.47 ***	-0.38 ***	.56 ***	-0.27 ***	-0.21 ***	-0.32 ***
BMI <sup>2</sup>	.00	-0.05 ***	.05 ***	.04 ***	-0.03 ***	.11 ***	.00	-0.04 ***	.04 ***
Age	-0.05 ***	-0.07 ***	-0.04 ***	-0.06 ***	-0.05 ***	-0.06 ***	-0.01	-0.03 *	.01
Education	.05 ***	.02	.06 ***	.04 ***	.00	.06 ***	.02 ***	.01	.02
Hispanic	.10 *	.02	.19 *	.07	.04	.09	.16 ***	.14 *	.18 **
Black	.40 ***	.41 ***	.40 ***	.37 ***	.36 ***	.37 ***	.30 ***	.33 ***	.29 ***
Asian	-0.23 ***	-0.16 ***	-0.30 ***	-0.17 ***	-0.18 ***	-0.18 ***	-0.02	-0.04	.00
Other Race	.12 ***	.11 *	.12 **	.03	.04	.03	.05	.07	.03
Gay/Lesbian	-0.07	-0.07	-0.06	-0.05	-0.11	.00	-0.13 **	-0.27 ***	-0.01
Bisexual	.02	-0.15 *	.07	.00	-0.14 *	.04	-0.11 **	-0.14 *	-0.09 *
Other	-0.26 ***	-0.25	-0.25 **	-0.11	-0.44 **	-0.02	-0.20 **	-0.21	-0.19 *
Not Involved	-0.31 ***	-0.35 ***	-0.28 ***	-0.26 ***	-0.32 ***	-0.19 ***	-0.53 ***	-0.57 ***	-0.50 ***
Widowed	-0.37 ***	-0.17	-0.44 ***	-0.01	.21	-0.07	-0.32 **	.06	-0.46 ***
Dating Multiple	.42 ***	.46 ***	.35 ***	.38 ***	.40 ***	.31 ***	.13 *	.21 **	.00
Adjusted. R <sup>2</sup>	.23 ***	.21 ***	.25 ***	.24 ***	.21 ***	.26 ***	.14 ***	.15 ***	.13 ***

	Sexual Enjoyment			Sex Frequency		
	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$
Gender	-0.17 ***	–	–	-0.10 ***	–	–
BMI	-0.25 ***	-0.19 ***	-0.29 ***	-0.04 ***	-0.02	-0.05 **
BMI <sup>2</sup>	.00	-0.03 ***	.03 ***	-0.01	-0.02 *	.01
Age	-0.02 *	-0.04 **	.00	-0.12 ***	-0.12 ***	-0.13 ***
Education	.01	.00	.02	-0.05 ***	-0.03 **	-0.06 ***
Hispanic	.13 **	.13 *	.12	.14 ***	.14 *	.15 *
Black	.30 ***	.31 ***	.28 ***	.24 ***	.23 ***	.25 ***
Asian	-0.01	-0.03	.02	-0.09 *	-0.01	-0.17 ***
Other Race	.06	.07	-0.10	.10 ***	.09	.11 **
Gay/Lesbian	-0.14 **	-0.23 ***	-0.05	-0.11 *	.02	-0.25 ***
Bisexual	-0.09 **	-0.16 *	-0.06	.02	.04	.02
Other	-0.13	-0.20	-0.10	-0.32 ***	-0.43 **	.26 **
Not Involved	-0.57 ***	-0.64 ***	-0.50 ***	-0.90 ***	-0.84 ***	-0.97 ***
Widowed	-0.30 **	.05	-0.43 ***	-0.46 ***	-0.17	-0.58 ***
Dating Multiple	.20 ***	.23 ***	.13	.22 ***	.41 **	-0.10 ***
Adjusted. R <sup>2</sup>	.13 ***	.15 ***	.12 ***	.17 ***	.17 **	.18 ***

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ . In the dummy codes, the category coded as 0 were: men for gender, White for race, heterosexual for sexual orientation, and in a relationship for relationship status. Positive  $\beta$ s indicated greater sexuality-related body image and negative  $\beta$ s indicated lower sexuality-related body image. For example, looking at results for satisfaction with nude appearance, women were less satisfied than men ( $\beta = -0.24$ ), people with high BMIs mass were less satisfied than people with low BMIs ( $\beta = -0.47$ ), and Blacks were more satisfied than Whites ( $\beta = 0.37$ ).



**Table 3b**  
Multiple regression analyses with psychological predictors of sexuality-related body image and sex frequency (controlling for demographic factors in Table 3a).

	Sex Appeal			Nude Appearance Satisfaction			Sexual Acceptability		
	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$
Body Surveillance	-0.14 ***	-0.19 ***	-0.12 ***	-0.21 ***	-0.25 ***	-0.19 ***	-0.24 ***	-0.27 ***	-0.23 ***
Thin-Ideal	-0.12 ***	-0.05 **	-0.17 ***	-0.13 ***	-0.06 ***	-0.17 ***	-0.06 ***	-0.01	-0.08 ***
Muscle-Ideal	.19 ***	.30 ***	.11 **	.18 ***	.26 ***	.10 **	.17 ***	.26 ***	.09 ***
Peer Pressure	-0.05 ***	-0.06 ***	-0.04 **	-0.01	-0.05 **	.01	-0.05 ***	-0.05 **	-0.05 **
Media Pressure	-0.04 ***	-0.06 ***	-0.02 *	-0.07 ***	-0.09 ***	-0.06 ***	-0.07 ***	-0.08 ***	-0.06 ***
Family Pressure	-0.05 ***	-0.03	-0.06 ***	-0.04 ***	-0.01	-0.05 ***	-0.06 ***	-0.04 **	-0.07 ***
Adjusted. R <sup>2</sup>	.30 ***	.31 ***	.33 ***	.34 ***	.32 ***	.37 ***	.24 ***	.26 ***	.24 ***

