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The Influence of Body Shape on Impressions of Sexual Traits

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ABSTRACT

The assumptions people make from body shape can have serious implications for the well-being of the individuals inhabiting such bodies. Fat people are subject to pervasive and resilient social stigma and discrimination, leading to negative mental and physical health outcomes, including negative sexuality-related outcomes. Though previous studies have examined the personality traits attributed to, or the sexual attractiveness of, varying body shapes, no research has asked participants to make attributions of sexual traits to varying body shapes. The purpose of this study was thus to examine sexuality-related trait inferences made from body shapes. Participants (N = 891, 70% women, M_{age} = 25.28) were randomly assigned to view 5 computer-generated 3-dimensional body models of varying shapes developed using the skinned multi-person linear model. Participants rated their sexual attraction to each body and the degree to which each of 30 traits (10 personality and 20 sexual) applied. Results demonstrated that larger bodies are generally viewed as less sexually attractive. Further, constellations of sexuality traits were predicted reliably by body shape, demonstrating that people hold sexual stereotypes about a diverse range of body shapes. This study provides an initial comprehensive demonstration of the sexuality-specific traits associated with varying body shapes.

> "She's a young girl, 17 ….Taking into consideration [the victim's] figure, which is quite voluptuous … Maybe she's a little fat but she has a pretty face, no? She was a bit flattered. Maybe it was the first time he showed interest in her."
>
> - Judge Jean-Paul Braun, on the sexual assault of a 17-year old girl by a 49-year old man[1]

Social psychological research has demonstrated a widespread halo effect tied to physical attractiveness, whereby attractive individuals are perceived to possess socially desirable personality traits and characteristics (e.g., Dion, 2002; Eagly et al., 1991; Langlois et al., 2000). Much research in this area has focused specifically on facial attractiveness, to the relative exclusion of other physical features (Regan, 1996). For instance, Little et al. (2011) examined the impact of facial attractiveness on social decision-making, such as preferences for mates and other types of social partners. However, in real-world situations, faces and bodies are often viewed together, thus raising the question of whether similar impressions are formed from perceptions of bodies (Hu et al., 2018). Unlike facial features, physical features pertaining to the body – such as body size and shape – can be perceived from a distance and may thus have an even more immediate impact on trait impressions. Herein, we use body shape as a reference to the fatness[2] of bodies, opting for the terminology of shape rather than weight or size given that (1) weight is a discrete and specific measure which humans are not particularly apt at perceiving accurately (e.g., Mikolajczyk et al., 2010) and (2) size might refer also to height or proportion. However, to stay true to source material, we use the term "weight" when describing prior research where this has been the variable of interest.

Fat bodies are subject to pervasive and resilient social stigma as well as discrimination in the workplace, education, healthcare settings, and society at large (Rubino et al., 2020). This extensive stigmatization and discrimination cause serious mental and physical harm to fat people (e.g., social isolation, depression, low self-esteem, see Rubino et al., 2020). Thus, the assumptions people make from body shapes can have serious implications for the well-being of the individuals inhabiting such bodies. Though previous studies have attempted to ascertain the personality traits attributed to, or the sexual attractiveness of, varying body shapes, no research to date has asked participants to make attributions of sexual traits to stimuli of varying body shapes. However, as demonstrated in our opening quote, perceived sexual attributes are intertwined with cultural assumptions about bodies. Understanding the link between sexuality-related trait inferences and body shape will provide greater insight into the far-reaching consequences of fat stigma and how this stigma plays out in sexual spheres, an area which has yet to be examined experimentally. The purpose of the present study was thus to empirically examine sexuality-related trait inferences made from human body shapes. To extend previous

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[1]Court recording published by Journal de Montreal, October 25, 2017.

[2]We use the terms "fat" and "fatness" in keeping with fat studies scholarship, which rejects the use of terms such as "obesity" and "overweight" in favor of fat as a descriptive term for larger bodies.

work on trait inferences more generally, and to examine trait attributions to differing body shapes in a holistic fashion, we also examined personality trait inferences in concert with sexuality-trait inferences.

Trait Inferences from Body Shape

Given the cultural attention paid to bodies, and particularly to body shape in Western society – for example, the aestheticization of fitness and gym culture (e.g., Gill et al., 2005; Uhlmann et al., 2018) and the glamorization of underweight bodies in media (e.g., Ahern et al., 2008) – it is perhaps unsurprising that body shape plays a role in human social impression formation.

Early research by Sheldon (1954) investigating human body shape categorized bodies along three fundamental dimensions: mesomorph (average but muscular build), ectomorph (tall and thin), and endomorph (short and round) to establish a link between body shape and personality. Though such a link was never definitively established, this categorization system was widely adopted. Seminal studies based on these categorizations indicated reliable evaluations of larger bodies as having more negative personality traits (e.g., Brodsky, 1954; E. C. Hill, 1975; Lerner, 1969; Strongman & Hart, 1968; Wells & Siegel, 1961). More recent research has revealed similar results, with fat bodies deemed unattractive, lazy, undisciplined, unintelligent, and incompetent (e.g., Flint, 2015; Hu et al., 2018; Paul & Townsend, 1995).

In a recent study, Hu et al. (2018) used a multivariate approach to examine personality traits applied to a large variety of body shapes; results indicated that personality inferences were reliably grounded in certain physical features of bodies, including body weight. Fatter bodies were judged to be more disorganized and lazier (subsets of the trait of conscientiousness) than thinner bodies. In the present work, we extend upon this and other literature by examining the application of personality traits in tandem with the application of sexual traits to bodies of varying shapes. Evaluating these in tandem allows for a more holistic understanding of perceptions of body shape; further, when certain body shapes are judged to be asexual (as detailed below), judgment of sexual traits may be irrelevant. That is, if certain bodies are seen as non-sexual, it may be that sexual traits are not applied to the body at all; in such a case, it would be important to understand which traits *are* inferred.

Sexual Bodies

A separate body of literature arising from evolutionary theory has attributed a different value to physical appearance. Evolutionary theorists posit that the physical body serves as a cue to an individual's fecundity and health; thus, when selecting a mate, individuals will select for physical traits indicative of the greatest likelihood of reproduction (Buss, 1989). The physical attractiveness of women is far more important than that of men (Buss et al., 1987; Feingold, 1990; Townsend, 1989). This difference is attributed to women's concealed ovulation, which makes physical attributes the most available cues of reproductive potential (Buss, 1989; Kenrick, 1989). Men's physical attributes are generally deemed less important than women's because men are valued instead for their power and resources (Buss, 1989); however, physical formidability and muscularity are valued in men (e.g., Dixson et al., 2010a, 2007a, 2007b; Sell et al., 2017), as these act as visible indicators of men's ability to acquire and defend resources and power (see Durkee et al., 2019).

Numerous studies have determined that both men and women in Western contexts deem fat bodies to be less attractive and less desirable than skinnier bodies (e.g., E. C. Hill, 1975; Singh, 1994; Singh & Young, 1995; Smith et al., 2007; Weeden & Sabini, 2005, 2007; Wilson et al., 2005). However, these results are complicated by the contributions of variables such as waist-to-hip ratio, which tends to emerge as a strong predictor of attractiveness in some cultural contexts (e.g., Dixson et al., 2010b; Furnham et al., 2006; Singh et al., 2010), but not others; in some small-scale societies, larger bodies with lower waist-to-hip ratios are evaluated as more attractive (Sugiyama, 2004; Wetsman & Marlowe, 1999; Yu & Shepard, 1998). This discrepancy may be due to factors such as resource scarcity; in cultures and in historical milieus where resource scarcity is present, larger bodies represent health, status, and the ability to obtain resources, and are therefore perceived as attractive (Anderson et al., 1992).

Given the relationship between body shape and trait judgments, as well as the relationship between body shape and sexual attractiveness judgments, we suspect that there is also a relationship between body shape and judgments of sexual traits. Indeed, previous work has hinted at this relationship, though it has never been directly explored. For example, E. C. Hill (1975) found that skinnier women's bodies were rated as more good-looking, younger, and feminine than larger bodies, which were ascribed traits such as wasteful, old, and masculine. Given that men tend to be attracted to younger and more feminine-typical women (Buss, 1989; Conroy-Beam & Buss, 2016), these judgments likely have implications for the sexual sphere.

Fat Bodies

Though there is a general dearth of literature pertaining to sexual judgments derived from body shapes, there has been empirical focus on one specific aspect of the body shape literature which provides much useful information. Recent interest in fat studies – corresponding with increasing obesity epidemics in the West – has born a broad literature concerned with the lived experiences of fat individuals, including their sexual and romantic experiences. A primary focus of this literature is the prejudice and stigmatization that fat individuals experience. A recent deep analysis of implicit attitudes data revealed that, despite a general trend toward decreased prejudice in the past decade, prejudiced attitudes toward fatness have actually increased (Charlesworth & Banaji, 2019).

Fatness deviates from contemporary Western cultural norms surrounding idealized conceptualizations of beauty and health (Gailey, 2012; Hall, 2018; Murray, 2004). Dominant contemporary discourses focus on the unmarked, normative position of the slender body, in contrast to the deviant, fat body (Van Amsterdam, 2013). Discourses that do focus on fat bodies tend to arise from biomedical perspectives; these situate fat bodies as unhealthy and provide an indication

of failure (Guthman & DuPuis, 2006; Rich & Evans, 2005). This discourse rests on the conceptualization of exercise and eating habits as lifestyle choices (Van Amsterdam, 2013); thus, the responsibility for failure to conform to beauty and bodily norms is believed to inhere in the individual. Fat individuals are constructed as people who have "failed to take the responsibility to shape their bodies to the norm of slenderness" (Van Amsterdam, 2013, p. 158). Stigmatization of fat bodies is often justified by blaming these individuals for their perceived failures (Flint, 2015; Puhl & Heuer, 2010), despite evidence indicating genetic and biochemical mechanisms that contribute to fatness (e.g., Poirier et al., 2006), which challenge the notion of individual responsibility. Previous research also suggests that disgust may underlie fat stigmatization; for example, the behavioral immune system – a complex set of psychological mechanisms which affect behavior in order to facilitate avoidance of infection (Schaller & Park, 2011) – may trigger disgust when confronted with a fat body, given that fatness is implicitly associated with disease-connoting concepts (Park et al., 2007).

