

Men and Masculinities

<http://jmm.sagepub.com/>

Bigger Is Not Always Better: The Effect of Obesity on Sexual Satisfaction and Behavior of Adult Men in the United States

Deborah Carr, Lauren F. Murphy, Heather D. Batson and Kristen W. Springer
Men and Masculinities 2013 16: 452 originally published online 5 September 2013
DOI: 10.1177/1097184X13502651

The online version of this article can be found at:
<http://jmm.sagepub.com/content/16/4/452>

Published by:



<http://www.sagepublications.com>

Additional services and information for *Men and Masculinities* can be found at:

Email Alerts: <http://jmm.sagepub.com/cgi/alerts>

Subscriptions: <http://jmm.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://jmm.sagepub.com/content/16/4/452.refs.html>

>> [Version of Record](#) - Oct 11, 2013

[OnlineFirst Version of Record](#) - Sep 5, 2013

[What is This?](#)

Bigger Is Not Always Better: The Effect of Obesity on Sexual Satisfaction and Behavior of Adult Men in the United States

Men and Masculinities

16(4) 452-477

© The Author(s) 2013

Reprints and permission:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1097184X13502651

jmm.sagepub.com



Deborah Carr¹, Lauren F. Murphy¹,
Heather D. Batson¹, and Kristen W. Springer¹

Abstract

We use data from the Midlife Development in the United States study to examine how sexual satisfaction, frequency, and number of partners are associated with men's body weight. We consider five body weight categories (underweight, normal, overweight, obese I, and obese II/III), and control for potential explanatory factors including demographic characteristics, socioeconomic status, health, perceived stigmatization, and adolescent weight. Obese II/III men report significantly less sexual satisfaction and less frequent sexual activity, and a greater likelihood of having no sex partner compared to normal weight men. Physical and mental health conditions partially account for obese II/III men's less satisfying and less frequent sex. However, the deleterious effects of obesity are suppressed by youthful weight. Obese II/III men are more likely to have been overweight adolescents, an attribute associated with more frequent and satisfying sex in adulthood. We discuss implications for the study of masculinities, and the ways that bodies and their symbolic meanings can shape men's sexual lives.

¹ Department of Sociology and Institute for Health, Health Care Policy and Aging Research, Rutgers University, New Brunswick, NJ, USA

Corresponding Author:

Deborah Carr, Department of Sociology and Institute for Health, Health Care Policy and Aging Research, Rutgers University, 112 Paterson Street, New Brunswick, NJ 08901, USA.

Email: carrds@rci.rutgers.edu

Keywords

male sexuality, obesity, body weight, sexual behavior, sexual satisfaction

Obesity is one of the most enduring social stigmas in US society; obese persons are consistently evaluated as less intelligent, attractive, sexually desirable, competent, and moral than their thinner peers (Puhl and Brownell 2001). Obese persons also have lower incomes, less education, lower marriage rates, more frequent experiences of interpersonal mistreatment and discrimination, and poorer physical and mental health (Baum and Ford 2004; Carr and Friedman 2005). These deleterious consequences of high body weight are more severe for women than for men, reflecting cultural norms equating female beauty with slenderness in white middle-class culture (Averett and Korenman 1996; Klein 2001). Multiple studies document that overweight women face compromised prospects for dating and fulfilling romantic lives, especially in adolescence (e.g., Boyes and Latner 2009; Carmalt et al. 2008).

However, few studies explore the effects of adult body weight on one's sexual experiences and satisfaction, especially among heterosexual men. In contemporary US society, men are often expected to comply with a repertoire of sexual behaviors that include frequent sexual activity, high levels of sexual satisfaction, sexual skill and confidence, and an ability to attract sexual partners. This conceptualization of "ideal" masculine sexuality is a central component of hegemonic masculinity, or the culturally normative ideal of manhood (Kimmel 1996). Men may achieve status and power by complying with this ideal; as such, sexuality may be an important (yet overlooked) domain where obesity impedes men's well-being.

We know of no nationally representative studies that document the effects of specific body mass index (BMI) categories on the sexual experiences of men in the United States. We use data from the Midlife Development in the United States (MIDUS) study to evaluate (1) the effects of adult BMI on men's sexual satisfaction, frequency, and number of partners and (2) the extent to which bivariate associations between BMI and sexual outcomes persist after potential explanatory factors (i.e., demographic, socioeconomic, health, stigmatization, and youthful weight characteristics) are controlled. More than two-thirds of men in the US are currently overweight and one-third are obese (Centers for Disease Control and Prevention [CDC] 2010); documenting sources of compromised well-being for these men may guide strategies to eliminate weight-based disparities.

Background***Body Weight, Masculinity, and Sexuality***

Social science and cultural studies suggest that obesity may affect men's identities by demasculinizing both their bodies and their character. Western culture's characterization of the "ideal" male is associated with strength and bodily "hardness"

(Klein 2001). In this view, subcutaneous fat may make men appear physically “soft” or “emasculated” (Braziel 2001). Obesity also may literally conceal physical indicators of maleness. In *The Secret Lives of Fat People*, one man describes the impact of obesity on his masculine identity: “All my life I’ve felt that my penis was too small . . . My stomach is just too big. Even when I have an erection, I can’t see my penis” (Mosher 2001, 170).