	Sexual Enjoyment			Sex Frequency		
	All $\beta$	Men $\beta$	Women $\beta$	All $\beta$	Men $\beta$	Women $\beta$
Body Surveillance	-0.23 ***	-0.24 ***	-0.23 ***	-0.04 ***	-0.06 ***	-0.03 *
Thin-Ideal	-0.05 ***	-0.01	-0.07 ***	-0.01	.00	-0.02
Muscle-Ideal	.16 ***	.23 ***	.09 ***	.06 ***	.10 ***	.03 **
Peer Pressure	-0.03 **	-0.03 *	-0.03 *	.03 **	.06 ***	.01
Media Pressure	-0.06 ***	-0.06 ***	-0.06 **	-0.04 ***	-0.03	-0.05 ***
Family Pressure	-0.06 ***	-0.05 **	-0.06 ***	-0.02	-0.03	.00
Adjusted. R <sup>2</sup>	.22 ***	.24 ***	.21 ***	.18 ***	.18 ***	.19 ***

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ . Positive  $\beta$ s indicated greater sexuality-related body image and negative  $\beta$ s indicated lower sexuality-related body image. For example, people higher in body surveillance reported lower sex appeal ( $\beta = -0.14$ ), and people higher in muscle/athletic-ideal internalization reported greater sex appeal ( $\beta = 0.19$ ).

in a relationship were always coded as 0 and each of the other relationship statuses were coded as 1 in their respective variables (not involved with anyone, widowed, or dating multiple people).

In Step 2, as shown in Table 3b, we then entered measures pertaining to objectification theory (body surveillance) and the tripartite influence model (thin-ideal internalization, muscle/athletic-ideal internalization, and perceived pressures from peers, media, and family). The purpose of these analyses was to identify which of these socio-cultural appearance pressures were most strongly associated with each of the sexuality-related body image measures, when controlling for the other variables in the model. This would help isolate which of these factors particularly heighten risk for poor sexuality-related body image that could be targeted for intervention. In Step 3, we added interaction terms of each of these sociocultural appearance pressures with BMI and BMI-squared to examine whether this would meaningfully add to the explanatory value of the model overall in terms of adjusted R<sup>2</sup> (not shown in Tables). Across all regression analyses, collinearity diagnostics did not identify high degrees of multicollinearity (most VIF values below 2.0, all below 5.0).

We then present gender differences in the overall prevalence of low, neutral, and high sexuality-related body image items, along with t-tests and Cohen’s d comparing men and women (Table 4). We highlight the percentage of men and women who report that their feelings about their bodies have a “very negative effect” on sexual enjoyment (Fig. 1) and also those reporting a “very positive effect” (Fig. 2).

**Table 4**  
Prevalence of low, neutral, and high scores on items assessing body image-related comfort with sex.

	Men					Women					Vs. <i>d</i>
	Low %	Neutral %	High %	<i>M</i>	<i>SD</i>	Low %	Neutral %	High %	<i>M</i>	<i>SD</i>	
Sex Appeal: My body is sexually appealing	25	27	48	3.25	1.03	28	20	52	3.24	1.11	0.01
Nude Appearance Satisfaction: I like the way I look without my clothes on	36	23	42	3.03	1.17	48	17	35	2.74	1.27	0.24***
Sexual Acceptability: Body image affects my feelings of acceptability as a sexual partner	27	16	57	4.61	1.73	34	15	51	4.38	1.83	0.13***
Sexual Enjoyment: Body image affects my enjoyment of my sex life	23	22	55	4.64	1.68	30	21	49	4.41	1.77	0.13***

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ . Frequency distributions are provided to show the percentage of men and women who scored on the low, neutral, or high end of each body image measure. For example, 25% of men disagreed that their body is sexually appealing, scoring on the low end of the Likert scale below the midpoint of the Likert scale. Means and standard deviations for each sex are presented. Effect size *d* and statistical significance for differences between men and women are shown in the last column. A positive effect size indicates that men scored higher on the measure than women (e.g., men were more likely to say that they like the way they look without their clothes on,  $d = 0.24$ ).