Fat stigma is a gendered phenomenon; fatness in women is particularly deviant, as women are subject to more social pressure and scrutiny regarding their body shape (e.g., Orbach, 1978; Wolf, 1991). Women are granted less leniency with regards to physical appearance, whereas men are afforded greater capacity to transcend the corporeal (Witz, 2000). For women, fatness is often seen as a failure to conform to (or rejection of) patriarchal cultural norms which dictate that women's worth comes from their appearance; thus, all women should be heterosexually and stereotypically attractive (e.g., Bordo, 1995; Hall, 2018). Further, given that women are valued for their reproductive capacity (e.g., Buss, 1989), fat women – who are perceived as unhealthy and thus reproductively incapable (e.g., Dağ & Dilbaz, 2015) – are rendered failures. For men, however, it seems that body shape matters differently; Bell and McNaughton (2007) posited that male fatness is seen as a failure of masculinity – a gendered norm – rather than a cultural failure (see also Monaghan, 2005).

Much as fat bodies are incongruent with cultural and gendered ideals, fat bodies are also generally seen as asexual. Murray (2004) argued that this is an extension of the conceptualization of fat bodies as unattractive. Supporting this claim, Chen and Brown (2005) found that fat individuals were rated as very undesirable sexual partners, with fat women rated lower than fat men on desirability. Fat bodies are described as sexually maladjusted (Bess, 1997), and some have suggested that fatness may be a way of intentionally avoiding sexuality (see Bess, 1997; Orbach, 1978), though clinical data supporting this theory is lacking. The notion of fat bodies as undesirable – removed from the cultural sphere of acceptable sexuality – and thus asexual suggests that sexuality may not be afforded to these bodies at all, or if it is, it may be a source of spectacle and perceived deviance.

Indeed, fat women's sexuality is constructed as especially undesirable and may even be treated as a spectacle to be laughed at (Murray, 2004). Harris (1990) found fat women were described as less attractive, less likely to date, less erotic, as having lower self-esteem, and deserving of fatter and uglier partners than thin women. Similarly, Regan (1996) found fat women to be viewed as less desirable, less sexually attractive, and as experiencing less sexual desire than thin women. Fat women are also rated as experiencing less sexual pleasure (Murray, 2004). A contradictory and less-established perspective constructs fat women as sexually insatiable (Hall, 2018); this may relate to conceptualizations of fat bodies as symbols of gluttony, lack of control, and overindulgence (e.g., Murray, 2004). In some cases, women's fat bodies are sexually fetishized, which leads to concerns regarding dehumanization (Gailey, 2012; Murray, 2004; Swami & Tovée, 2009). Though no definitive evidence of dehumanization can be drawn from the fat fetish literature, a separate practice referred to as "hogging" – preying on fat women as a form of sexual competition and humor – provides strong evidence that fat women's sexuality is not taken seriously by some. In one study, men familiar with the practice of hogging described fat women as lonely, desperate, abnormal, and deserving of mistreatment due to their weight (Gailey & Prohaska, 2006); elsewhere, larger women are described as "easy targets" (Gailey, 2012) and devoid of sexual agency (Hall, 2018).

Fat men are similarly ascribed broadly negative sexualities; however, these pertain more to typical gendered sex roles than to men as sexual beings. Fat men are viewed as less likely to currently have a sex partner, and as less sexually attractive and desirable than average-weight men (Regan, 1996). In contrast, fat men are also described as powerful and cuddly (Van Amsterdam, 2013). Despite these positive descriptors, fat men's sexuality is nonetheless limited by traditional sexual scripts (Murray, 2018; Simon & Gagnon, 1986) which continue to dominate heterosexual relations (Sanchez et al., 2012) and ascribe the role of the initiator to men. Bess (1997) posited that fat men are fearful of rejection and may thus be inhibited in their role as the initiator, leading to social and sexual isolation. Further, the construction of fat people as lacking sexual agency (Hall, 2018) is more damaging for men than for women, as men are typically expected to be sexual agents while women are ascribed a more passive role (e.g., Byers, 1996); fatness is also conceptualized as a lack of control (Monaghan, 2005), which again conflicts with traditional sexual scripts (e.g., Byers, 1996).

Thus, it is clear that bodies – at least those that do not conform to societal ideals – are implicated in judgments of sexual traits. However, much of the research supporting this is qualitative in nature and has focused only on "othered" bodies, to the exclusion of normative and idealized bodies; that is, little is known about perceptions of non-extreme or non-deviant bodies.

Purpose of the Present Study

The purpose of the present study was thus to explore sexuality-related trait inferences made from human body shapes. This study counters the methodological limitations of previous research by utilizing realistic 3-dimensional computer-generated bodies instead of line drawings, which have been questioned with regards to their accuracy as well as the generalizability of results obtained (e.g., Henss, 2000; Wilson et al., 2005). Some research has employed photographic stimuli to counter these concerns (e.g., Henss, 2000; Rozmus-Wrzesinska & Pawlowski, 2005; Streeter & McBurney, 2003; Tovée et al., 1998); however, the use of photographs entails numerous confounds demonstrated to impact

attractiveness judgments. Specifically, confounds may be introduced pertaining to bodily judgments, including facial attractiveness (where faces were included; e.g., Schaefer et al., 2006), skin color (e.g., M. E. Hill, 2002; Swami et al., 2008a, 2008b), and hair color (Swami et al., 2008a, 2008b). Previous research on attractiveness judgments utilizing photographic stimuli and controlling for confounding factors such as skin color and hair color has demonstrated patterns of visual fixation on the bodily regions where fat is most pronounced (Cornelissen et al., 2009), indicating that fatness is an important variable to isolate in work on sexual judgments. The 3-dimensional computer-generated stimulus bodies used in the present work control for each of these variables, varying only the body shape of the stimuli. The ability to uniquely manipulate individual body parameters has proved useful for identifying key predictors of physical attractiveness in previous work (e.g., Brooks et al., 2015; Mautz et al., 2013).

Further, we aimed to counter the focus on the "other" observed in previous research on sexual judgments. That is, previous research pertaining to sexual judgments based on body shape is almost exclusively available only with reference to extreme forms of the (usually female) body – usually, the fat body (Van Amsterdam, 2013). Thus, little is known about how normative bodies are judged with reference to sexual traits. In the present study, we sought to examine (1) the personality and sexuality traits attributed to a diverse array of body shapes and (2) whether the application of these traits to certain bodies shapes was systematic with common dimensional attributes (e.g., trait valence, trait gender-typicality).

Method

Participants

Men and women of any sexual orientation over the age of 16 years were eligible to participate in this study. Some participants were recruited from the research participant pool of a large Western Canadian university, others via adverts placed in local universities or through snowball samples via multiple online platforms (Facebook, Instagram, Twitter, Reddit) and research recruitment sites for sexology and psychology studies.[3] The initial sample consisted of 1,582 participants; 668 were removed for not meeting an 80% completion rate. This high rate of noncompletion may be due to the community-based sample who was not receiving any compensation for their participation. A further 23 participants who did not specify their gender as either men or women were removed from further analyses given that we grouped some analyses by gender.

The final sample consisted of 891 participants (70% women), ranging in age from 16 to 71 years (M_{age} = 25.28; SD_{age} = 9.84). Detailed demographic information is presented in Table 1.

Stimuli

The stimuli were 10 (5 male, 5 female) bodies generated using the skinned multi-person linear (SMPL) model (Loper et al., 2015), a vertex-based model which accurately represents a variety of human body shapes (Hu et al., 2018). The SMPL model generates three-dimensional template bodies based on full-body laser scans of 1,700 male and 2,100 female bodies in the Civilian American and European Surface Anthropometry Resource (CAESAR) data set (Robinette et al., 2002, 1999). Stimuli for the present study were modeled to represent a variety of body shapes, with each gendered set of 5 containing one "very skinny", one "skinny", one "average", one "fat", and one "very fat" body (see Figures 2 and 3). Blendshape values – the principal components of shape variation – for the weight parameter were set very low for the "very skinny" bodies and maximized for the "very fat" bodies, with the other bodies lying at more central values. Blendshape values for other parameters, such as height, were adjusted as minimally as necessary to normalize the bodies. Each body was set to a neutral standing position for the purposes of experimental display. Each body was rendered from a frontal as well as a 45° profile view, displayed to participants side-by-side; all bodies were visualized under controlled illumination, background, and surface material conditions, which were chosen to maximize the realism and visibility of the stimuli.

Measures

Demographic Questionnaire

Participants were asked to provide information about their age, gender, ethnic background, sexual orientation, relationship status, and education level. In addition, participants were asked to indicate their own body shape by selecting 1 of the 10 body stimuli used in the study that most resembled their own (see Table 1).

Trait List

The list of traits included 30 descriptor terms, 10 of which were drawn from the Big Five Inventory (John & Srivastava, 1999) and assessed general personality. Within these 10 items, each domain of the Big Five was represented by one positive and one negative trait. For example, the agreeable domain was represented with *agreeable* (positive) and *quarrelsome* (negative). The remaining 20 traits were sexual descriptors generated by the research team, which aimed to capture a wide variety of sexual traits. These included, for instance, promiscuity, sexual aggressiveness, and fertility. Upon presentation of each body shape, participants indicated whether each trait descriptor applied to the body shape by selecting from among three options; "*does not apply*", "*somewhat applies*", or "*definitely applies*".

Attractiveness Ratings

Participants rated how sexually attractive they found each body shape by responding on a 4-point Likert scale ranging from 0 (*not at all sexually attractive*) to 4 (*very sexually attractive*).

[3]The survey was anonymous and information regarding recruitment locations for each participant was not gathered. It is unknown where most of the successful participant acquisition took place; therefore, the composition of our sample as it relates to recruitment locale is uncertain.

Table 1. Distribution of demographic characteristics by participant gender.