Popular culture’s characterizations of obese men may demasculinize their character as well as their bodies. Obese men are perceived to be infantile, lacking self-control, and unable to manage their bodies (Ulaby 2001). This presumed inability to control one’s impulses is extended to sexuality, where it is assumed that an obese man’s sexual appetite mirrors his voracious appetite for food, and he is focused on his own (rather than his partner’s) pleasure (Ulaby 2001). Taken together, these cultural images suggest that obese men may fail to comply with the behaviors and characteristics associated with the masculine “ideal.” This is a provocative idea, yet little research has formally evaluated *the extent to which* and *the reasons why* weight may affect men’s sexual behavior and satisfaction. However, recent research suggests that body weight is an important component of masculinity and may have powerful effects on men’s sexual lives. For example, clinical studies show that compared to normal weight men, overweight and obese men had fewer partners in the past year (Bajos et al. 2010), rated their sexual encounters as less satisfying (Kolotkin et al. 2006), were less likely to use condoms during sexual intercourse (Bajos et al. 2010), and were more likely to report that they had ever been forced to participate, or had participated without really wanting to, in any of eleven listed sexual acts (Adolfsson et al. 2004).

Despite this descriptive evidence, studies have not yet rigorously evaluated the specific pathways linking body weight to men’s sexual behaviors and satisfaction. Our study is an attempt to fill this void. We seek to uncover whether, and for which specific outcomes, body weight is related to men’s sexual lives, and to evaluate the psychosocial and biological pathways that might account for these patterns. We next review theoretical work on the evolutionary bases of mate selection, stigma, and set point theory; these distinctive literatures suggest ways that body weight, and obesity in particular, may impede (or enhance) both subjective appraisals and behavioral indicators of men’s sexual lives.

Evolutionary Perspectives on Sexual Partnerships

The proposition that obesity may limit men’s prospects for a satisfying sexual life is consistent with evolutionary theories of mate selection. These theories propose that the most important goal of human (and animal) life is to reproduce and thus pass on one’s genes. As such, humans choose to mate with partners who will maximize their reproductive fitness or the likelihood that they will reproduce multiple healthy offspring. Evolutionary theorists posit that men tend to be attracted to young, healthy, attractive women with low waist–hip ratios (WHR), as these traits are

considered visible indicators of fecundity (Buss 2003; Frederick and Haselton 2007). By contrast, the “ideal” physique for men is largeness due to muscle mass, because muscular men are thought to be more aggressive and may more successfully pursue and attract female mates (Buss 2003). Muscle mass also suggests vigor, strength, virility, and a capacity to protect one’s partner and offspring (Bell and McNaughton 2007). A man who violates this expectation, whether by being physically frail or obese, would be deemed a less capable and desirable protector and procreator.

Evolutionary theories have been critiqued on the grounds that they essentialize gender differences and neglect sociocultural context. We concur with these critiques. However, contemporary research does confirm the importance of muscle mass for men’s sexual appeal (Frederick and Haselton 2007). Drawing on this work, we hypothesize that heterosexual obese men will be less likely than slimmer men to have a current sexual partner and will have less frequent sexual activity.

The Stigmatization of Obesity

Evolutionary arguments presume that distaste for obese bodies is natural and a precondition for successful reproduction. However, social science research challenges this assumption, and shows persuasively that norms regarding acceptable body weight are culturally bound, and vary widely across time and place. In the contemporary United States, overweight bodies are the statistical norm, where 61 percent of women and 73 percent of men have a BMI deemed “overweight” or heavier (CDC 2010, table 72). However, contemporary cultural norms equate a lean or muscular physique with physical attractiveness and sexual desirability (Chen and Brown 2005). Given the current cultural devaluation of an obese or adipose physique, we posit that one potential pathway linking obesity to compromised sexual well-being is weight-related stigma.

A stigma is any personal trait that is degraded systematically by others. A vast literature shows that obesity is still a stigmatized trait in contemporary US society; children, adults, and even health care professionals who work with obese patients hold negative attitudes toward overweight and obese persons (see Puhl and Brownell 2001, for review). Negative attitudes often are translated into unkind or discriminatory treatment, evidenced by high levels of discrimination and mistreatment reported by obese adults (Carr and Friedman 2005). Thus, we evaluate the extent to which perceived mistreatment mediates the linkage between obesity and sexual outcomes. Prior research suggests three plausible pathways through which the obesity stigma may affect sexual satisfaction, frequency, and the availability and interest of potential sexual partners. First, experiences of weight-related mistreatment—ranging from teasing to institutional discrimination—negatively affect one’s self-esteem and body image and increase symptoms of depressed mood (Carr and Friedman 2005; Carr, Friedman, and Jaffe 2007). These psychological outcomes may compromise one’s

sexual satisfaction and ability to pursue and maintain a meaningful romantic relationship (e.g., Ackard, Kearney-Cooke, and Peterson 2000).

Second, experiences of employment discrimination may limit men's ability to comply with a key expectation of the "hegemonic masculinity" ideal: that a man will be a successful worker and breadwinner (Kimmel 1996). Obese men are significantly more likely than their slimmer peers to report that they were ever fired or denied a job or promotion on the grounds of their body weight (Carr and Friedman 2005). An obese man's greater risk of unemployment, unstable employment, and inadequate wages (e.g., Baum and Ford 2004) may affect his sense of manhood and create strains with his romantic partner, and thus carry negative consequences for his sexual life (Bodenmann, Ledermann, and Bradbury 2007).

Third, the partners of obese men may hold stigmatizing beliefs (e.g., obese men are sexually undesirable or lacking in self-control). These beliefs, in turn, may trigger critical comments which affect both emotional and sexual satisfaction in the relationship. Spouses and romantic partners are among the most frequent perpetrators of psychological mistreatment directed at obese persons; this mistreatment typically includes verbal slights and "nagging" (Puhl et al. 2008). These negative interactions may spill over to the partners' sexual relationship. Thus, in our multivariate analyses, we evaluate whether the statistical association between BMI and sexual outcomes is mediated by perceived mistreatment on the grounds of one's body weight.

Obesity and Masculine Identity Development

Our study focuses on linkages between adult body weight and sexual outcomes. However, adult BMI is strongly correlated with BMI during adolescence (Shumei and Chumlea 1999), the stage in the life course when one establishes a sexual identity and sexual self-confidence, or lack thereof (Cawley, Joyner, and Sobal 2006). It is important to evaluate the extent to which adult body weight affects sexual outcomes, when youthful weight is controlled.