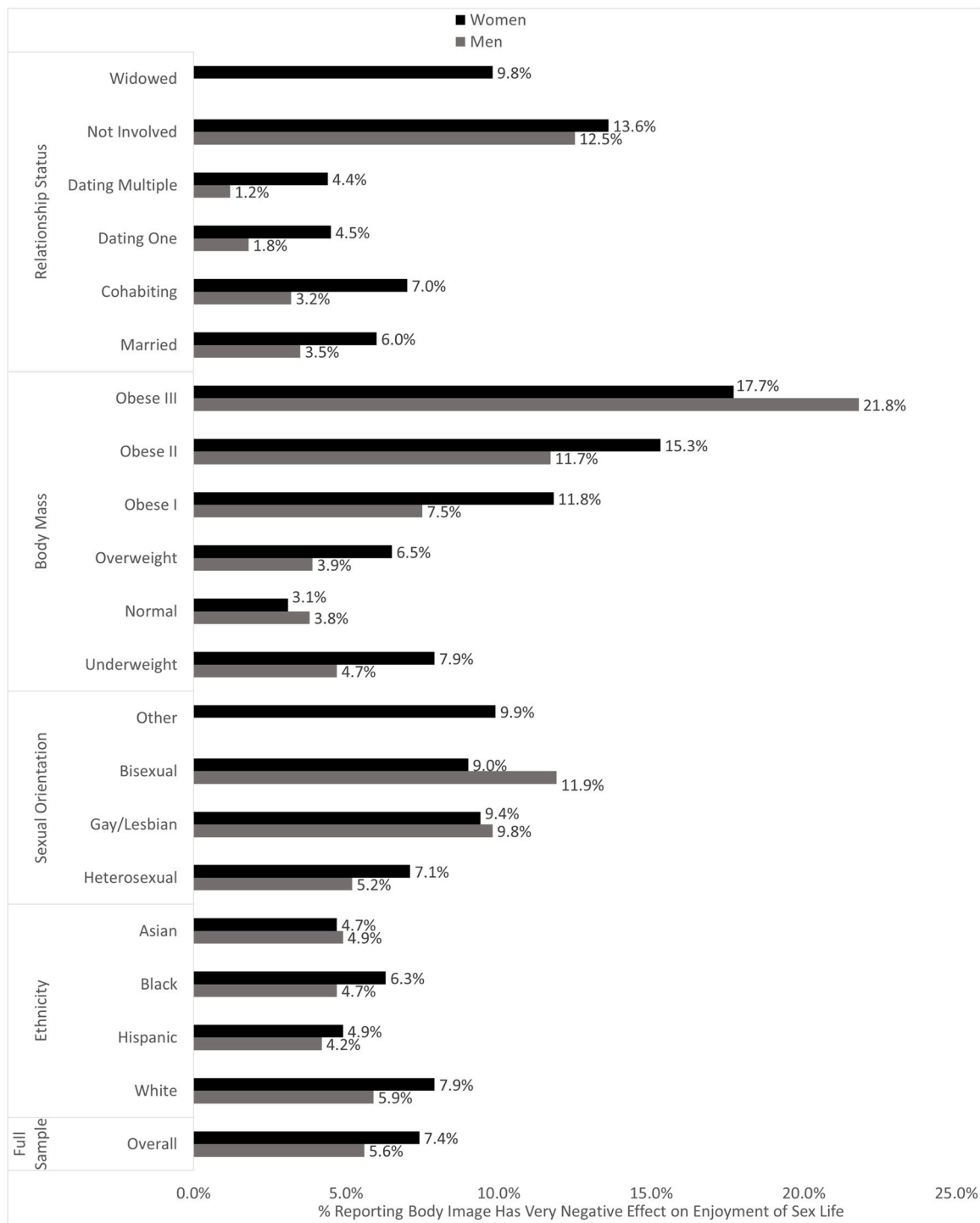
### 3. Results

#### 3.1. Gender differences in sexuality-related body image (Hypothesis 1)

We hypothesized that women would be more likely to report poorer sexuality-related body image than men. In the initial regression analysis with gender entered as a predictor, women reported lower satisfaction than men with their nude appearance ( $\beta = -0.24$ ), sexual acceptability ( $\beta = -0.16$ ), and sexual enjoyment ( $\beta = -0.17$ ), after controlling for other demographic variables (Table 3a). Women and men did not differ, however, in perceptions of sex appeal ( $\beta = -0.02$ ).

Table 4 presents the prevalence of low, neutral, and high scores on sexuality-related body image items by gender. A smaller proportion of men than women reported low nude appearance satisfaction (36% men vs. 48% women), low sexual acceptability (27% men vs. 34% women), and low sexual enjoyment (23% men vs. 30% women). Men and women did not differ in perceptions of low sex appeal (25% men vs. 28% women). Overall, 6% of men and 7% of women reported that their feelings about their body had a “very negative” effect on their enjoyment of their sex lives (Fig. 1).

Looking at the positive side of body image, the proportions of women and men reporting high sexuality-related body image in each item were: high sex appeal (48% men vs. 52% women), nude appearance satisfaction (42% men vs. 35% women), sexual acceptability (57% men vs. 51% women), and sexual enjoyment (55% men vs. 49% women; Table 4). Overall, 15% of men and 13% of women



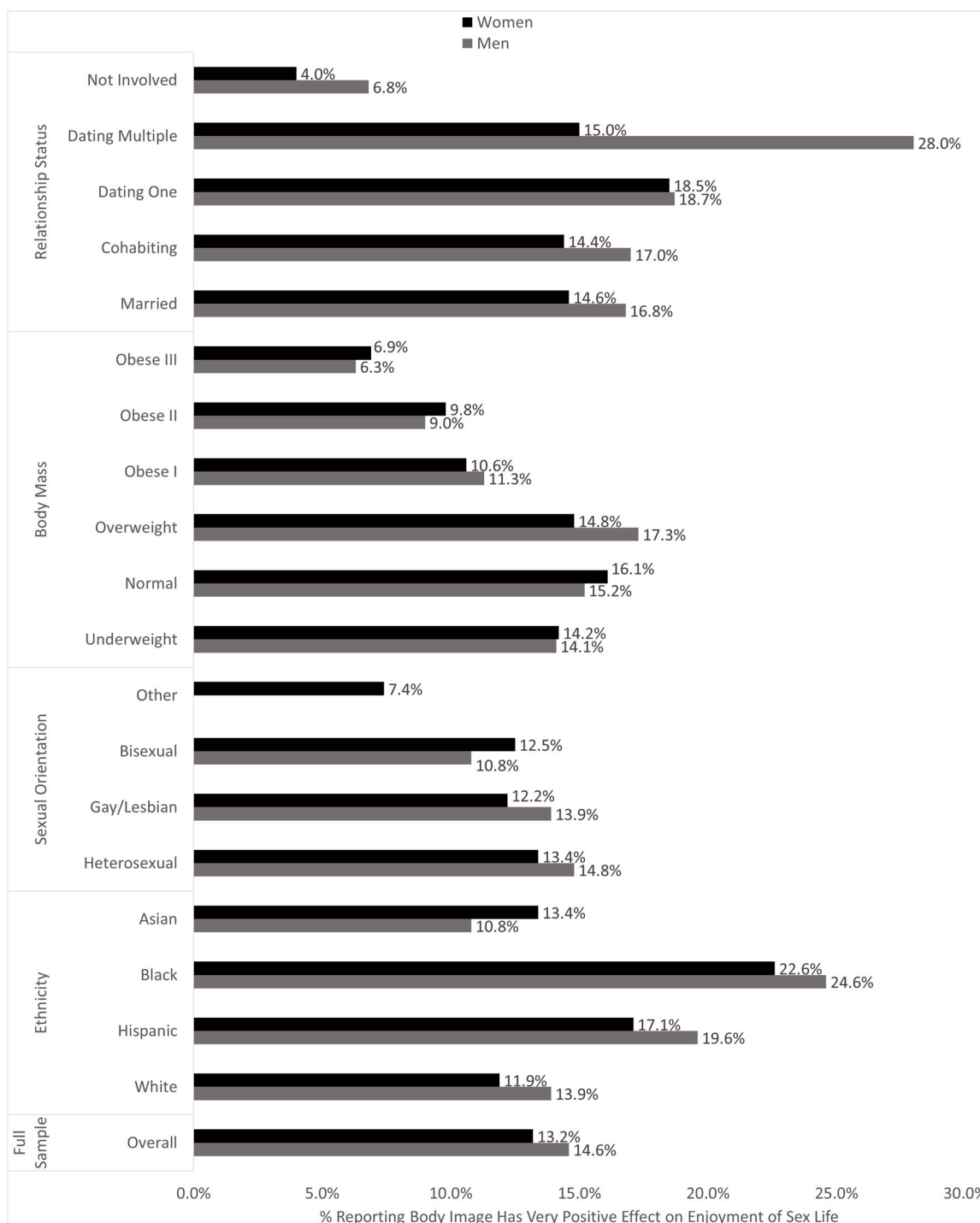
**Fig. 1.** The Percentage of Men and Women Reporting Their Body Image Has a “Very Negative Effect” on their Enjoyment of Their Sex Lives by Demographic Categories. *Note.* The dark bars represent women and the lighter bars represent men. The figure shows the percentage of participants who reported that their feelings about their bodies had a “very negative effect” on “My enjoyment of my sex life.” Over 8.0% of participants reported this very negative effect among men and women who identified as gay, lesbian, bisexual, other sexual orientation; were not currently involved with anyone; and who had High II-III BMI. Additionally, greater than 8% of women with High I BMI and widowed women reported a very negative effect.