	Women n = 621	Men n = 270
Age	M = 23.06 (SD = 6.70)	M = 30.40 (SD = 13.38)
Sexual Orientation		
Straight	472 (76.0%)	194 (71.9%)
Gay	19 (3.1%)	21 (7.8%)
Bisexual	111 (17.9%)	52 (19.3%)
Specify*	19 (3.1%)	3 (1.1%)
Relationship Status		
Single	257 (41.4%)	123 (45.6%)
Casually dating	74 (11.9%)	22 (8.1%)
Non-marital committed relationship	218 (35.1%)	50 (18.5%)
Married/Civil union	63 (10.1%)	65 (24.1%)
Separated/Divorced	7 (1.1%)	8 (3.0%)
Widowed	1 (0.2%)	2 (0.7%)
Ethnicity		
Caucasian	290 (46.7%)	184 (68.1%)
East Asian	33 (5.3%)	7 (2.6%)
South Asian	162 (26.1%)	26 (9.6%)
Southeast Asian	24 (3.9%)	7 (2.6%)
Eurasian/Central Asian	1 (0.2%)	0 (0.0%)
Pacific Islander	6 (1.0%)	0 (0.0%)
African/Black	31 (5.0%)	10 (3.7%)
Middle Eastern/North African	11 (1.8%)	2 (0.7%)
Hispanic/Latin American	22 (3.5%)	16 (5.9%)
Indigenous/Aboriginal	4 (0.6%)	3 (1.1%)
Multiracial	32 (5.2%)	8 (3.0%)
Other identification	4 (0.6%)	7 (2.6%)
Education		
Some high school	57 (9.2%)	19 (7.0%)
Completed high school	119 (19.2%)	34 (12.6%)
Some college/university	326 (52.5%)	104 (38.5%)
Completed undergraduate	70 (11.3%)	60 (22.2%)
Vocational degree/certificate	14 (2.3%)	13 (4.8%)
Graduate school or above	31 (5.0%)	39 (14.4%)
Unspecified	4 (0.6%)	1 (0.4%)
Body Type**		
Woman – Very skinny	84 (13.5%)	3 (1.1%)
Woman – Skinny	252 (40.6%)	2 (0.7%)
Woman – Average	194 (31.2%)	3 (1.1%)
Woman – Fat	67 (10.8%)	0 (0%)
Woman – Very fat	17 (2.7)	0 (0%)
Man – Very skinny	0 (0%)	29 (10.7%)
Man – Skinny	4 (0.6%)	106 (39.2%)
Man – Average	0 (0%)	87 (32.2%)
Man – Fat	2 (0.3%)	31 (11.5%)
Man – Very fat	1 (0.2%)	9 (3.3%)

Note: *We adopted the terminology "specify" over "other" in sexual orientation options provided to participants to use more positive and inclusive language. The specify category represents participants who opted to provide another term for their sexual orientation. **Participants of all genders were able to select male-typical or female-typical bodies as self-representative.

Procedure

The study was presented as an investigation into the influence of body shape on impressions of character traits. Participants completed the study entirely online using the survey software Qualtrics. Once informed consent was obtained, participants completed the demographic questionnaire and were then randomly assigned to view separately 5 of the 10 stimulus bodies. Participants did not view all 10 of the body stimuli due to concerns about fatigue and attrition. Each participant was given a brief set of instructions before viewing the bodies indicating they would be presented with five different body shapes and would be asked a series of questions regarding each body shape.

Drawing from the procedures of Hu et al. (2018), participants in each trial were presented with a body rendered from two views (frontal and 45° profile). Text above each stimulus directed the participant to "Please look closely at this body and then answer the following questions". Participants were then exposed to a single on-screen question asking them to indicate how sexually attractive they found the body shape of the displayed stimulus body. Next, participants were shown the 30-item trait list and tasked with judging whether each of the words on the trait list applied to the body shape presented. Once participants entered their judgment for the displayed body and clicked the "next page" button, the next body appeared. The procedure was repeated until participants had viewed five randomly assigned bodies. The experiment was self-paced and took approximately 15 minutes to complete.

Results

Sexual Attractiveness

First, we examined participant ratings of the sexual attractiveness of the various body shapes. The mean sexual attractiveness rating of each body was calculated using participant scores on the single item "how sexually attractive do you find this body?" and are presented in Figure 1. We conducted two separate one-way univariate analyses of covariance – controlling for own body type – to examine differences in participant gender on the dependent variable of attraction to various body shapes for each body's gender.

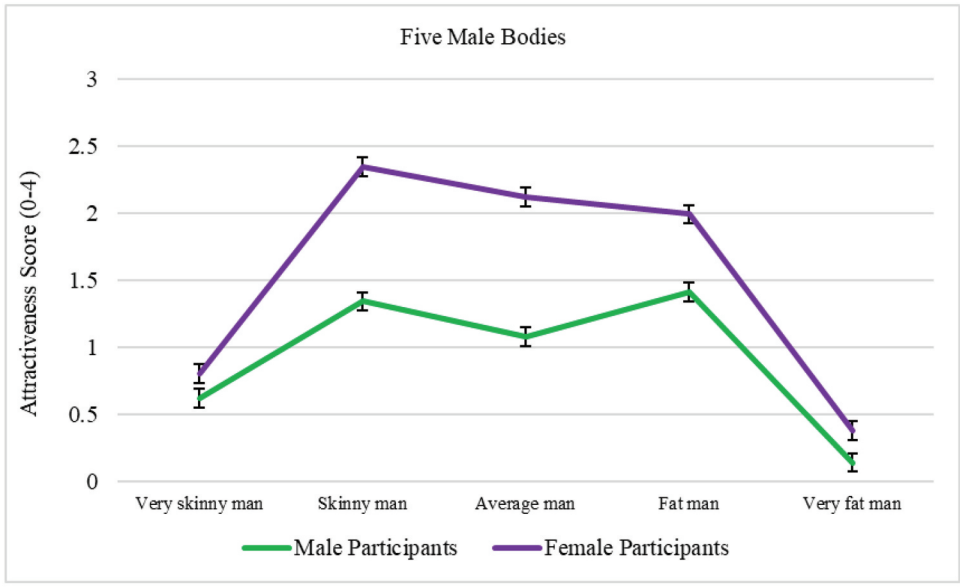
Male Bodies

For the male bodies, there was a significant participant gender x body shape interaction on ratings of attractiveness, $F(4, 2051) = 10.15$, $p < .001$, $\eta^2 = .019$. Simple main effects analyses revealed a statistically significant difference in attractiveness scores of different body shapes for both men, $F(4, 2051) = 24.37$, $p < .001$, and women, $F(4, 2051) = 168.13$, $p < .001$. Follow-up simple comparisons indicated that for men, the fat male body was evaluated as most attractive ($M = 1.41$; $SE = 0.11$), followed by the skinny ($M = 1.34$; $SE = 0.11$) and average body ($M = 1.08$; $SE = 0.11$). The very fat male body was rated as significantly less attractive ($M = 0.14$; $SE = 0.11$) than all other bodies. All evaluations of attractiveness were significantly different ($p < .001$), except for differences between the skinny and average bodies ($p = .09$), the skinny and fat bodies ($p = .64$), and the fat and average bodies ($p = .16$).

For the female participants, simple comparisons indicated the skinny male body was most attractive ($M = 2.34$; $SE = 0.07$), followed by the average body ($M = 2.12$; $SE = 0.07$) and the fat body ($M = 1.99$; $SE = 0.07$). The very fat male body was rated as significantly least attractive ($M = 0.39$; $SD = 0.07$) relative to all other bodies. All differences in evaluations of attractiveness were significant ($p < .001$), apart from those between the average and fat bodies ($p = .18$). Overall, the very fat male body was perceived as least sexually attractive by both men and women; men favored a slightly fatter male body than did women.

Female Bodies

A one-way univariate analysis of covariance – again controlling for own body type – for the female bodies revealed a significant main effect of participant gender, $F(1, 2057) = 27.17$, $p < .001$,



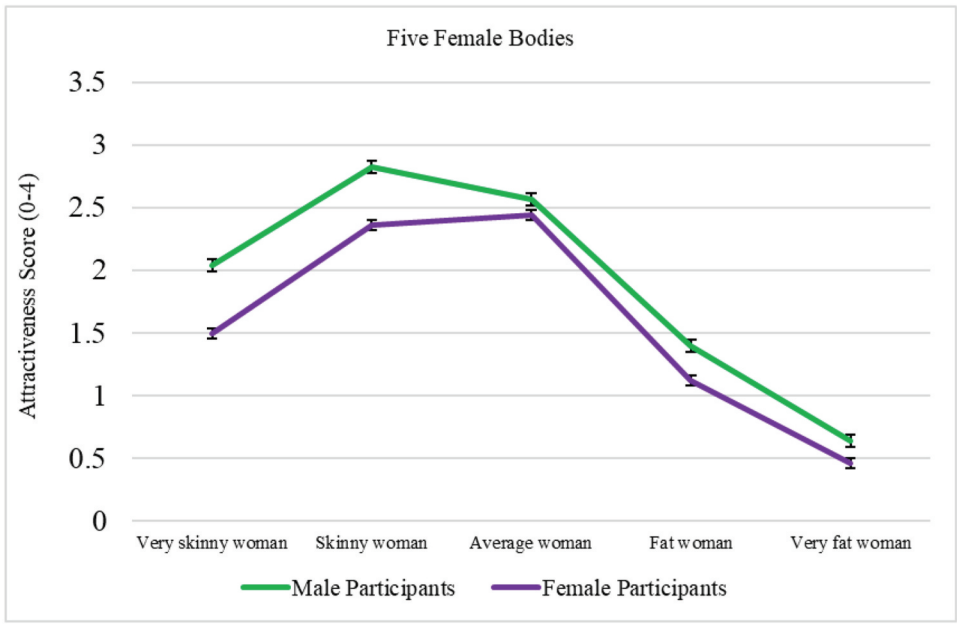


Figure 1. Mean sexual attractiveness ratings by participant gender. Error bars represent standard errors.

η^2 = .013. Men (M = 1.90; SE = 0.05) perceived female bodies overall as more attractive than did women (M = 1.59; SE = 0.03). There was also a significant main effect of body shape, F (4, 2057) = 157.75, p < .001, η^2 = .235. Follow-up pairwise comparisons revealed that the skinny (M = 2.60; SE = 0.07) and average (M = 2.51; SE = 0.07) bodies were rated as significantly more attractive than all other bodies, while the very fat body (M = 0.55; SE = 0.07) was rated as significantly less attractive than all other bodies. Finally, the fat body (M = 1.27; SE = 0.07) was rated as significantly less attractive than the very skinny, skinny, and average bodies. Overall, the fatter female bodies were perceived as less sexually attractive. There was no significant participant gender by body shape interaction for evaluations of attractiveness of the female bodies.

Next, we examined the specific sexual traits associated with each body shape. The top three traits that "definitely apply" and "do not apply" to each body, as rated by the entire sample, are presented in Table 2. To better understand the traits associated with the various body shapes, we created a multidimensional space that allowed us to visualize the body shapes and trait labels in tandem.