Early life body weight may be indicative of two traits: one's "set point," or natural and comfortable body size, and one's sense of masculinity and sexual confidence. Set point theory suggests that individuals have different ranges of easily maintainable weight and that some obese people have "naturally" large bodies (Keesey and Hirvonen 1997). "Metabolically healthy obese" individuals, who have a high BMI and high amounts of body fat yet maintain healthy cholesterol levels (Karelis et al. 2004), provide evidence that a large body is normal and healthy for some. For some men, especially during young adulthood or adolescence, a high BMI may also signify high levels of muscle mass rather than adipose tissue (Witt and Bush 2005).

A young man's physique also may have long-term implications for his adult sexuality, as it may shape how he learns to "perform" or "do" hegemonic masculinity (Johnston and Morrison 2007). Such performances involve the use of the body, including displays of sexual conquest and risk-taking behaviors (Connell 1995). It is plausible that a high BMI in young adulthood could *enhance* men's personal

identification with hegemonic masculinity and feelings of confidence and therefore enhance their sexual experiences in adulthood. Monaghan and Hardey (2009) argue that a subset of obese men can be classified as “proud;” they treat their large size as a “positive” and “central” part of their self-identification. We propose that adult men who were large as young adults might have felt “proud” of their large size, and consequently may approach their sexual relations in adulthood with greater confidence, skill, and success. Consistent with our speculations, prior work shows that earlier pubertal timing (and accompanying changes such as physical growth and development of muscle mass) among boys is associated with a boost in social status and self-esteem, due in part to increased athleticism and a more adult appearance (Taga, Markey, and Friedman 2006). Thus, we evaluate whether the effect of adult obesity on men’s sexual outcomes persist after we control for men’s youthful BMI.

Biological and Demographic Correlates of Body Weight and Sexual Outcomes

Obesity may affect men’s sexual experiences via physiological as well as psychological pathways. Obese men have elevated risks of a range of physical conditions including erectile dysfunction, or the persistent inability to attain and maintain a penile erection adequate for satisfactory sexual performance (Larsen, Wagner, and Heitmann 2007); infertility (MacDonald et al. 2010); and reduced testosterone levels (Isidori et al. 2005). Each of these conditions may compromise both physical and emotional aspects of sexual satisfaction. Obesity also is associated with chronic conditions including diabetes and high blood pressure, which are associated with diminished sexual desire, decreased sexual satisfaction, and sexual health-related complications, as well as reliance on pharmacological treatments that affect sexual outcomes (Bhasin et al. 2007; Kip et al. 2004). Although men with physical health problems, especially erectile dysfunction, may find satisfaction in alternative activities such as kissing and petting, most research shows that men equate sexual “satisfaction” with intercourse and orgasm—physical processes that may be impeded by obesity (e.g., Laumann et al. 1994).

Given these well-documented associations between body weight and health conditions that may compromise the quality of one’s sexual encounters, we control for a range of physical health conditions and medication use that may account for the statistical association between body weight and sexual outcomes. Specifically, we adjust for general physical health (self-rated health and functional limitations), depressed affect, diagnoses of diabetes and heart disease, and medication use for depression and diabetes. The association between body weight and sexual outcomes also may be accounted for by a range of demographic factors including age, race, socioeconomic status, sexual orientation, and age, which have been found elsewhere to be correlated with both BMI (CDC 2010) and both sexual satisfaction and activity (Laumann et al. 1994). Thus, our analyses control for a range of demographic and socioeconomic characteristics.

Data and Method

Data

Data are from the Midlife Development in the United States (MIDUS) survey. MIDUS is a national probability sample of noninstitutionalized English-speaking adults aged 25 to 74, selected from telephone banks in the continental United States. Households were selected via random digit dialing and then stratified sampling was used to select respondents within households. The sample was stratified by age and gender; men and persons age sixty-five to seventy-four were oversampled. Telephone interviews and mail questionnaires were administered in 1995–1996. Our results are based on the unweighted data; results were similar when we adjusted for unequal probabilities of household selection and respondent selection within households.

The total MIDUS sample includes 4,242 adults (2,155 men and 2,087 women). Our analytic sample includes the 1,670 men who completed the mail questionnaire and telephone interview. We limit our sample to black and white men only, because the MIDUS sample does not have sufficient numbers of persons of other ethnicities to conduct other racial comparisons. The response rate for the self-administered mail questionnaire is 87 percent, thus caution should be taken in extrapolating our results to the total population in the same age range.¹

Measures

Dependent Variables. *Current sexual satisfaction* is assessed with the item: “using a scale from 0 to 10 where 0 means ‘the worst possible situation’ and 10 means ‘the best possible situation,’ how would you rate the sexual aspect of your life these days?” *Sexual frequency* is evaluated with the question “over the past six months, on average, how often have you had sex with someone?” Response categories are never/not at all; less than once a month; once a month; two or three times a month; once a week; or at least twice a week. *Number of sexual partners* is assessed with the question: “over the past year, how many sex partners have you had?” with response categories ranging from “none” to “six or more.” Responses are highly skewed, with 12.7 percent of men reporting none, 76 percent reporting one, and just 11.6 percent reporting two or more partners.² We recode the measure into the dichotomy of had (vs. did not have) at least one sex partner in the past year. Sexual outcomes were obtained in the self-administered questionnaire.