reported that their feelings about their bodies had a “very positive” effect on their enjoyment of their sex lives (Fig. 2).

### 3.2. Sexual orientation differences in sexuality-related body image among men and women (Hypothesis 2)

We hypothesized that sexual minority men, but not women, would report poorer body image than their heterosexual

counterparts. Consistent with previous research, regression analyses conducted with men revealed that compared to heterosexual men, gay men reported lower sexual acceptability ( $\beta = -0.27$ ) and sexual enjoyment ( $\beta = -0.23$ ), but they did not significantly differ in sex appeal ( $\beta = -0.07$ ) or nude appearance satisfaction ( $\beta = -0.11$ ). Relative to heterosexual men, bisexual men reported poorer body image across all four measures ( $\beta = -0.14$  to  $-0.16$ ), but none of these associations exceeded  $\beta = |.19|$  and none were significant at  $p < .01$ .



**Fig. 2.** The Percentage of Men and Women Reporting Their Body Image Has a “Very Positive Effect” on their Enjoyment of Their Sex Lives by Demographic Categories. *Note.* The dark bars represent women and the lighter bars represent men. The figure shows the percentage of participants who reported that their feelings about their bodies had a “very positive effect” on “My enjoyment of my sex life.” Over 10% of participants reported this very positive effect in all groups except for men and women who identified with an “other” sexual orientation, were in the High BMI II-III categories, were not currently involved with anyone. Furthermore, fewer than 10% widowed women reported a very positive effect.

Among women, regression analyses conducted with women revealed no differences among the heterosexual, lesbian, or bisexual groups that exceeded  $\beta = .09$  (Table 3a).

The patterns identified in the regressions for each gender were also apparent in the frequency distributions (see Table 5). A greater proportion of gay (45%) and bisexual men (37%) reported low sexual acceptability compared to 26% of heterosexual men. Similarly, 40% of gay men and 34% of bisexual men reported low sexual enjoyment

compared to only 22% of heterosexual men. Low sex appeal was reported by 31% of gay men, 34% of bisexual men, and 24% of heterosexual men, and low satisfaction with nude appearance was reported by 47% of gay men, 45% of bisexual men, and 35% of heterosexual men.

Among women, the differences between sexual orientation groups never exceeded 6% points. The percentage of heterosexual, lesbian, and bisexual women reporting poor body image across the

**Table 5**  
Prevalence of low body image-related comfort with sex among men and women.

	White %	Hispanic %	Black %	Asian %	Under-weight %	Normal %	Over-weight %	Obese I %	Obese II %	Obese III %
Low Sex Appeal: My body is sexually appealing (Disagree)	26 (30)	23 (22)	15 (20)	22 (25)	23 (25)	13 (10)	17 (27)	44 (45)	59 (58)	77 (66)
Low Nude Appearance Satisfaction: I like the way I look without my clothes on (Disagree)	37 (50)	35 (43)	22 (39)	32 (39)	31 (29)	21 (25)	29 (52)	58 (72)	72 (78)	86 (83)
Low Sexual Acceptability: Body image affects: My feelings of acceptability as a sexual partner (Negative Effect)	29 (36)	22 (23)	17 (29)	22 (24)	27 (37)	19 (21)	22 (35)	41 (49)	50 (55)	60 (58)
Low Sexual Enjoyment: Body image affects: My enjoyment of my sex life (Negative Effect)	25 (32)	22 (24)	14 (28)	20 (20)	27 (34)	16 (18)	19 (31)	38 (43)	38 (48)	53 (53)
	Hetero. %	Gay/Lesbian %	Bisexual %	Other %	Married %	Cohabit %	Dating One %	Dating Multiple %	Not Involved %	Widow %
Low Sex Appeal: My body is sexually appealing (Disagree)	24 (28)	31 (33)	34 (28)	-(39)	24 (28)	22 (25)	18 (21)	10 (15)	34 (38)	-(43)
Low Nude Appearance Satisfaction: I like the way I look without my clothes on (Disagree)	35 (47)	47 (47)	45 (49)	-(49)	36 (50)	32 (44)	27 (39)	18 (13)	45 (54)	-(59)
Low Sexual Acceptability: Body image affects: My feelings of acceptability as a sexual partner (Negative Effect)	26 (34)	45 (35)	37 (40)	-(37)	23 (32)	24 (33)	19 (28)	11 (30)	40 (47)	-(45)
Low Sexual Enjoyment: Body image affects: My enjoyment of my sex life (Negative Effect)	22 (30)	40 (29)	34 (35)	-(25)	21 (30)	19 (30)	14 (23)	11 (20)	36 (38)	-(35)

Note. In each cell, the first number represents the percentage of men who fell into the categories generally associated with poor body image (e.g., % disagreeing with the statement "My body is sexually appealing"). The second number in parentheses represents the percentage of women. For example, 26% of White men (and 30% of White women) report low sex appeal. Only data for cells with at least 40 participants are shown.

items were: low sex appeal (28%, 38%, 28%), low satisfaction with nude appearance (47%, 47%, 49%), low sexual acceptability (34%, 35%, 40%), and low sexual enjoyment (30%, 29%, 35%; Table 5).