Correspondence Analysis

Following procedures outlined by Hu et al. (2018), we employed a correspondence analysis (CA) to visualize the application of the personality and sexual traits to each body type. CA is a multivariate statistical method like PCA but developed for categorical data. As noted by Hu et al., CA allows simultaneous visualization of the observations (bodies) and variables (traits) in a unitary multivariate space. To implement the CA, we tallied body and trait variables in a contingency

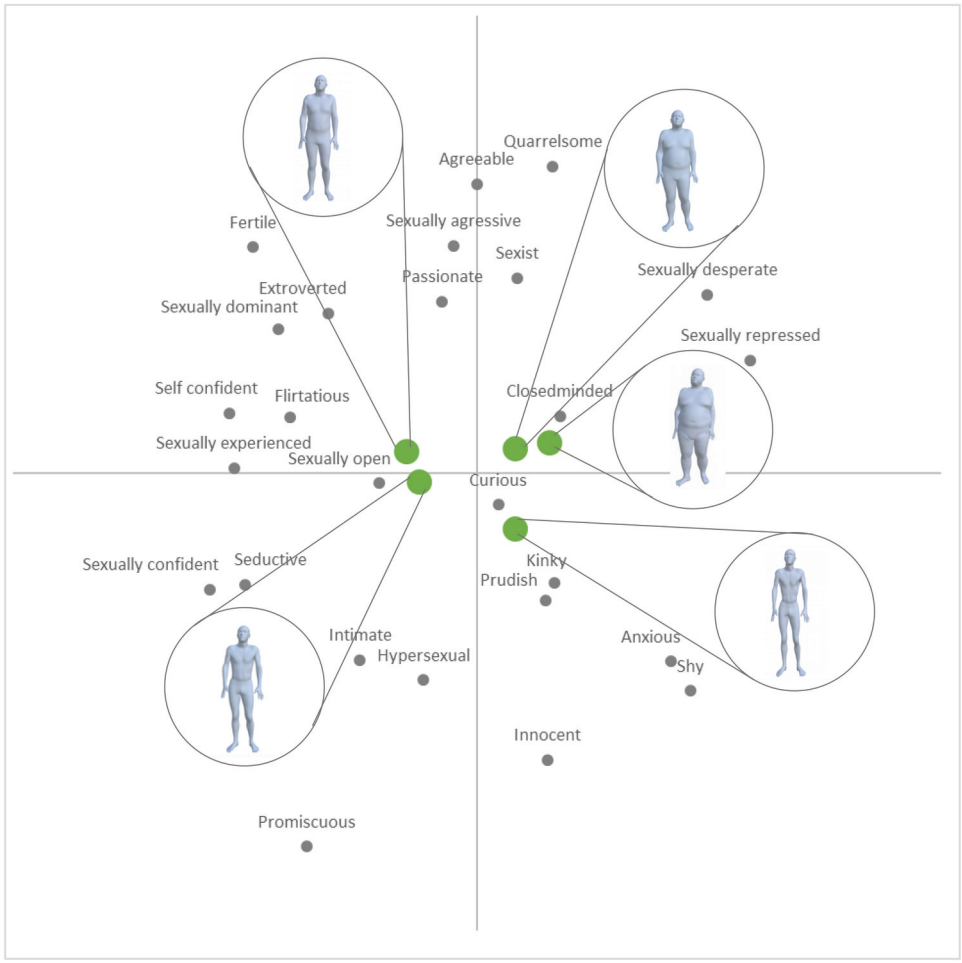


Figure 2. Biplots of trait ratings for male bodies. Male body stimuli presented to participants are shown. Vertical and horizontal axes represent valence and agency, respectively. Plot illustrates the relationship between body shape and trait ratings.

table for bodies of each gender, with the five body shapes along the columns and the 30 personality and sexuality traits in the rows. CA transformed the body and trait variables into two new sets of dimension or factor scores – one for the bodies and one for the traits. With these factor scores as coordinates, two-dimensional maps were formed to visualize the traits associated with each body. Bodies were inputted as the column variable and column principle normalization was utilized; thus, the relationships between the bodies can be interpreted by examining proximity, whereas the relationships between the row variables (traits) can be cautiously interpreted from proximity – noting that the vertical distances between these coordinates are exaggerated.

The CA spaces were interpreted for the male and female bodies separately by considering each axis in isolation. The vertical axis for both male bodies and female bodies separated traits by valence, with positive traits (e.g., seductive, self-confident) generally on the left side and negative traits (e.g., sexually desperate, sexually depressed) generally on the right side. For the male bodies (see Figure 2), this dimension accounted for 84.1% of inertia; for the female bodies (see Figure 3), it accounted for 81.9% of inertia. Interpretation of descriptor terms with each body shape is done primarily via visual interpretation and must therefore be interpreted cautiously, with limits to variations that are clearly self-evident (Hu et al., 2018). Among the five male and five female body shapes, skinny and average bodies were generally found on the positive side of the vertical axis, and heavier (i.e., fat and very fat) bodies were found on the negative right side of the vertical axis.

The horizontal axis separated traits by agency. For the male bodies, active personality and sexuality traits (e.g., sexually dominant, sexually aggressive, passionate) were primarily in the top half of the space, and passive personality and sexuality traits (e.g., prudish, innocent) were in the bottom half. This dimension accounted for 11.0% of inertia. For the female bodies, the reverse seemed true, with agentic, active traits (e.g., sexually dominant, sexually aggressive) in the bottom half of the space and passive traits (e.g., prudish, careful) in the top half of the space. For the female bodies, this dimension accounted for 12.3% of inertia. Along the agency axis, body shapes were similar in traits for male and female bodies. For both the male and female bodies, average, fat, and very fat bodies occupied the agentic half of the space, and skinny and very skinny bodies occupied the passive half of the space.

Principal Component Analysis

A principal component analysis (PCA) was used as a data reduction technique on the 30 sexuality-related traits that

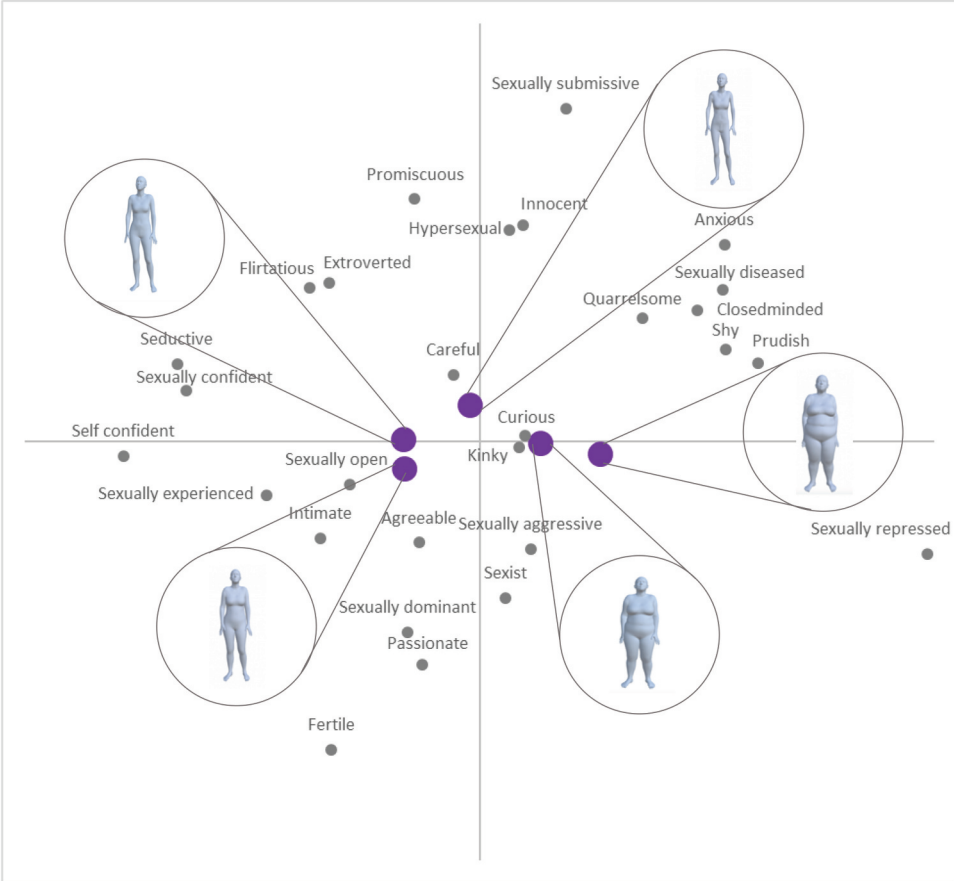


Figure 3. Biplots of trait ratings for female bodies. Female body stimuli presented to participants are shown. Vertical and horizontal axes represent valence and agency, respectively. Plot illustrates the relationship between body shape and trait ratings.

measured inferences about various body shapes. A PCA was selected over other data reduction techniques as PCAs are typically utilized in exploratory research to reduce items into common latent dimensions (Garson, 2018), although inferences are restricted to the sample in the study and rely on subsequent investigations for cross-validation to generalize findings to a population (Field, 2013). Other techniques such as exploratory factor analysis (EFA) may overfit the data and often need cross-validation within one study design (Garson, 2018). Despite the similarities and differences between PCAs and EFA, results obtained from both techniques tend to yield comparable results especially when the PCAs includes approximately 30+ variables with communalities 0.7 or greater (Stevens, 2002). However, given the novel and exploratory nature of this study, for our purposes, low communalities under 0.4 were excluded (see Stevens, 2002) and all other variables were retained.

In the initial PCA five traits, including quarrelsome, sexist, careful, curious, and sexually diseased, did not load properly (low communalities; under 0.4) and were removed; therefore, 25 traits were retained and entered in the PCA. A direct oblimin rotation was employed. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.94 with individual KMO measures all greater than 0.85, classifications of "meritorious" to "marvelous" according to Kaiser (1974). Bartlett's Test of Sphericity were statistically significant (p = .001), indicating that the data was appropriate for factoring. The PCA revealed three components that had eigenvalues greater than one which explained 30.6%, 14.5%, and 7.2% of the total variance. Overall, the three-component solution explained 52.3% of the total variance. The three components were labeled *sexually extroverted* (Component 1), *sexually introverted* (Component 2), and *sexually ambivalent* (Component 3). Component loadings are available in supplemental materials (see online supplementary file Table 3).