Independent Variables. We include two measures of body size: adult BMI and WHR. *BMI* is calculated based on the formula: weight (in kilograms) divided by height (in meters) squared. We recoded continuous BMI scores into six categories, based on cutpoints defined by National Heart, Lung, and Blood Institute (NHLBI 1998) guidelines: *underweight* (<18.5), *normal* (18.5–24.9), *overweight* (25–29.9), *obese I* (30–34.9), *obese II* (35–39.9), and *obese III* (>40). We combine the latter two, due

to the small number of cases in the obese III category (2.6 percent of sample). We also include a dichotomous indicator for persons who do not report their weight; persons who are particularly distressed by or mistreated due to their body weight may not report it in surveys (Carr and Friedman 2005). Self-reported weights are highly correlated with scale weights (Palta et al. 1982). Very overweight persons tend to underestimate their weight, but the bias introduced by using self-report data is considered “inconsequential” (Palta et al. 1982, 230), especially when classifying persons into the broad NHLBI categories. Persons classified as “normal” are the reference category; the label “normal” is not a subjective evaluation, but rather, the descriptive label used by NHLBI.

BMI has been critiqued on the grounds that it does not capture the distribution of one’s body weight. Central or abdominal adiposity (i.e., WHR) is associated with risk of heart disease and diabetes (Mokdad et al. 2003), both of which compromise sexual functioning. Empirical studies show that high abdominal adiposity is rated as less physically attractive than a narrow midsection (Streeter and McBurney 2003); this perception could affect both men’s self-image or their attractiveness to some potential partners. Thus, all models control for WHR; the correlation between BMI and WHR in the MIDUS is modest ($r = .42$), a correlation which is slightly lower than that found in other national samples (Ford, Mokdad, and Giles 2003). MIDUS participants received a tape measure with the self-administered questionnaire and reported their waist and hip circumference in inches. Self-reported measures of waist and hip are valid and accurate measures; prior studies found correlations of .80 and .74 for men’s self-reported versus investigator-measured measures of waist and hip, respectively (Spencer, Roddam, and Key 2004).

Health Characteristics. *Current physical health* is evaluated with the question: “in general, would you say your physical health is excellent, very good, good, fair, or poor?” Responses of fair/poor are coded as 1, and good or better health is the reference category. This is a widely used and valid measure; it is a more accurate predictor of mortality than physician-based assessments (Ferraro and Farmer 1999). *Functional limitations* are measured with the instrumental activities of daily living scale (IADL). Respondents are asked: “how much does your health limit you in doing activities such as walking, lifting, and engaging in vigorous exercise?” Response categories range from 1 to 4 and include: *not at all*, *a little*, *some*, and *a lot*. Scale scores reflect one’s average response across items, where higher scores indicate greater disability. The IADL is commonly used to evaluate functional limitations in community-dwelling populations (Lawton and Brody 1969).

Negative affect ($\alpha = .87$) refers to the frequency with which one experienced six depressive symptoms in the past thirty days such as “felt so sad nothing could cheer you up.” Response categories include *none*, *a little*, *some*, *most*, or *all of the time*. Responses are averaged and higher scores reflect more negative affect. This scale was developed for the MIDUS; scale items were drawn from well-known, valid instruments tapping negative affect (Mroczek 2004).

High blood pressure and *diabetes* are assessed via an illness checklist, for which respondents indicate conditions they have experienced in the twelve months prior to interview. *Shortness of breath* is a dichotomous variable set equal to 1 if respondents answered “yes” to any of the following three conditions: “Do you get short of breath when (a) walking with other people your age on level ground; (b) walking at your own pace on level ground, or (c) washing or dressing.” *Medication use for high blood pressure* and *depression* are assessed with a medication checklist; respondents indicate conditions for which they have taken prescription medication in the thirty days prior to interview. Dichotomous measures are set equal to 1 if a participant is taking a particular medication.

Demographic characteristics. Demographic characteristics include *age* in years (ranging from twenty-five to seventy-four), *race* (1 = *black*; 0 = *white*), *relationship status* (1 = *currently married or cohabiting*; 0 = *not*), and *sexual orientation* (1 = *gay or bisexual*; 0 = *heterosexual*). *Family size* refers to the number of children one has. *Sexual orientation* is assessed with the question “how would you describe your sexual orientation?” We constructed a dummy variable indicating those who identify as homosexual or bisexual; we combined these two categories because of the very small proportion of cases in either category (1.7 and 1.5 percent, respectively).³

Socioeconomic status characteristics. We consider *educational attainment*, *employment status*, and *occupational status*. Educational attainment refers to years of completed schooling: less than twelve, twelve (reference category), thirteen to fifteen, and sixteen or more years. *Employment status* is a dichotomous variable indicating that a person was employed at the time of interview. *Occupational status* is a categorical variable indicating whether one works in an upper white-collar job (i.e., professional, executive, or managerial) versus a category including lower white-collar (i.e., sales and clerical) and blue-collar (e.g., crafts, operatives, labor, and farm) workers. We use occupation rather than income as an indicator of one’s financial standing, because income fluctuates over the life course—especially in response to one’s health (Ettner 1996).

Early body weight. Respondents are asked “how much did you weigh when you were 21 years old?” BMI scores were recoded into a dummy variable indicating whether one’s body weight at age twenty-one was overweight or higher versus normal weight or under (reference category). A BMI of 25 is the cutpoint because the Centers for Disease Control (CDC 2000) have determined that children and adolescents with a BMI of roughly 25 are “at risk for overweight.”

Interpersonal mistreatment. The MIDUS measures one’s perceived experiences of interpersonal and institutional discrimination and one’s attribution for the perceived mistreatment. Respondents indicate the frequency with which they experienced eleven types of institutional discrimination (e.g., not hired for a job) and nine types of interpersonal mistreatment (e.g., treated with less courtesy than other people). Persons who report having experienced any of these types of mistreatment are then

asked “what was the main reason for the discrimination you experienced?” and they may indicate all reasons that apply. We construct categorical variables indicating whether one was mistreated on the grounds of weight or physical appearance, mistreated for any other reason, or reported no mistreatment (reference category).