A "very negative effect" of body image on sexual enjoyment was reported least often by heterosexual men (5%), followed by heterosexual women (7%), bisexual women (9%), lesbian women (9%), gay men (10%), and bisexual men (12%; Fig. 1). Turning to positive body image, a "very positive effect" of body image on enjoyment of sex lives was reported by 11–15% of these groups (Fig. 2).

3.3. BMI differences in sexuality-related body image among men and women (Hypothesis 3)

We hypothesized that people with higher BMIs would report poorer sexuality related body image, but there may also be a curvilinear component to the association, particularly for men. In the regressions conducted with men and the regressions conducted with women, higher BMI was linked to all four sexuality-related body image items, with all but one  $\beta$  exceeding  $|.20|$ . There were also weak curvilinear associations in some analyses, with all but one  $\beta <|.10|$  (Table 3a).

The only BMI ranges where a majority of people reported high nude appearance satisfaction were among men with BMIs 21–27 and among women with BMIs 17–24. Low nude appearance satisfaction was reported by the majority of men with BMIs above 31 and women with BMIs above 27. The only BMI ranges where a majority of people reported high sexual acceptability were men with BMIs 18–31 and women with BMIs 17–28. Low sexual acceptability was reported by the majority of men with BMIs above 37 and the majority of women with BMIs above 32.

The links between BMI and body image were immediately apparent when looking across the BMI categories (Table 5). For all items, low sexuality-related body image was least common among men and women in the Low BMI category. For example, only 13% of normal weight men and 10% of Low BMI women reported low sex appeal, compared to 44% of High I BMI men and 45% of High I BMI women. Fig. 1 illustrates this pattern clearly. Very few normal weight men and women reported that their feelings about their bodies have a "very negative effect" on their enjoyment of their sex lives, but this percentage increased notably in higher BMI groups.

On the other hand, despite this trend towards poorer body image with increasing BMI, there were also respondents in every BMI category whose feelings about their body had a very positive impact on their sexual enjoyment (see Fig. 2). Across the High I-III BMI categories, 6–11% of men and women reported that their feelings about their bodies had a "very positive effect" on their enjoyment of their sex lives, as did 14–17% of Low BMI to Medium BMI men and women.

3.4. Racial differences in sexuality-related body image among men and women (Hypothesis 4)

We hypothesized that Black participants would report the highest sexuality-related body satisfaction and that Asian participants would report the lowest. In regression analyses conducted with men and in the regression analyses conducted with women, Black men and women reported higher sexuality-related body image than White men and women across all four items ( $\beta$ s =  $|.28$  to  $.41|$ ). In contrast, Asian men and women reported lower sex appeal and lower satisfaction with nude appearance than White men and women ( $\beta$ s =  $|.16$  to  $.30|$ ), but did not differ in sexual acceptability or sexual enjoyment. Hispanic men and women reported higher scores on some measures than White men and women, but no  $\beta$ s exceeded  $|.19|$ .

The links between race and body image are evident when looking at the frequency distributions (Table 5). Among men, 15% of Black men reported low sex appeal (vs. 22–30% of other groups), 22%



reported low satisfaction with nude appearance (vs. 32–37%), 17% reported negative impact on acceptability (vs. 22–29%), and 14% reported negative impact on sexual enjoyment (vs. 20–25%). Among women, White women tended to report the absolute highest percentage of low satisfaction, though not always by 8% points or greater. A total of 30% of White women reporting low sex appeal (vs. 20–25% of other groups), 50% reporting low satisfaction with nude appearance (vs. 39–43%), 36% reporting negative impact on sexual acceptability (vs. 23–39%), and 32% reporting negative impact on sexual enjoyment (vs. 20–28%).

Across racial groups, between 4% and 6% of men and women reported that their feelings about their bodies had a “very negative effect” on their sexual enjoyment (Fig. 1). At the positive end of the spectrum, as shown on Fig. 2, across racial groups, over 10% of all respondents reported their feelings about their body had a “very positive effect” (the highest score) on their sexual enjoyment. The highest proportions were among Black men and women (25% vs. 23%), followed by Hispanic men and women (20% vs. 17%), White men and women (14% vs. 12%), and Asian men and women (11% vs. 13%).

### 3.5. Age differences in sexuality-related body image among men and women (Hypothesis 5)

Age was entered as a predictor variable in regressions for each of the four sexuality-related body image variables. Consistent with our hypothesis, in the regression analyses conducted among men and among women, age was only weakly associated to each of these variables (all  $\beta$ s < 0.08; Table 3a).

### 3.6. Relationship status differences in sexuality-related body image among men and women (Hypothesis 6)

We hypothesized that people in romantic relationships would report the highest sexuality-related body image. In regression analyses conducted with men and in the regression analyses conducted with women, compared to people in relationships, men and women who were not involved with anyone reported lower sex appeal ( $\beta$ s = -0.35, men; -0.28 women), nude appearance satisfaction ( $\beta$ s = -0.32, men; -0.19, women), sexual acceptability ( $\beta$ s = -0.57, men; -0.50, women), and sexual enjoyment ( $\beta$ s = -0.64, men; -0.50, women) in regression analyses. In contrast, compared to people in relationships, men and women who were dating multiple people reported greater sex appeal ( $\beta$ s = 0.46, men; 0.35, women) and greater nude appearance satisfaction ( $\beta$ s = 0.40, men; 0.31 women). Looking at the remaining two outcomes, men, but not women, dating multiple people reported heightened sexual acceptability ( $\beta$ s = 0.21, men; 0.00, women) and sexual enjoyment ( $\beta$ s = 0.23, men; 0.13, women).