Multiple Regression: Male Bodies

Next, a series of three multiple regressions with a Bonferroni corrected alpha of $p < .02$ were conducted on the male body shapes. A total of three separate multiple regressions were calculated in sequential order: (1) extroverted sexual traits was entered as the dependent variable, then (2) introverted sexual traits, and finally (3) ambivalent sexual traits. This method was used to investigate the effects of the five different male body shapes (i.e., very skinny, skinny, average, fat, and very fat) on predicting extroverted, introverted, and ambivalent sexual traits, respectively. The regression model for extroverted sexual traits was statistically significant, R^2 = .07, $F(5, 3563) = 48.29$, $p < .001$; adjusted R^2 = .07. Three male bodies were found to be negatively associated with extroverted traits: very skinny ($\beta = -.15$; $SE = 0.06$), fat ($\beta = -.12$; $SE = 0.06$), and very fat ($\beta = -.17$; $SE = 0.06$), whereas the skinny male body shape ($\beta = .07$; $SE = 0.06$) was positively associated with extroverted sexual traits. The second multiple regression for

Table 2. Top traits that "definitely apply" and "do not apply" to each body (% of raters in agreement).

	Definitely Applies	Does Not Apply
Very skinny man	Anxious (35.5%)	Sexually dominant (70.4%)
	Shy (29.5%)	Seductive (69.1%)
	Sexually desperate (21.7%)	Self-confident (63.6%)
Very skinny woman	Anxious (29.8%)	Sexist (72.2%)
	Sexually submissive (22.2%)	Sexually diseased (70.4%)
	Self-confident (21.7%)	Sexually dominant (68.9%)
Skinny man	Self-confident (30.1%)	Sexually diseased (66.2%)
	Sexually confident (28.2%)	Prudish (63.0%)
	Fertile (27.7%)	Sexually repressed (62.4%)
Skinny woman	Self-confident (34.5%)	Sexually diseased (75.2%)
	Fertile (33.5%)	Sexist (73.6%)
	Sexually confident (28.5%)	Sexually desperate (70.1%)
Average man	Fertile (26.0%)	Sexually diseased (74.4%)
	Self-confident (23.8%)	Prudish (67.6%)
	Sexually confident (22.0%)	Sexually submissive (63.8%)
Average woman	Fertile (43.6%)	Sexually diseased (80.4%)
	Self-confident (28.6%)	Sexist (77.0%)
	Intimate (26.6%)	Sexually repressed (70.2%)
Fat man	Anxious (24.1%)	Seductive (75.4%)
	Sexually desperate (22.4%)	Sexually diseased (72.8%)
	Shy (21.3%)	Promiscuous (67.8%)
Fat woman	Anxious (27.7%)	Sexually diseased (78.1%)
	Fertile (27.2%)	Sexist (72.9%)
	Shy (21.2%)	Sexually aggressive (63.2%)
Very fat man	Anxious (32.3%)	Seductive (79.5%)
	Careless (31.9%)	Sexually diseased (71.2%)
	Sexually desperate (29.6%)	Promiscuous (70.8%)
Very fat woman	Careless (30.4%)	Sexually diseased (77.1%)
	Anxious (28.4%)	Sexist (72.5%)
	Shy (25.6%)	Seductive (72.0%)

Table 3. Component loadings.

	Component		
	1 Sexually Extroverted	2 Sexually Introverted	3 Sexually Ambivalent
Sexually confident	**.80**		
Sexually experienced	**.79**		
Flirtatious	**.77**		
Seductive	**.77**		
Self-confident	**.75**		
Sexually open	**.70**		
Extroverted	**.70**		
Intimate	**.70**		
Sexually dominant	**.67**		
Promiscuous	**.65**		
Passionate	**.65**		
Fertile	**.60**		
Kinky	**.57**		
Hypersexual	**.56**		
Sexually aggressive	**.56**		
Shy		**.76**	
Innocent		**.71**	
Sexually submissive		**.65**	
Anxious		**.63**	
Agreeable		**.55**	
Closed-minded			**.67**
Sexually desperate			**.67**
Careless			**.63**
Sexually repressed			**.54**
Prudish			**.44**

introverted sexual traits was statistically significant, $R^2 = .04$, $F(5, 3563) = 25.68$, $p < .001$; adjusted $R^2 = .03$. Two male bodies were found to be negatively associated with sexually introverted traits: skinny ($\beta = -.11$; $SE = 0.06$) and average ($\beta = -.17$; $SE = 0.06$). A third regression model for ambivalent sexual traits was statistically significant, $R^2 = .07$, $F(5, 3563) =$

48.03, $p < .001$; adjusted $R^2 = .07$. The very skinny ($\beta = .13$; $SE = 0.06$), skinny ($\beta = .06$; $SE = 0.06$), fat ($\beta = .16$; $SE = 0.06$), and very fat ($\beta = .23$; $SE = 0.06$) male body shapes were positively associated with sexually ambivalent traits.

Multiple Regression: Female Bodies

A similar technique was employed for the female bodies to determine the effects of the five different body shapes (i.e., very skinny, skinny, average, fat, and very fat) on predicting extroverted, introverted, and ambivalent sexual traits, respectively. Again, a series of multiple regressions with a Bonferroni corrected alpha of $p < .02$ investigated the effects of the five different female body shapes (i.e., very skinny, skinny, average, fat, and very fat) on predicting extroverted, introverted, or ambivalent sexual traits. Three separate multiple regressions were run on the five female bodies with extroverted, introverted, and ambivalent sexual traits entered, in turn, as the dependent variable. The regression model for extroverted sexual traits was statistically significant, $R^2 = .06$, $F(5, 3563) = 42.08$, $p < .001$; adjusted $R^2 = .05$. Overall, three bodies were found to be positively significant in predicting ascribed sexually extroverted traits: very skinny ($\beta = .07$; $SE = 0.06$), skinny ($\beta = .17$; $SE = 0.06$), average ($\beta = .15$; $SE = 0.06$), whereas the very fat ($\beta = -.06$; $SE = 0.06$) body was found to be significantly negatively associated with sexually extroverted traits. The second multiple regression for introverted sexual traits was statistically significant, $R^2 = .02$, $F(5, 3563) = 11.10$, $p < .001$; adjusted $R^2 = .01$. Four bodies were found to be positively significantly associated with introverted sexual traits: very skinny ($\beta = .10$; $SE = 0.06$), skinny ($\beta = .06$; $SE = 0.06$), fat ($\beta = .08$; $SE = 0.06$), and very fat ($\beta = .07$; $SE = 0.06$). A third regression model for ambivalent sexual traits was statistically significant, $R^2 = .10$, $F(5, 3563) = 69.91$, $p < .001$; adjusted $R^2 = .10$. The very fat female body was positively associated with ambivalent traits ($\beta = .10$; $SE = 0.06$), whereas the other four female bodies were found to be negatively associated with sexually ambivalent traits: very skinny ($\beta = -.13$; $SE = 0.06$), skinny ($\beta = -.23$; $SE = 0.06$), average ($\beta = -.23$; $SE = 0.06$), fat ($\beta = -.06$; $SE = 0.06$).

Discussion

The present study used an experimental approach to examine attributions of sexuality-related traits to bodies of varying shapes. This work provides several novel findings to the literature. First, in accordance with prior literature, we found that the very fat male body was rated as the least sexually attractive, followed by the very skinny body (e.g., Tovée et al., 1999a). For the female bodies, we found that men perceived the bodies as more sexually attractive overall, but participants of both genders identified the very fat body as less sexually attractive than any of the other bodies. The fat female body was also rated as especially unattractive, though not to the same degree as the very fat female body. These findings, in tandem with the heightened attractiveness ratings for the skinny and average bodies, corroborate prior literature which has found that larger bodies in general are rated as less attractive than average and skinny bodies (e.g., Tovée et al., 2002, 1999b, 1998). Second, we determined that people infer a diverse range of sexual traits from body shape and that bodies of different shapes are evaluated differently regarding these traits. With respect to the top traits that were rated as applying to each body, it is notable that for the non-average bodies, and particularly for the fat/very fat bodies, personality traits often overtook sexual traits in being the most applied. This may reflect the notion that non-average bodies are generally perceived as less sexual than average bodies (e.g., Murray, 2004).

Our correspondence analyses demonstrate consistent associations between sexual trait inferences and body shape, supported by the structure of the CA spaces which indicate agreement across participants in the traits applied to each body. The spaces for male and female bodies were similar, but not identical. Most notably, the very skinny male body and very skinny female body differed in their location in the CA space; while the very skinny female body was associated with positive, passive traits, the very skinny male body was associated with negative, passive traits. This difference in valence likely reflects limited cultural notions of the proper physical embodiment of masculinity (and thus masculine sexuality), which prescribes lean muscularity and athleticism (e.g., Leit et al., 2002; Norman, 2013), traits not representative of either the very skinny or fat extremes in our body models. In contrast, the ideal embodied sexuality for women may include very skinny bodies but certainly rejects the other extreme of fatness (e.g., Polivy & Herman, 2004; Tovée et al., 1998). The very skinny male was also associated largely with negative personality traits (e.g., anxious, shy), whereas the fat male bodies were more associated with negative sexual traits (e.g., sexually desperate, sexually repressed), perhaps suggesting that the very skinny male is perceived as asexual by design while the fat and very fat males are rendered asexual as a result of perceived interpersonal challenges (e.g., with finding sexual partners, see Regan, 1996) rather than inherent qualities.

Our regression analyses indicated that certain constellations of sexual traits are reliably associated with certain body shapes. Among the male bodies, the very skinny, fat, and very fat bodies were negatively associated with extroverted sexual traits, suggesting that these bodies are not perceived as having many of the traits typically associated with ideal male sexuality, including agentic traits like sexual dominance, sexual confidence, and hypersexuality (Snell et al., 1988). The skinny male body, which was rated as the most sexually attractive, was positively associated with these extroverted sexual traits. Again, this may reflect narrow conceptualizations of ideal masculine sexuality which do not extend to skinny or fat bodies. Bell and McNaughton (2007) posited that male fatness is seen as a failure of masculinity; male thinness, at extremes, may also violate this gendered norm. Further supporting this notion, the skinny and average male bodies were also negatively associated with introverted sexual traits, such as innocence and sexual submissiveness, which are not representative of stereotypical understandings of ideal male sexuality (Damon, 2003; Snell et al., 1988). Further, all the male bodies – except the average body – were positively associated with ambivalent sexual traits, such as sexually desperate and sexually repressed. The lack of association between these ambivalent sexual traits and the average male body suggests that this

average body is indeed less associated with negative sexual traits than the other bodies, supporting the notion that average bodies are less prone to negative sexual stereotyping; traditional sexual scripts which position the male as the initiator (Murray, 2018; Simon & Gagnon, 1986) may drive the attribution of more negative stereotypes to male bodies not perceived as ideal. Overall, regarding the male bodies, we found that average bodies are perceived as most fitting to the stereotypes of ideal male sexuality, while deviations in shape, particularly toward fatter bodies, are linked to less positive and idealized sexual trait attributions.