Findings

Bivariate Analysis

Table 1 presents descriptive statistics (i.e., means and proportions) by BMI category. The BMI levels reported in the MIDUS are comparable with national estimates showing that one-third of men in the United States are obese and two-thirds are overweight or obese (CDC 2010, table 72). Obese II/III men report the lowest levels of satisfaction, sexual frequency, and number of partners; their sexual satisfaction scores are .7 points lower than their normal weight peers (5.4 vs. 6.1). They also report significantly less frequent sex in the past six months relative to their normal weight peers and are more likely to have had zero sex partners in the past year. Nearly one-quarter of obese II/III men, yet roughly 10–12 percent of slimmer men, had zero sex partners in the past year.

Higher BMI men also report significantly poorer health outcomes. The proportion of men reporting fair/poor health, high blood pressure diagnosis and medication use, diabetes diagnosis, and shortness of breath increases as BMI surpasses “normal.” Functional limitations also increase significantly across weight categories. The magnitude of these differences is large; one-third of obese II/III men have high blood pressure and one-fifth report diabetes and severe shortness of breath—rates more than three times higher than normal weight men. The data also reveal a strong association between youthful and adult weight; the proportion reporting that they were overweight or obese at age twenty-one increases steeply across adult BMI categories. Among obese II/III men, 80 percent report that they were overweight or obese at age twenty-one, compared to just 5 percent who are currently “normal” weight. BMI is also strongly associated with perceptions that one has been mistreated on the grounds of weight. One-quarter of obese II/III men report weight-related discrimination; this prevalence is more than twice that of all other BMI categories.

Multivariate Analyses

Our primary goal is to evaluate the extent to which the relationship between BMI and sexual outcomes is accounted for (or suppressed) by demographic, health, socioeconomic, stigmatization, and early weight characteristics. Table 2 summarizes a series of multivariate models, where each block of potential explanatory variables is entered separately. Fully adjusted models are shown in Table 3 and reveal the extent to which body weight relates to sexual outcomes when all potential control and pathway variables are adjusted.

Table 1. Means (and Standard Deviations) for All Variables Used in Analysis, by Body Mass Index (BMI), Men of Midlife in the United States (MIDUS), 1995.

	Total Sample	Underweight ^a (<18.5)	Normal ^b ($18.5-24.9$)	Overweight ^c ($25-29.9$)	Obese ^d ($30-34.9$)	Obese II/III ^e ($35+$)	Did Not Report Weight ^f	F-statistic ($df = 5$)	Significant Subgroup Differences
Dependent variables									
Current sexual satisfaction (range: 0 = worst possible to 10 = best possible)	5.89 (2.89)	6.00 (2.74)	6.10 (2.87)	5.83 (2.88)	5.97 (2.91)	5.41 (3.07)	5.59 (2.91)	1.18	
Sexual frequency, past six months (range: 0 = never to 5 = twice/week or more)	4.03 (1.77)	3.50 (1.99)	4.15 (1.78)	4.01 (1.76)	4.12 (1.66)	3.54 (1.95)	3.68 (1.95)	2.61*	be
Number of sexual partners, past year	1.13 (.98)	.79 (.58)	1.24 (1.13)	1.13 (.96)	1.09 (.84)	0.93 (.90)	1.02 (.93)	2.36*	
0 sexual partners, past year	.12	.29	.12	.12	.10	.23	.19	3.43**	be, ce, de
One or more sexual partners, past year	.86	.71	.87	.87	.89	.77	.79	2.31*	
Central adiposity									
Waist-hip ratio, current	.95 (.07)	.91 (.06)	.92 (.05)	.94 (.06)	.98 (.07)	1.01 (.08)	.94 (.05)	61.90***	ad, ae, bc, bd, be, cd, ce, de, ef
Health characteristics									
Self-rated physical health (1 = fair/poor)	.14	.21	.12	.11	.19	.27	.18	5.84***	bd, be, cd, ce
Functional limitations (range: 1 = not at all to 4 = a lot)	1.48 (.71)	1.87 (1.09)	1.33 (.60)	1.44 (.68)	1.65 (.78)	1.89 (.86)	1.55 (.82)	15.3***	bd, be, cd, ce, de
Negative affect (range: 1 = none to 5 = all the time)	1.49 (.57)	1.46 (.64)	1.54 (.59)	1.46 (.54)	1.46 (.55)	1.54 (.69)	1.63 (.75)	1.99†	
High blood pressure diagnosis, past year	.20	.07	.12	.19	.30	.33	.17	9.62***	bc, bd, be, cd, ce
Diabetes diagnosis or treatment, past year	.06	.00	.02	.05	.08	.20	.06	9.57***	ae, bd, be, ce, de, ef
Shortness of breath, severe	.07	.21	.06	.06	.07	.20	.13	6.69***	be, ce, de

(continued)

Table 1. (continued)