These links between relationship status and sexuality-related body image are evident when looking at the frequency distributions (Table 5). People not in relationships tended to report poorer sexuality-related body image. One third of men not involved in a relationship (34%) reported low sex appeal (vs. 10% of men dating or 24% in relationships), 45% reported low nude appearance satisfaction (vs. 18% dating, 36% relationships), 40% reported low sexual acceptability (vs. 11% dating, 23% relationships), and 36% reported low sexual enjoyment (vs. 11% dating, 21% relationships). Among women, over one-third of women not involved in a relationship (38%) reported low sex appeal (vs. 15% dating, 28% relationships), 54% reported low nude appearance satisfaction (vs. 13% dating, 50% relationships), 47% reported low sexual acceptability (vs. 28% dating, 33% relationships), and 38% reported low sexual enjoyment (vs. 20% dating, 30% relationships).

There was also a great deal of variability across relationship status in the prevalence of very negative and very positive effects of

body image on sexual enjoyment. Men and women who were not involved with others were most likely to report a “very negative effect” of their body image on enjoyment of their sex lives, followed by men and women who were widowed, married, cohabiting, dating one person, and dating multiple people (Fig. 1). Men and women who were not involved with others were also least likely to report a “very positive effect” of their body image on enjoyment of their sex lives (Fig. 2).

### 3.7. Examining psychological predictors of sexuality-related body image and sex frequency (Hypothesis 7)

#### 3.7.1. Zero-order correlations

Consistent with our hypotheses, measures assessing objectification theory and tripartite model constructs were associated with sexuality-related body image measures, with most zero-order correlations in the range of  $r$ s = |.10 to .30| (Table 2). Body surveillance was most consistently linked to poorer sexuality-related body image, with all but one association greater than  $r$  = |.20|. Feeling satisfied with one’s face was related to more positive sex-related body image ( $r$ s = |.37 to .44|), and being more preoccupied with weight was associated with poorer sexuality-related body image ( $r$ s = |.20 to .40|). In contrast to our expectations, none of the correlations between these constructs and frequency of sex exceeded  $r$  = |.19|. All four sexuality-related body image items, however, were related to sexual frequency. Men and women with higher sexuality-related body image engaged in sexual activity more often per week. This was true for the overall sample ( $r$ s = |.18 to .36|) as well as for those in relationships (dating, cohabiting, and married;  $r$ s = |.19 to .30; Table 2).

#### 3.7.2. Regression analyses: objectification and tripartite model measures predicting sexuality-related body image

The regression analyses conducted within each gender highlighted the associations between body image constructs and sexuality-related body image (Table 3b). Body surveillance was the only measure that consistently linked to poorer sexuality-related body image, with associations between  $\beta$  = |.20 to .27| for three of the outcome variables and all associations exceeding  $\beta$  = |.09|.

Contrary to expectations, none of the associations for peer, media, or family pressures exceeded  $\beta$  = |.09|. For women, internalization of the thin ideal was linked to lower perceived sex appeal  $\beta$  = -0.17 and lower nude appearance satisfaction  $\beta$  = -0.17, but none of the other associations exceeded  $\beta$  = |.09| for women and none reached this level for men. Of particular interest, and in stark contrast to the results for thin-ideal, muscle-ideal internalization was consistently linked to more positive sexuality-related body image across all measures for men  $\beta$  = |.20 to .27|, as well as for women, though associations were smaller  $\beta$  = |.09 to .11|.

#### 3.7.3. Predictors of positive body image

We were particularly interested in the psychological factors that are associated with positive enjoyment of one’s sex life, across body types. We wanted to see if people with high BMI experienced high sexuality-related body image if they had low levels of surveillance and thin-ideal internalization. We created interaction terms between each of the objectification and tripartite model measures with BMI and BMI-squared. We then entered these as second step predictors of sex life enjoyment to the original regression analyses shown in Table 3b for men and women. Although some of these interaction terms were statistically significant, adding all of these interaction terms only increased *adjusted R*<sup>2</sup> by 1% for men and women, and none of the interaction terms with BMI or BMI-squared exceeded  $\beta$  = |.09|. This suggests that generally across the BMI continuum, having lower body surveillance, internalization of the thin-ideal, and lower appearance pressures is associated with positive effect of body image on sex life enjoyment. For example, people with

High BMI had relatively high scores on sex life enjoyment if they engaged in low levels of body surveillance.

#### 3.7.4. Predictors of sex frequency

Consistent with our hypotheses, constructs related to objectification theory or tripartite model were associated with sex frequency, but associations were weak to modest in strength ( $\beta < |.11|$ ; Table 3b). We then added the four items assessing sexuality-related body image as predictors into the model (not shown in table). For men, the overall model was statistically significant,  $F(24, 5268) = 69.2, p < .001, adj. R^2 = .24$ . and the same was true for women,  $F(24, 6301) = 69.2, p < .001, adj. R^2 = .24$ . The only item to predict sexual frequency with an effect size greater than  $\beta = .10$  was for people reporting that body image had a positive effect on enjoyment of sex life for men ( $\beta = 0.26, p < .001$ ) and for women ( $\beta = 0.27, p < .001$ ).

## 4. Discussion

### 4.1. Objectification theory and tripartite model findings

The current investigation shed light on the links of sexuality-related body image to demographic factors, tripartite model constructs, objectification theory constructs, and sexual frequency in a national sample of U.S. adults. In our sample, men and women with more positive sexuality-related body image engaged in sex more frequently. Furthermore, in keeping with the tripartite influence model and objectification theory, men and women who experienced more body surveillance, thin-ideal internalization, and perceived sociocultural pressures reported poorer sexuality-related body image. Muscle/athletic internalization, however, was only weakly linked to greater sexuality-related body image.

In support of objectification theory, body surveillance was the sociocultural appearance concern most consistently linked to sexuality-related body dissatisfaction for both men and women. These findings are supportive of claims that monitoring one's appearance routinely can produce body dissatisfaction and interfere with sexual enjoyment (Fredrickson & Roberts, 1997), and that body surveillance is linked to body concerns for both men and women (Frederick et al., 2007).

### 4.2. Demographic differences

Beyond demonstrating a robust overall link between body image and sexuality, the current investigation identified whether key demographic factors such as gender, BMI, race, age, sexual orientation, and relationship status correspond to vulnerability to poor sexuality-related body image and negative consequences of body image on sexual well-being.