Regression analyses conducted with the female bodies also revealed patterns in sexual trait stereotyping. We found that the very skinny, skinny, and average stimuli were positively associated with extroverted sexual traits, while the very fat body was negatively associated with these traits. The agentic traits captured by this dimension were positively associated with female bodies which were deemed more sexually attractive, while heavier (and less attractive) bodies were not associated or were negatively associated with these traits. In contrast, all bodies except the average female body were positively associated with the dimension of sexual introversion. Though apparently paradoxical, considering the simultaneous positive association of some of these bodies with sexual extroversion, we suggest that this may be representative of the complex double standards society has for women's sexuality (e.g., Farvid et al., 2017), which include, for example, the expectation that women are simultaneously sexual but innocent. Women who are evaluated positively with regards to sexuality may thus be seen as embodying both agentic, extroverted sexual traits and more passive, introverted sexual traits. Finally, we found that only the very fat female body was positively associated with sexually ambivalent traits while all the other bodies were negatively associated with these traits. The negative valence of the sexually ambivalent trait category was thus associated with the heaviest (and least attractive) female body only, suggesting very fat female bodies, even relative to fat female bodies, are perceived particularly negatively with regard to sexual traits.

Overall, we found fat and very fat bodies associated with less idealized constellations of sexual traits for both men and women. However, we also found that for men, the very skinny body was associated with relatively negative sexual traits overall. These findings corroborate the notion that anti-fat bias operates along gendered lines (e.g., Chen & Brown, 2005; Royce, 2009) and highlights the need to examine anti-fat bias from broader perspectives than simply comparing fat to skinny. By examining sexual trait attributions to a broad range of body stimuli, we could observe patterns which are obscured by the preeminent dichotomizing of fat and "normal".

The findings of the present work demonstrate that stereotypes about bodies of varying shape are pervasive and reliable, and that these stereotypes extend into the domain of sexuality. Given that sexuality plays an important role in quality of life (e.g., Giami, 2015; McCabe et al., 1996), stereotyping and discrimination that extend into this sphere necessitate serious examination and intervention. The serious detrimental health outcomes of fat stigma (see Rubino et al., 2020 for an overview), often understood as evolving from stigmatizing and discriminatory interpersonal interactions in addition to structural inequalities, must be considered in relation to sexuality. At present, these links are underexplored in both the health and sexuality literatures. By demonstrating in an experimental paradigm the pervasive presence and reliability of sexuality trait inferences made from a variety of body shapes, the present work provides a firm launching point for future explorations of the relationship between body shape and sexual stereotyping.

Limitations and Future Directions

The present sample was relatively homogenous with regard to culture, self-identified body shape, and sexual orientation, thus limiting the generalizability of our findings. Further, our sample of women was much younger than our sample of men and there was a disproportionately high number of Asian women participants, as well as a disproportionate number of participants rating themselves as very skinny or skinny. Reports of thinness may be driven by social desirability biases, such that participants perceive themselves as, or wish to actually be, thinner than they are; indeed, prior research indicates that people tend to underreport weight and BMI (e.g., Gorber et al., 2007). Future research should thus aim to replicate and extend these findings with more diverse and representative samples. The need for greater sampling diversity is evidenced by, for example, previous research indicating cultural specificity of attraction to different body shapes (e.g., Sugiyama, 2004) as well as reports of specific norms and subcultures surrounding fatness in LGBTQ+ communities (e.g., Foster-Gimbel & Engeln, 2016).

Further, it is possible that the perceived age of the stimuli may have acted as a confound in the present study. Thinner body shapes may have been perceived as younger, while fatter bodies may have been perceived as older; given the relatively young age of our sample, this may have influenced ratings of the sexual attractiveness of the stimuli. The age of participants may also have influenced ratings; a broad range was represented in our sample, but age was unequally distributed, with most participants between 16–30 years. Future research should therefore examine age effects of body perception. Additionally, it may have been difficult for participants to overlook the computer-generated nature of the stimuli when rating sexual attractiveness; though mean sexual attractiveness ratings were fairly normally distributed across the body stimuli, means overall were generally below the midpoint of the scale. Several personal communications directed toward the authors (e.g., in comments on the online study postings) indicated that participants did not find the stimuli attractive due to their computer-generated appearance.

Future work should extend the understanding of the relationship between the physical body and stereotyping of sexual attributes to health outcomes and examine the practical implications of sexual stereotyping for individuals with bodies of varying shape. Sexual stigmatization could be examined as a mediator of the relationships between body shape and negative physical and mental health outcomes. Future work should also examine potential differential contributions of different

forms of bodily variation to sexual trait attributions; for example, the role of height and waist-to-hip ratio and shoulder-to-hip ratio in addition to body shape. It would be beneficial to examine these factors in tandem with many variables which were intentionally controlled for in the present work, such as facial attractiveness and other facets of physical appearance. Given the gendered attributions of sexual traits demonstrated herein, future work should also examine how participants perceive the masculinity and femininity of body stimuli; these perceptions may mediate the relationship between body shape and attributed sexual stereotypes.

Conclusions

In sum, the present work demonstrates that people infer sexuality-related traits from body shape in systematic ways. This study provides an initial empirical examination of the associations of sexuality traits with a variety of body shapes using 3-dimensional computer-generated body stimuli. We found that fat bodies were generally perceived less positively with regard to sexual traits, and that attributions of sexual stereotypes operate within traditional notions of gendered sexuality. The implications of these trait associations for fat stigma and related health outcomes should be examined in future work. It is our hope that the findings of the present work may be utilized to encourage deeper discussions of sexuality and physical body stereotyping and encourage initiatives for diversity, equality, and body positivity.

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References

Ahern, A. L., Bennett, K. M., & Hetherington, M. M. (2008). Internalization of the ultra-thin ideal: Positive implicit associations with underweight fashion models are associated with drive for thinness in young women. *Eating Disorders*, *16*(4), 294–307. https://doi.org/10.1080/10640260802115852

Anderson, J. L., Crawford, C. E., Nadeau, J., & Lindberg, T. (1992). Was the duchess of windsor right? A cross-cultural view of the socio-biology of ideals of female body shape. *Ethology and Sociobiology*, *13*(3), 197–227. https://doi.org/10.1016/0162-3095(92)90033-Z

Bell, K., & McNaughton, D. (2007). Feminism and the invisible fat man. *Body & Society*, *13*(1), 107–131. https://doi.org/10.1177/1357034X07074780

Bess, B. E. (1997). Human sexuality and obesity. *International Journal of Mental Health*, *26*(1), 61–67. https://doi.org/10.1080/00207411.1997.11449387

Bordo, S. (1995). *Unbearable weight: Feminism, Western culture, and the body*. University of California Press.

Brodsky, C. M. (1954). A study of norms for body form-behavior relationship. *Anthropological Quarterly*, *27*(4), 91–101. https://doi.org/10.2307/3316929

Brooks, R. C., Shelly, J. P., Jordan, L. A., & Dixson, B. J. (2015). The multivariate evolution of female body shape in an artificial digital ecosystem. *Evolution and Human Behavior*, *36*(5), 351–358. https://doi.org/10.1016/j.evolhumbehav.2015.02.001

Buss, D. M. (1987). Sex differences in human mate selection criteria: An evolutionary perspective. In C. Crawford, D. Krebs, & M. Smith (Eds.). *Sociobiology and psychology: Ideas, issues, and applications* (pp. 335–352). Erlbaum.

Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, *12*(1), 1–14. https://doi.org/10.1017/S0140525X00023992

Byers, E. S. (1996). How well does the traditional sexual script explain sexual coercion? Review of a program of research. *Journal of Psychology & Human Sexuality*, *8*(1–2), 7–25. https://doi.org/10.1300/J056v08n01_02

Charlesworth, T. E., & Banaji, M. R. (2019). Patterns of implicit and explicit attitudes: I. Long-term change and stability from 2007 to 2016. *Psychological Science*, *30*(2), 174–192. https://doi.org/10.1177/0956797618813087

Chen, E. Y., & Brown, M. (2005). Obesity stigma in sexual relationships. *Obesity Research*, *13*(8), 1393–1397. https://doi.org/10.1038/oby.2005.168

Conroy-Beam, D., & Buss, D. M. (2016). Mate preferences. In V. Weekes-Shackelford & T. Shackelford (Eds.). *Encyclopedia of Evolutionary Psychological Science*. Springer. https://doi.org/10.1007/978-3-319-16999-6_1-1

Cornelissen, P. L., Hancock, P. J., Kiviniemi, V., George, H. R., & Tovée, M. J. (2009). Patterns of eye movements when male and female observers judge female attractiveness, body fat and waist-to-hip ratio. *Evolution and Human Behavior*, *30*(6), 417–428. https://doi.org/10.1016/j.evolhumbehav.2009.04.003

Dağ, Z. Ö., & Dilbaz, B. (2015). Impact of obesity on infertility in women. *Journal of the Turkish German Gynecological Association*, *16*(2), 111–117. https://doi.org/10.5152/jtgga.2015.15232

Damon, W. (2003). Dominance, sexism, and inadequacy: Testing a compensatory conceptualization in a sample of heterosexual men involved in SM. *Journal of Psychology & Human Sexuality*, *14*(4), 25–45. https://doi.org/10.1300/J056v14n04_02

Dion, K. K. (2002). Cultural perspectives on facial attractiveness. In C. Rhodes & L. A. Zebrowitz (Eds.), *Facial attractiveness: Evolutionary, cognitive, and social perspectives* (pp. 239–259). Ablex.