	Total Sample	Underweight ^a (<18.5)	Normal ^b (18.5–24.9)	Overweight ^c (25–29.9)	Obese I ^d (30–34.9)	Obese II/III ^e (35+)	Did Not Report Weight ^f	F-statistic (df = 5)	Significant Subgroup Differences
High blood pressure medication, past month	.17	.07	.11	.17	.26	.28	.11	7.68***	bc, bd, be, cd
Depression medication, past month	.064	.00	.069	.061	.066	.076	.037	.433	
Demographic characteristics									
Race (1 = black)	.06	.07	.05	.05	.05	.09	.11	1.13	
Age (in years)	47.32 (13.22)	45.36 (14.48)	45.27 (13.97)	47.89 (13.34)	49.28 (11.84)	47.76 (11.75)	44.69 (12.18)	4.21**	bc, bd
Gay/bisexual identity	.03	.14	.05	.03	.02	.02	.04	3.02*	
Married/cohabitating	.76 (.43)	.71 (.47)	.74 (.44)	.76 (.43)	.77 (.42)	.75 (.44)	.76 (.43)	.27	
Number of children	2.22 (1.78)	2.14 (1.66)	1.95 (1.84)	2.22 (1.67)	2.47 (1.78)	2.73 (2.20)	2.26 (1.72)	4.80***	bd, be
Socioeconomic status characteristics									
<12 years of education	.08	.00	.09	.07	.11	.08	.06	1.79	
13–15 years of education	.27	.57	.27	.25	.28	.36	.30	2.47*	
16+ years of education	.39	.21	.45	.41	.28	.27	.43	6.11***	bd, be, cd
Currently employed	.76	.71	.74	.76	.77	.75	.76	.27	
Upper white-collar	.35	.29	.37	.35	.33	.28	.37	.65	
Early life body weight	.28	.00	.05	.27	.56	.80	.00	96.5***	ad, ae, bc, bd, be, cd, ce, cf, de, df, ef
Overweight/obese at age 21									
Perceived mistreatment									
Weight/appearance discrimination, lifetime	.10	.07	.10	.08	.11	.25	.13	5.42***	be, ce, de
Other discrimination, lifetime	.34	.43	.35	.32	.35	.36	.39	.68	
N	1,670	14	434	787	289	92	54		
%	100	.8	26.0	47.1	17.3	5.5	3.2		

Note: Post hoc comparisons were conducted using analysis of variance; significant ($p < .05$) subgroup differences are denoted as ab: underweight versus normal; ac: underweight versus overweight; ad: underweight versus obese I; ae: underweight versus obese II/III; af: underweight versus weight missing; bc: normal versus overweight; bd: normal versus obese I; be: normal versus obese II/III; bf: normal versus weight missing; cd: overweight versus obese I; ce: overweight versus obese II; cf: overweight versus weight missing; de: obese I versus obese II/III; df: obese I versus weight missing; ef: obese II/III versus weight missing. Asterisks denote significance level of F-statistic, where † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Summary Table: Adjusted and Unadjusted Effects of Obese III/III BMI on Sexual Outcomes.

	Sexual Satisfaction (Ordinary Least Squares Regression)		Sexual Frequency (Ordinal Regression)		Had at Least One Sex Partner, Past Year (Logistic Regression)	
	Estimate	Adjusted R ²	Estimate	χ^2 ; df	Odds Ratio	χ^2 ; df
Baseline model: unadjusted effects	-.695* (.334)	.001	-.610*** (-1.01, -.21)	11.8; 5	.522* (.298, .913)	10.11; 5
Model 1: BL + waist-hip ratio	-.418 (.364)	.005	-.390† (-.82, .042)	23.9; 6	.598 (.322, 1.11)	8.93; 6
Model 2: 1 + demographic variables	-.757* (.344)	.123	-.788** (-1.24, -.34)	333.1; 11	.390** (.190, .802)	231.03; 11
Model 3: 2 + socioeconomic status variables	-.767* (.345)	.121	-.791** (-1.24, -.34)	338.78; 16	.386* (.186, .804)	242.39; 16
Model 4: 2 + health characteristics	-.594† (.342)	.171	-.710** (-1.17, -.25)	381.7; 19	.416* (.194, .890)	255.59; 19
Model 5: 2 + BMI at age 21	-.953* (.372)	.124	-.952*** (-1.14, -.47)	336.1; 12	.266*** (.118, .575)	236.97; 12
Model 6: 2 + perceived mistreatment	-.681* (.345)	.125	-.768** (-1.23, -.38)	335.1; 13	.399* (.193, .822)	232.33; 13
Model 7: 2 + socioeconomic status, health, BMI at age 21 and perceived mistreatment	-.749* (.371)	.172	-.885** (-1.39, -.38)	338.9; 27	.286** (.123, .665)	269.87; 27

Notes: BL = baseline; BMI = body mass index. Ordinary least squares (OLS) regression coefficients (and standard errors), ordinal regression coefficients, and odds ratios (omitted category = no partner) are presented. Confidence intervals (95 percent) are presented for ordinal and logistic regression models. Adjusted R² values are shown for OLS models and degrees of freedom and χ^2 test results for categorical outcomes. Results are shown for the obese III/III category only, because the remaining BMI categories were not statistically significant beyond the baseline model. Demographic variables include age, sex, race, partner status, and sexual orientation. Socioeconomic status variables include education, employment status, and occupational status. Health characteristics include self-rated health, depressed mood, functional limitations, diabetes diagnosis, high blood pressure diagnosis, shortness of breath, depression medication use, and high blood pressure medication use. BMI at 21 is a dichotomous indicator if one was overweight or obese (vs. normal or underweight) at age twenty-one. Perceived mistreatment includes dichotomous indicators of ever experience weight-related discrimination, ever experience discrimination for any other reason, and never discriminated against (omitted category).

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Fully Adjusted Regression Models Predicting Sexual Outcomes among Men in the MIDUS 1995, by Body Mass Index.