#### 4.2.1. Gender differences

Although substantial proportions of both men and women reported negative sexuality-related body image, prevalence rates also often differed across gender. The largest difference was that roughly one-third of men disliked their nude appearance, compared to approximately half of women. Across other variables, gender differences in poor sexuality-related body image were much lower (<10%). For example, more men than women reported that their feelings about their bodies had negative effects on their enjoyment of their sex lives. These findings of small-to-moderate gender differences are consistent with research on sexuality-related body image (Gillen & Markey, 2018), as well as gender differences in overall body satisfaction among men and women in meta-analyses (Gentile et al., 2009; Karazsia et al., 2017) and national studies (e.g., Fallon et al., 2014; Frederick et al., 2016b).

#### 4.2.2. Sexual orientation differences

Sexual orientation was an important predictor of sexuality-related body image for men but not for women. Consistent with existing research on sexuality-related body image (Peplau et al., 2009), gay men reported more negative effects of body image on their sexual enjoyment and sexual acceptability. Bisexual men reported poorer sexuality-related body image across all four items. These findings are consistent with the notion that people who seek male partners, such as gay and bisexual men, face more appearance-related pressures and objectification, including from potential dating partners.

Furthermore, these findings must be considered in light of the multiple forms of stigma that may be experienced by sexual minority populations. For example, anti-bisexual stigma is common in the U.S. (Flores, 2014), and bisexual individuals may uniquely experience this form of stigma from both heterosexual and lesbian/gay communities (Roberts, Horne, & Hoyt, 2015). Bisexual women and men's body image and psychological wellbeing can be adversely impacted by anti-bisexual stigma (Arnett, Frantell, Miles, & Fry, 2019; Chmielewski & Yost, 2013), but scant research has examined the gendered implications of such experiences for sexuality-related body image. Our study suggests a need for more research on the unique experiences of bisexual men with regards to sexuality-related body image.

In addition to the potential impact of sexuality-related body dissatisfaction on the quality of gay and bisexual men's sex lives, these findings also have public health implications. For instance, sexual minority men with poorer body image are more likely to have condomless sex (Brady et al., 2019; Gholizadeh et al., 2018), a pattern also observed in other populations (Gillen & Markey, 2018). When people feel more dissatisfied with their bodies, they are more likely to feel hesitant talking about using protection and feel more compelled to validate their appearance through sexual activity. These findings underscore the importance of understanding sexuality-related body image within the context of social stressors such as sexual orientation-based stigma.

#### 4.2.3. BMI and age differences

Differences in sexuality-related body image across body mass and age were generally in accord with previous research relating to overall body satisfaction. For instance, we found that higher body mass was strongly related to sexuality-related body dissatisfaction, whereas age was not (Frederick & Essayli, 2016; Peplau et al., 2009).

The strong associations with BMI warrant further consideration. One likely possibility is that people higher in BMI experience greater weight stigma, and this stigma has powerful impacts on people's body image and sex lives. Experiencing weight stigma is psychologically and physiologically stressful (Major, Eliezer, & Rieck, 2012; Tomiyama, 2014), leading to poorer mental health more generally (Emmer, Bosnjak, & Mata, 2020), which causes people to become more self-conscious about their weight and gain weight (Tomiyama, 2014). Experiencing poorer mental health is associated with lower sex drive and lower sexual arousal (Laurent & Simons, 2009), making it plausible that poorer mental health driven by weight stigma could result in poorer body image and subsequent sexual dysfunction. Furthermore, people higher in BMI are more likely to view themselves as less attractive and may face weight stigma from their romantic partners (Boyes & Latner, 2009), feeding into their self-perceptions of being less acceptable as sexual partners. These factors could contribute to people feeling less comfortable with sex and less confident in their appearance and body image in the context of sexual relationships.

Some types of sexual dysfunctions, such as erectile dysfunctions, are correlated with higher BMI or to conditions correlated with higher BMI, although the causal mechanism linking them together is not always clear (Esfahani & Pal, 2018). It is possible, however, that

higher body mass causes some sexual dysfunctions, or is the attributed cause in people's minds. Experiencing the sexual dysfunctions could directly cause people to feel greater sexuality-related body dissatisfaction. Additionally, if people attribute their sexual dysfunctions to their weight, this could cause them to feel greater weight self-consciousness, which leads to subsequent sexuality-related body dissatisfaction. These experiences would further strengthen the association between BMI and sexuality-related body image.

#### 4.2.4. Racial differences

In keeping with past meta-analyses on overall body satisfaction (Grabe & Hyde, 2006), we found that Black men and women reported more positive sexuality-related body image than White men and women. In extending research noting that Asian women report lower overall appearance evaluation than White women (Frederick et al., 2007, 2016; Forbes & Frederick, 2008), we found that Asian women and men reported lower sex appeal and satisfaction with their nude appearance than White women and men. One potential contributor to this discrepancy among Asian and White individuals' sexuality-related body image is Asian women's greater level of breast size dissatisfaction (Forbes & Frederick, 2008). Additionally, Asian women report higher face image dissatisfaction than White women (Frederick, Reynolds, Garcia, & Murray, 2019; Frederick et al., 2016a) and Asian men report greater face dissatisfaction than White men (Frederick et al., 2019), which could contribute to lower sexuality-related body image.

These findings underscore that, despite a great deal of overlap between racial groups, some key average differences emerge that are important to consider and address. Following calls for greater attention to racial diversity in relation to body image in general (Winter, Danforth, Landor, & Pevehouse-Pfeiffer, 2019), future research should explore in-depth the role of race in the development of sexuality-related body image and how these experiences are influenced by living in a sociocultural context that idealizes and privileges bodies and physical features associated with White/Western societies.

#### 4.2.5. Relationship status

A noteworthy dimension to our findings was that relationship status was a consistent predictor of sexuality-related body image. Relatively few studies have been undertaken to examine the connection between relationship status and body image, making these findings of particular importance.

People who were not involved with others (not dating and not in a relationship) reported poorer sexuality-related body image across all items compared to those in relationships. There are several possible explanations for this pattern. First, people who feel more confident in their appearance likely also feel more comfortable approaching others, enhancing their odds of forming romantic relationships. Second, both men and women value physical attractiveness in a partner (Buss, 1989; Fales et al., 2016; Bailey et al., 1994), and therefore people who are considered more attractive by a wider range of people are more likely to attract romantic partnerships. Third, once in relationships, men and women likely feel fewer appearance-related pressures because they are not actively competing on the mating market for a partner and receive positive feedback on their appearances from their partners, boosting their sexuality-related body image.