Dixson, B. J., Dixson, A. F., Bishop, P., & Parrish, A. (2010a). Human physique and sexual attractiveness in men and women: A New Zealand – U.S.A comparative study. *Archives of Sexual Behavior*, *39*(3), 798–806. https://doi.org/10.1007/s10508-008-9441-y

Dixson, B. J., Dixson, A. F., Li, B., & Anderson, M. J. (2007a). Studies of human physique and sexual attractiveness: Sexual preferences of men and women in China. *American Journal of Human Biology*, *19*(1), 88–95. https://doi.org/10.1002/ajhb.20584

Dixson, B. J., Dixson, A. F., Morgan, B., & Anderson, M. J. (2007b). Human physique and sexual attractiveness: Sexual preferences of men and women in Bakossiland, Cameroon. *Archives of Sexual Behavior*, *36*(3), 369–375. https://doi.org/10.1007/s10508-006-9093-8

Dixson, B. J., Sagata, K., Linklater, W. L., & Dixson, A. F. (2010b). Male preferences for female waist-to-hip ratio and body mass index in the highlands of Papua New Guinea. *American Journal of Physical Anthropology: The Official Publication of the American Association of Physical Anthropologists*, *141*(4), 620–625. https://doi.org/10.1002/ajpa.21181

Durkee, P. K., Polo, P., Munoz-Reyes, J. A., Rodríguez-Ruiz, C., Losada-Pérez, M., Fernández-Martínez, A. B., Turiégano, E., Buss, D. M., & Pita, M. (2019). Men's bodily attractiveness: Muscles as fitness indicators. *Evolutionary Psychology*, *17*(2), 1–10. https://doi.org/10.1177/1474704919852918

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but . . . : A meta-analytic review of research on the physical attractiveness stereoweight. *Psychological Bulletin*, *110*(1), 109–128. https://doi.org/10.1037/0033-2909.110.1.109

Farvid, P., Braun, V., & Rowney, C. (2017). 'No girl wants to be called a slut!': Women, heterosexual casual sex and the sexual double

standard. *Journal of Gender Studies*, *26*(5), 544–560. https://doi.org/10.1080/09589236.2016.1150818
Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction: A comparison across five research paradigms. *Journal of Personality and Social Psychology*, *59*(5), 981–993. https://doi.org/10.1037/0022-3514.59.5.981
Field, A. (2013). Discovering statistics using IBM SPSS statistics (4th ed.). Sage
Flint, S. W. (2015). Obesity stigma: Prevalence and impact in healthcare. *British Journal of Obesity*, *1*(1), 14–18. https://www.researchgate.net/profile/Stuart_Flint/publication/276918977_Obesity_stigma_Prevalence_and_impact_in_healthcare/links/555b6e6408ae91e75e7661f1/Obesity-stigma-Prevalence-and-impact-in-healthcare.pdf
Foster-Gimbel, O., & Engeln, R. (2016). Fat chance! Experiences and expectations of antifat bias in the gay male community. *Psychology of Sexual Orientation and Gender Diversity*, *3*(1), 63–70. https://doi.org/10.1037/sgd0000159
Furnham, A., Swami, V., & Shah, K. (2006). Body weight, waist-to-hip ratio and breast size correlates of ratings of attractiveness and health. *Personality and Individual Differences*, *41*(3), 443–454. https://doi.org/10.1016/j.paid.2006.02.007
Gailey, J. A. (2012). Fat shame to fat pride: Fat women's sexual and dating experiences. *Fat Studies*, *1*(1), 114–127. https://doi.org/10.1080/21604851.2012.631113
Gailey, J. A., & Prohaska, A. (2006). "Knocking off a fat girl:" An exploration of hogging, male sexuality, and neutralizations. *Deviant Behavior*, *27*(1), 31–49. https://doi.org/10.1080/016396290968353
Garson, D. (2018). *Factor analysis*. Statistical Associates Publishing.
Giami, A. (2015). Sexuality, health and human rights: The invention of sexual rights. *Sexologies*, *24*(3), e45–e53. https://doi.org/10.1016/j.sexol.2015.07.002
Gill, R., Henwood, K., & McLean, C. (2005). Body projects and the regulation of normative masculinity. *Body & Society*, *11*(1), 37–62. https://doi.org/10.1177/1357034X05049849
Gorber, S. C., Tremblay, M., Moher, D., & Gorber, B. (2007). A comparison of direct vs. self-report measures for assessing height, weight and body mass index: A systematic review. *Obesity Reviews*, *8*(4), 307–326. https://doi.org/10.1111/j.1467-789X.2007.00347.x
Guthman, J., & DuPuis, M. (2006). Embodying neoliberalism: Economy, culture, and the politics of fat. *Environment and Planning D: Society and Space*, *24*(3), 427–448. https://doi.org/10.1068/d3904
Hall, O. (2018). Fat women's experiences of navigating sex and sexuality. *Women's Studies Journal*, *32*, 10–20. http://wsanz.org.nz/journal/docs/WSJNZ32Hall10-20.pdf
Harris, M. B. (1990). Is love seen as different for the obese? *Journal of Applied Social Psychology*, *20*(15), 1209–1224. https://doi.org/10.1111/j.1559-1816.1990.tb01469.x
Henss, R. (2000). Waist-to-hip ratio and female attractiveness. Evidence from photographic stimuli and methodological considerations. *Personality and Individual Differences*, *28*(3), 501–513. https://doi.org/10.1016/S0191-8869(99)00115-4
Hill, E. C. (1975). *Traits attributed to female somatotypes*. [Unpublished Master's thesis]. University of Nebraska.
Hill, M. E. (2002). Skin color and the perception of attractiveness among African Americans: Does gender make a difference? *Social Psychology Quarterly*, *65*(1), 77–91. https://doi.org/10.2307/3090169
Hu, Y., Parde, C. J., Hill, M. Q., Mahmood, N., & O'Toole, A. J. (2018). First impressions of personality traits from body shapes. *Psychological Science*, *29*(12), 1969–1983. https://doi.org/10.1177/0956797618799300
John, O. P., & Srivastava, S. (1999). Big Five Inventory (BFI). In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). Guilford Press. https://10.1525/fq.1998.51.4.04a00260
Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36. https://doi.org/10.1007/BF02291575
Kenrick, D. T. (1989). Bridging social psychology and sociobiology: The case of sexual attraction. In R. W. Bell & N. J. Bell (Eds.), *Sociobiology and social sciences* (pp. 5–23). Texas Tech University Press.
Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, *126*(3), 390–423. https://doi.org/10.1037/0033-2909.126.3.390
Leit, R. A., Gray, J. J., & Pope, H. G. (2002). The media's representation of the ideal male body: A cause for muscle dysmorphia? *International Journal of Eating Disorders*, *31*(3), 334–338. https://doi.org/10.1002/eat.10019
Lerner, R. M. (1969). Some female stereoweights of male body build-behavior relations. *Perceptual and Motor Skills*, *28*(2), 363–366. https://doi.org/10.2466/pms.1969.28.2.363
Little, A. C., Jones, B. C., & DeBruine, L. M. (2011). Facial attractiveness: Evolutionary based research. *Philosophical Transactions. Biological Sciences*, *366*(1571), 1638–1659. https://doi.org/10.1098/rstb.2010.0404
Loper, M., Mahmood, N., Romero, J., Pons-moll, G., & Black, M. J. (2015). SMPL: A skinned multi-person linear model. *ACM Transactions on Graphics*, *34*(6), Article 248. https://doi.org/10.1145/2816795.2818013
Mautz, B. S., Wong, B. B., Peters, R. A., & Jennions, M. D. (2013). Penis size interacts with body shape and height to influence male attractiveness. *Proceedings of the National Academy of Sciences*, *110*(17), 6925–6930. https://doi.org/10.1073/pnas.1219361110
McCabe, M. P., Cummins, R. A., & Romeo, Y. (1996). Relationship status, relationship quality, and health. *Journal of Family Studies*, *2*(2), 109–120. https://doi.org/10.5172/jfs.2.2.109
Mikolajczyk, R. T., Maxwell, A. E., El Ansari, W., Stock, C., Petkeviciene, J., & Guillen-Grima, F. (2010). Relationship between perceived body weight and body mass index based on self-reported height and weight among university students: A cross-sectional study in seven European countries. *BMC Public Health*, *10*(1), 40. doi:10.1186/1471–2458-10-40
Monaghan, L. F. (2005). Big handsome men, bears and others: Virtual constructions of 'fat male embodiment'. *Body & Society*, *11*(2), 81–111. https://doi.org/10.1177/1357034X05052463
Murray, S. (2004). Locating aesthetics: Sexing the fat woman. *Social Semiotics*, *14*(3), 237–247. https://doi.org/10.1080/10350330408629678
Murray, S. (2018). Heterosexual men's sexual desire: Supported by, or deviating from, traditional masculinity norms and sexual scripts? *Sex Roles*, *78*(1–2), 130–141. https://doi.org/10.1007/s11199-017-0766-7
Norman, M. E. (2013). "Dere's not just one kind of fat" Embodying the "skinny" self through constructions of the fat masculine other. *Men and Masculinities*, *16*(4), 407–431. https://doi.org/10.1177/1097184X13502662
Orbach, S. (1978). *Fat is a feminist issue: A self-help guide for compulsive eaters*. Berkley Books.
Park, J. H., Schaller, M., & Crandall, C. S. (2007). Pathogen-avoidance mechanisms and the stigmatization of obese people. *Evolution and Human Behavior*, *28*(6), 410–414. https://doi.org/10.1016/j.evolhumbehav.2007.05.008
Paul, R. J., & Townsend, J. B. (1995). Shape up or ship out? Employment discrimination against the overweight. *Employee Responsibilities and Rights Journal*, *8*(2), 133–145. https://doi.org/10.1007/BF02621279
Poirier, P., Giles, T. D., Bray, G. A., Hong, Y., Stern, J. S., Pi-Sunyer, F. X., & Eckel, R. H. (2006). Obesity and cardiovascular disease: Pathophysiology, evaluation, and effect of weight loss: An update of the 1997 American Heart Association scientific statement on obesity and heart disease from the obesity committee of the council on nutrition, physical activity, and metabolism. *Circulation*, *113*(6), 898–918. https://doi.org/10.1161/CIRCULATIONAHA.106.171016
Polivy, J., & Herman, C. P. (2004). Sociocultural idealization of thin female body shapes: An introduction to the special issue on body image and eating disorders. *Journal of Social and Clinical Psychology*, *23*(1), 1–6. https://doi.org/10.1521/jscp.23.1.1.26986
Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: Important considerations for public health. *American Journal of Public Health*, *100*(6), 1019–1028. https://doi.org/10.2105/AJPH.2009.159491
Regan, P. C. (1996). Sexual outcasts: The perceived impact of body weight and gender on sexuality. *Journal of Applied Social Psychology*, *26*(20), 1803–1815. https://doi.org/10.1111/j.1559-1816.1996.tb00099.x
Rich, E., & Evans, J. (2005). 'Fat ethics'–the obesity discourse and body politics. *Social Theory & Health*, *3*(4), 341–358. https://doi.org/10.1057/palgrave.sth.8700057

Robinette, K. M., Blackwell, S., Daanen, H., Boehmer, M., Fleming, S., Brill, T., Hoeferlin, D., & Burnsides, D. (2002). *Civilian American and European surface anthropometry resource (CAESAR)* (Final Report No. 1). SAE International.