	Current Sexual Satisfaction	Sexual Frequency, Past Six Months (CI: 95 percent)	I + Past Year Sexual Partners (CI: 95 percent)
Overweight (25–29.9)	.229 (.783)	-.603 (-.165, .44)	.502 (.111, 2.27)
Obese I (30–34.9)	-.359* (.177)	-.255* (-.492, -.017)	.858 (.562, 1.31)
Obese II/III (35+)	-.332 (.250)	-.189 (-.525, .148)	.765 (.420, 1.39)
Did not report weight	-.749* (.371)	-.885*** (-1.38, -.384)	.286** (.123, .665)
Central adiposity	-.828 (.722)	-.128** (-.226, -.0305)	.799 (.149, 4.30)
Waist-hip ratio	.366 (1.20)	.145 (-1.47, 1.76)	2.502 (.138, 45.43)
Health characteristics			
Self-rated physical health (1 = fair/poor)	-.557* (.233)	-.10 (-.411, .210)	.923 (.565, 1.51)
Functional limitations (range: 1 = not at all to 4 = a lot)	-.393** (.130)	-.233** (-.408, -.057)	.838 (.640, 1.09)
Negative affect (range: 1 = none to 5 = all the time)	-.797*** (.142)	-.393*** (-.584, -.201)	.668** (.490, .909)
High blood pressure diagnosis or treatment, past year	-.414 (.293)	-.398* (-.795, -.767)	.700 (.374, 1.31)
Diabetes diagnosis or treatment, past year	-.328 (.305)	-.115 (-.526, .296)	1.24 (.615, 2.51)
Shortness of breath, severe	0.38 (.330)	-.033 (-.475, .410)	.778 (.395, 1.53)
High blood pressure medication, current	.206 (.308)	.285 (-.135, .704)	1.162 (.604, 2.24)
Depression medication, current	.043 (.308)	.116 (-.298, .530)	.812 (.433, 1.52)
Demographic characteristics			
Race (1 = black)	.730* (.341)	.873*** (.387, 1.36)	.646 (.291, 1.44)
Age (in years)	-.048*** (.007)	-.056*** (-.066, -.047)	.941*** (.925, .957)
Gay/bisexual identity	-.136 (.408)	-.216 (-.764, .333)	1.234 (.532, 2.86)
Married/cohabitating	1.626*** (.172)	1.079*** (.844, 1.314)	5.636*** (3.93, 8.09)
Number of children	.157*** (.045)	.190*** (.128, .252)	1.325*** (.118, 1.48)
Socioeconomic status characteristics			
<12 years of education	.297 (.286)	170 (-.219, .559)	.593 (.314, 1.12)
13–15 years of education	-.159 (.192)	0.76 (-.182, .334)	.699 (.441, 1.11)

(continued)

Table 3. (continued)

	Current Sexual Satisfaction	Sexual Frequency, Past Six Months (CI: 95 percent)	I + Past Year Sexual Partners (CI: 95 percent)
16+ years of education	-.328 (.201)	-.002 (-.270, .266)	.988 (.604, 1.62)
Currently employed	-.119 (.190)	.178 (-.076, .433)	1.101 (.721, 1.68)
Upper white-collar job	.169 (.176)	-.007 (-.243, .228)	1.050 (.676, 1.63)
Early life body weight			
Overweight/obese at age 21	.285 (.175)	2.18† (-.017, .452)	1.642* (1.05, 2.57)
Perceived mistreatment			
Weight/appearance discrimination, lifetime	-.339 (.235)	-.013 (-.331, .304)	.976 (.555, 1.71)
Other discrimination, lifetime	.036 (.154)	-.039 (-.246, .168)	1.382† (.943, 2.03)
Adjusted R ²	.172		
χ^2 , df		387.979; 27	269.867; 27

Notes: CI = confidence interval; MIDUS = Midlife Development in the United States. Unstandardized ordinary least squares (OLS) regression coefficients (and standard errors) are presented for sexual satisfaction, ordinal regression (β) coefficients for sexual frequency, and odds ratios (exponentiated β s) for sexual partner are presented for the multinomial logistic regression model. Normal weight is the reference group in all models. Adjusted R² values are presented for OLS regression models and Nagelkerke pseudo R² values for the ordinal and logistic models. All models are adjusted for sex, race, age, marital status, parental status, education, employment status, occupational status, negative affect, self-rated health, IADLs, and an indicator that one was overweight/obese at age 21. †p < .10. *p < .05. **p < .01. ***p < .001.

Sexual Satisfaction. Ordinary least squares (OLS) regression models reveal that obese II/III men report significantly lower levels of sexual satisfaction than normal weight men; yet this disadvantage attenuates considerably when potential explanatory factors—especially health—are controlled. In the unadjusted baseline model, obese II/III men report sexual satisfaction scores that are .7 points lower than their normal weight peers; yet this effect is no longer statistically significant at the $p < .05$ level when health characteristics are controlled (in model 4). Experiences of perceived discrimination account for a slight attenuation in the effect of extreme obesity; after perceived mistreatment is controlled in model 6, the effect of obese II/III status declines by roughly 12 percent (from $b = -.77$ to $-.68$). Health plays the greatest explanatory role; however, 17 percent of the variance in sexual satisfaction is explained when health characteristics are controlled, yet just 12 percent is explained by other blocks of potential explanatory measures.

We also find a powerful suppression effect; the deleterious effect of obese II/III increases (from $-.76$ to $-.95$) when body weight at age twenty-one is controlled (in model 5). A suppression effect occurs when two independent variables have opposite relationships with the dependent variable, though a positive relationship with each other (MacKinnon, Krull, and Lockwood 2000). Being overweight or obese at age twenty-one is positively correlated with being obese II/III in adulthood; yet it also has a *positive* independent effect on adult sexual satisfaction.⁴ That is, being a large young man is associated with greater sexual satisfaction in adulthood, whereas being an obese II/III adult man compromises satisfaction. In the fully adjusted model (column 1, Table 3), obese II/III men report sexual satisfaction scores that are .75 points lower than normal weight men ($p < .10$).

Sexual satisfaction is also associated directly with health. Persons with fair or poor self-rated physical health report significantly lower satisfaction than those in better health ($b = -.56$, $p < .05$). Negative affect and functional limitation also are significantly associated with satisfaction. Specific illnesses, such as diabetes and high blood pressure, do not have statistically significant effects on satisfaction, perhaps due to their modest correlations with general indicators such as self-rated health. Consistent with research on the demographic predictors of sexual satisfaction, we find that older men report significantly lower satisfaction, while married and cohabiting men report significantly higher satisfaction (Laumann et al. 1994).