#### 4.3. Sexuality-related body image and sexual frequency

People who felt their bodies were not sexually appealing and experienced dissatisfaction with their nude appearance reported more negative effects of body image on their feelings of acceptability as a sexual partner and their enjoyment of their sex lives. These

perceived negative effects were, in turn, predictive of having sex less frequently with their partners.

One straightforward interpretation of these results is that negative feelings about the body cause men and women to feel less inclined to have sex or to feel less sexual arousal. Other explanations are possible. For example, people who are dissatisfied with their bodies may have more health problems that interfere with sexual activity. Alternately, for some people, more frequent sexual activity itself can enhance positive feelings about the body and overall sexuality-related body image.

One common issue, particularly for men, is that they feel less sexually desired by their partners in longer-term relationships compared to the beginning of their relationships (Frederick, Lever, Gillespie, & Garcia, 2017). People whose partners desire sex less often, or whose desire for their partner declines, could initiate sex less often, leading to a decrease in sexual-life related body satisfaction. These various explanations suggest different interventions, focused either on people's feelings about their bodies, health and medical issues, or dynamics related to sexuality across the partners in the relationship.

#### 4.4. Limitations and future directions

Our study relied on a large national sample, but this sample was not nationally representative and was limited to Mechanical Turk workers (see Frederick et al., 2022). Second, the data are correlational, and thus, directionality is impossible to ascertain. Although we predicted that sexuality-related body image contributes to sexual frequency, it is plausible that this association is bidirectional, such that greater sexual frequency also promotes higher sexuality-related body image. One limitation of the current study is that it relied on a series of one-item measures assessing aspects of sexuality-related body image as the key outcome measures, and one-item measures could fail to measure all of the relevant aspects of the construct. The items were drawn from existing validated measures of body image and were moderately-to-strongly intercorrelated with each other, but systematically developing a scale that comprehensively measures different aspects of sexuality-related body image would benefit the field.

Men and women also have specific concerns with sexually-dimorphic aspects of their bodies that could impact sexuality-related body image that should be measured. For example, many women are concerned with the size or shape of their breasts (Forbes & Frederick, 2008; Frederick, Peplau, & Lever, 2008) and genitals (Amos & McCabe, 2016), and many men are concerned with their penis size (Johnston, McLellan, & McKinlay, 2014; Lever, Frederick, & Peplau, 2006). People who are dissatisfied with their genitals tend to report lower sexual satisfaction (see Gillen & Markey, 2018).

Finally, the current study assessed only one aspect of sex lives – sexual frequency – but body dissatisfaction likely connects to a wider set of experiences, including feelings of sexual arousal and sexual attraction (Gillen & Markey, 2018). Sex frequency is highly correlated with sexual satisfaction (Frederick, St. John, Garcia, & Lloyd, 2018), but it is not specifically a measure of sexual well-being or quality and can be impacted by negative factors such as pressure from a romantic partner. Future research should assess other aspects of people's sex lives that are connected to sexuality-related body image. For example, heterosexual men systematically report more consistent orgasms during sexual activity with their partners than do heterosexual women (Frederick et al., 2018; Garcia, Lloyd, Wallen, & Fisher, 2014). Many factors contribute to these gaps, but one likely contributing factor is that body dissatisfaction inhibits orgasm ability (Ackard et al., 2000). Largely unstudied are the connections of body image to sexuality-related emotions, such as sexual regret (Bendixen, Asao, Wyckoff, Buss, & Kennair, 2017; Galperin et al., 2013) and sexual jealousy (Ambwani & Strauss, 2007; Frederick &



Fales, 2016), which could be magnified by body dissatisfaction. Future research should investigate sexuality-related body image, and the links related outcomes, more extensively and with more detailed measurement.

#### 4.5. Concluding comments

A key strength of this study was that it provided the rare opportunity to examine sexuality-related body image concerns in a large sample. This allowed us to examine the experiences of people of different genders, sexual orientations, races, weight groups, and ages. The findings highlighted the widespread prevalence of sexuality-related body dissatisfaction, which calls for interventions to improve body image and to address harmful cognitions and behaviors that interfere with sexual satisfaction. Indeed, regardless of body mass, men and women who had lower levels of body surveillance reported greater overall sexuality-related body satisfaction.

One way to promote this positive sexuality-related body image would be to emphasize the benefits of *attuned sexuality*, which emphasizes how protective factors – body image, sexual agency and function, access to individual desires, and mindfulness of body pleasures – can buffer against the negative impacts of body surveillance and internalization of body and sexual ideals (Satinsky & Ramseyer Winter, 2019). More broadly, there are a wide variety of interventions designed to increase body satisfaction (Alleva, Sheeran, Webb, Martijn, & Miles, 2015b; Alleva, Martijn, Van Breukelen, Jansen, & Karos, 2015a; Martijn, Alleva, & Jansen, 2015), including those targeting media influences (McLean, Paxton, & Wertheim, 2016; Rodgers, McLean, & Paxton, 2018), and promoting physical activities such as yoga (Borden & Cook-Cottone, 2020; Halliwell, Jarman, Tylka, & Slater, 2018), particularly yoga that emphasizes mindfulness (Cox, Ullrich-French, Cook-Cottone, Tylka, & Neumark-Sztainer, 2020). These interventions may prove useful for enhancing not only general body satisfaction, but also sexuality-related body image, and ultimately people's sexual and relationship satisfaction.

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#### CRediT authorship contribution statement

The first author completed the Conceptualization and Methodology. The second author took the lead on writing and data analyses, with additional analyses conducted by the fifth author and additional data analyses proposed by the second through sixth authors. The middle authors engaged in planning, literature review, and/or writing. Along with the first author, the last author engaged in Supervision of the project. The first author was primarily involved with Funding acquisition (grant PI), along with the second to last author (grant CO-PI).

#### Conflict of Interest

There are no conflicts of interest.

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