Robinette, K. M., Daanen, H., & Paquet, E. (1999). The CAESAR project: A 3-D surface anthropometry survey. In *Second international conference on 3D digital imaging and modeling* (Cat. No. PR00062, pp. 380–386). Ottawa, ON: IEEE. https://doi.org/10.1109/IM.1999.805368

Royce, T. (2009). The shape of abuse: Fat oppression as a form of violence against women. In E. D. Rothblum & S. Solovay (Eds.), *The fat studies reader* (pp. 151–157). University Press.

Rozmus-Wrzesinska, M., & Pawlowski, B. (2005). Men's ratings of female attractiveness are influenced more by changes in female waist size compared with changes in hip size. *Biological Psychology*, *68*(3), 299–308. https://doi.org/10.1016/j.biopsycho.2004.04.007

Rubino, F., Puhl, R. M., Cummings, D. E., Eckel, R. H., Ryan, D. H., Mechanick, J. I., Nadglowski, J., Salas, X. R., Schauer, P. R., Twenefour, D., Apovian, C. M., Arrone, L. J., Batterham, R. L., Berthoud, H., Boza, C., Busetto, L., Dicker, D., De Groot, M., Eisenberg, D., Flint, S. W., & Dixon, J. B. (2020). Joint international consensus statement for ending stigma of obesity. *Nature Medicine*, *26*(4), 485–497. https://doi.org/10.1038/s41591-020-0803-x

Sanchez, D. T., Fetterolf, J. C., & Rudman, L. A. (2012). Eroticizing inequality in the United States: The consequences and determinants of traditional gender role adherence in intimate relationships. *Journal of Sex Research*, *49* (2–3), 168–183. https://doi.org/10.1080/00224499.2011.653699

Schaefer, K., Fink, B., Grammer, K., Mitteroecker, P., Gunz, P., & Bookstein, F. L. (2006). Female appearance: Facial and bodily attractiveness as shape. *Psychology Science*, *48*(2), 187–204. https://pure.mpg.de/rest/items/item_1834756/component/file_1834755/content

Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters). *Current Directions in Psychological Science*, *20*(2), 99–103. https://doi.org/10.1177/0963721411402596

Sell, A., Lukazsweski, A. W., & Townsley, M. (2017). Cues of upper body strength account for most of the variance in men's bodily attractiveness. *Proceedings of the Royal Society B: Biological Sciences*, *284*(1869), 20171819. https://doi.org/10.1098/rspb.2017.1819

Sheldon, W. H. (1954). *Atlas of men: A guide for somatotyping the adult male at all ages*. Harper.

Simon, W., & Gagnon, J. H. (1986). Sexual scripts: Permanence and change. *Archives of Sexual Behavior*, *15*(2), 97–120. https://doi.org/10.1007/BF01542219

Singh, D. (1994). Body fat distribution and perception of desirable female body shape by young black men and women. *International Journal of Eating Disorders*, *16*(3), 289–294. https://doi.org/10.1002/1098-108X(199411)16:3<289::AID-EAT2260160310>3.0.CO;2-9

Singh, D., Dixson, B. J., Jessop, T. S., Morgan, B., & Dixson, A. F. (2010). Cross-cultural consensus for waist–hip ratio and women's attractiveness. *Evolution and Human Behavior*, *31*(3), 176–181. https://doi.org/10.1016/j.evolhumbehav.2009.09.001

Singh, D., & Young, R. K. (1995). Body weight, waist-to-hip ratio, breasts, and hips: Role in judgments of female attractiveness and desirability for relationships. *Ethology and Sociobiology*, *16*(6), 483–507. doi:10.1016/0162–3095(95)00074-7

Smith, K. L., Cornelissen, P. L., & Tovée, M. J. (2007). Color 3D bodies and judgements of human female attractiveness. *Evolution and Human Behavior*, *28*(1), 48–54. https://doi.org/10.1016/j.evolhumbehav.2006.05.007

Snell, W. E., Hawkins, R. C., & Belk, S. S. (1988). Stereotypes about male sexuality and the use of social influence strategies in intimate relationships. *Journal of Social and Clinical Psychology*, *7*(1), 42–48. https://doi.org/10.1521/jscp.1988.7.1.42

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Erlbaum.

Streeter, S. A., & McBurney, D. H. (2003). Waist–hip ratio and attractiveness: New evidence and a critique of "a critical test". *Evolution and Human Behavior*, *24*(2), 88–98. https://doi.org/10.1016/S1090-5138(02)00121-6

Strongman, K. T., & Hart, C. J. (1968). Stereotyped reactions to body build. *Psychological Reports*, *23*(3,suppl.), 1175–1178. https://doi.org/10.2466/pr0.1968.23.3f.1175

Sugiyama, L. S. (2004). Is beauty in the context-sensitive adaptations of the beholder? Shiwiar use of waist-to-hip ratio in assessments of female mate value. *Evolution and Human Behavior*, *25*(1), 51–62. https://doi.org/10.1016/S1090-5138(03)00083-7

Swami, V., Furnham, A., & Joshi, K. (2008a). The influence of skin tone, hair length, and hair colour on ratings of women's physical attractiveness, health and fertility. *Scandinavian Journal of Psychology*, *49*(5), 429–437. https://doi.org/10.1111/j.1467-9450.2008.00651.x

Swami, V., Rozmus-Wrzesinska, M., Voracek, M., Haubner, T., Danel, D., Pawłowski, B., Stanistreet, D., Chaplin, F., Chaudhri, J., Sheth, P., Shostak, A., Zhang, E. X., & Furnham, A. (2008b). The influence of skin tone, body weight, and hair colour on perceptions of women's attractiveness and health: A cross-cultural investigation. *Journal of Evolutionary Psychology*, *6*(4), 321–341. https://doi.org/10.1556/JEP.6.2008.4.4

Swami, V., & Tovée, M. J. (2009). Big beautiful women: The body size preferences of male fat admirers. *Journal of Sex Research*, *46*(1), 89–96. https://doi.org/10.1080/00224490802645302

Tovée, M. J., Hancock, P. J., Mahmoodi, S., Singleton, B. R., & Cornelissen, P. L. (2002). Human female attractiveness: Waveform analysis of body shape. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, *269*(1506), 2205–2213. https://doi.org/10.1098/rspb.2002.2133

Tovée, M. J., Maisey, D. S., Emery, J. L., & Cornelissen, P. L. (1999a). Visual cues to female physical attractiveness. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, *266*(1415), 211–218. https://doi.org/10.1098/rspb.1999.0624

Tovée, M. J., Maisey, D. S., Vale, E. L., & Cornelissen, P. L. (1999b). Characteristics of male attractiveness for women. *The Lancet*, *353* (9163), 1500. https://doi.org/10.1016/s0140-6736(99)00438-9

Tovée, M. J., Reinhardt, S., Emery, J. L., & Cornelissen, P. L. (1998). Optimum body-mass index and maximum sexual attractiveness. *The Lancet*, *352* (9127), 548. https://doi.org/10.1016/S0140-6736(05)79257-6

Townsend, J. M. (1989). Mate selection criteria: A pilot study. *Ethology and Sociobiology*, *10*(4), 241–253. https://doi.org/10.1016/0162-3095(89)90002-2

Uhlmann, L. R., Donovan, C. L., Zimmer-Gembeck, M. J., Bell, H. S., & Ramme, R. A. (2018). The fit beauty ideal: A healthy alternative to thinness or a wolf in sheep's clothing? *Body Image*, *25*, 23–30. https://doi.org/10.1016/j.bodyim.2018.01.005

van Amsterdam, N. (2013). Big fat inequalities, thin privilege: An intersectional perspective on 'body size'. *European Journal of Women's Studies*, *20*(2), 155–169. https://doi.org/10.1177/1350506812456461

Weeden, J., & Sabini, J. (2005). Physical attractiveness and health in Western societies: A review. *Psychological Bulletin*, *131*(5), 635–653. https://doi.org/10.1037/0033-2909.131.5.635

Weeden, J., & Sabini, J. (2007). Subjective and objective measures of attractiveness and their relation to sexual behavior and sexual attitudes in university students. *Archives of Sexual Behavior*, *36*(1), 79–88. https://doi.org/10.1007/s10508-006-9075-x

Wells, W. D., & Siegel, B. (1961). Stereo weighted somato weights. *Psychological Reports*, *8*, 77–78. https://doi.org/10.2466/pr0.1961.8.1.77

Wetsman, A., & Marlowe, F. (1999). How universal are preferences for female waist-to-hip ratios? Evidence from the Hadza of Tanzania. *Evolution and Human Behavior*, *20*(4), 219–228. https://doi.org/10.1016/S1090-5138(99)00007-0

Wilson, J. M., Tripp, D. A., & Boland, F. J. (2005). The relative contributions of waist-to-hip ratio and body mass index to judgements of attractiveness. *Sexualities, Evolution & Gender*, *7*(3), 245–267. https://doi.org/10.1080/14616660500238769

Witz, A. (2000). 'Whose body matters? Feminist sociology and the corporeal turn in sociology and feminism'. *Body & Society*, *6*(2), 1–24. https://doi.org/10.1177/1357034X00006002001

Wolf, N. (1991). *The beauty myth: How images of beauty are used against women*. Morrow.

Yu, D. W., & Shepard, G. H. (1998). Is beauty in the eye of the beholder? *Nature*, *396*(6709), 321–322. https://doi.org/10.1038/24512