Sexual Frequency. Obese II/III men report significantly less frequent sex than normal weight men. As with sexual satisfaction, the disadvantage reported by highly obese men is partly attributable to their compromised physical health. The effect of obese II/III (net of demographic characteristics) decreases by almost 10 percent, from .79 to .71 when health is controlled, yet this effect remains sizable and statistically significant. As with satisfaction, the effect of obese II/III is suppressed by youthful body weight; the disadvantage associated with being obese II/III increases from .71 to .95 when youthful body weight is controlled (see model 5). Although being overweight or obese at twenty-one is strongly associated with being obese II/III in

adulthood, it also has a positive and marginally significant effect on adult sexual frequency ($b = .22, p < .10$, Table 3).

The fully adjusted model in Table 3 (column 2) shows that even when all potential explanatory factors are controlled, obese II/III men report significantly less frequent sex than normal weight men ($b = -.885, p < .001$). However, men who failed to report their weight have the least frequent sexual activity of all the BMI categories ($b = -1.28, p < .001$), suggesting that men who are ashamed of or displeased with their body have the least frequent sexual activity.

Sexual frequency, like satisfaction, is directly associated with physical and mental health. Those with more severe functional limitations and depressed affect, and men diagnosed with high blood pressure report significantly less frequent sex than their healthier counterparts. Few other covariates are associated with sexual frequency; black men report significantly more frequent sexual activity than white men ($b = -.873, p < .001$), and married or cohabiting men report more frequent sex than those not in coresidential relationships ($b = 1.08, p < .001$). Younger men, and men with a greater number of children, report more frequent sexual activity.

Sexual Partners. We estimated a binary logistic regression predicting whether a man had at least one sexual partner in the past year. The baseline (unadjusted) model in Table 2 shows that obese II/III men are roughly half as likely as normal weight men to have had a sex partner in the past year. After demographic and socioeconomic status characteristics are adjusted, the odds ratio is roughly .39. Interestingly, this effect is not accounted for by larger men's compromised physical health; we see little attenuation of the obese II/III effect when health measures are controlled.

Once again, the disadvantage associated with being obese II/III increases when youthful weight is controlled (model 5). In other words, if all men in our sample had the same body weight at age twenty-one, then obese II/III men would have even more severely compromised sexual outcomes in adulthood, given the protective effects for adult sexual outcomes of having been a large adolescent. As Table 3 reveals, men who were overweight or obese at age twenty-one are 1.6 times as likely as men who were normal or underweight at age twenty-one to currently have a partner. The fully adjusted models in Table 3 show that obese II/III men are only 29 percent as likely as normal weight men to have had a sex partner in the past year. These results show persuasively the toll that severe obesity in adulthood takes on multiple aspects of men's sexual lives.

Very few of the demographic or psychosocial measures are associated with having a sexual partner in the past year. Only one aspect of health—depressed affect—is associated with having a partner, where higher levels of negative affect reduce the odds that a man has a sex partner. Married and cohabiting men are nearly six times as likely as men without a coresidential romantic partner to have had a sexual partner in the past year. Age is inversely related to the odds of having a current partner. Although gay and bisexual men do not differ significantly from straight men in the odds of having a current partner, preliminary analyses reveal that they report a

significantly larger number of partners. However, sample size precludes us from exploring the complex ways that sexual orientation and BMI may interact to shape sexual experiences.

Discussion

Sexuality is a central component of hegemonic masculinity (Kimmel 1996) and an essential aspect of well-being; satisfying sexual relations are associated with emotional, physical, and interpersonal well-being (Laumann et al. 1994). Although mounting research shows how demographic and interpersonal factors affect sexual health and functioning (Laumann et al. 1994), our analysis is the first population-based study of US men to systematically investigate *whether* and *how* BMI affects multiple indicators of men's sexual lives.

Overall, we find that obese II/III men have lower levels of sexual satisfaction, less frequent sex, and a greater likelihood of having no sexual partner in the past year, relative to "normal" weight men. However, the magnitude of effects, and the extent to which these disparities are explained away (or suppressed) by other personal characteristics varies across outcomes. We will focus here on three key findings and discuss their implications for the study of contemporary masculinity. First, physical and mental health account for some of the disadvantage experienced by obese II/III men in the domains of sexual satisfaction and frequency but not number of partners. Second, experiences of perceived discrimination and stigmatization partially account for obese II/III men's lower levels of sexual satisfaction but not the two behavioral outcomes. Third, the harmful effect of obese II/III status is suppressed by weight at age twenty-one for all three outcomes; obese II/III men are more likely than their thinner peers to have been overweight in their youth, yet this attribute also is associated with more satisfying sexual outcomes in adulthood.

Obesity, Physical Health, and Men's Sexual Lives

Obese II/III men report significantly lower sexual satisfaction than their normal weight counterparts, and this disparity is largely accounted for by physical health indicators. This finding is consistent with research documenting obese men's higher propensity for erectile dysfunction (Larsen, Wagner, and Heitmann 2007), infertility (MacDonald et al. 2010), reduced testosterone levels (Isidori et al. 2005), and elevated risk of chronic conditions like cardiovascular disease and diabetes (Bhasin et al. 2007; Kip et al. 2004). Erectile dysfunction, reduced testosterone, and infertility can impede the quality of men's sexual encounters and challenge men's perceptions of themselves as masculine and sexually fit, which could dampen their sexual satisfaction.

Surprisingly, we found that health played only a minor role in attenuating the effect of obesity on sexual frequency and had no effect on having a sexual partner. We suspect the latter finding reflects the fact that study respondents may interpret the term sexual partner to mean a romantic partner with whom sex is a possibility

but not necessarily a frequent or regular occurrence. For example, some married or cohabitating men could have indicated that they “have a sexual partner,” although they may rarely or never have sex with this person. Recent research based on national samples estimates that 15–20 percent of marriages are “sexless,” meaning the couple has not had sexual intercourse in the past year (e.g., Donnelly and Burgess 2008). Poor physical health may affect one’s sexual frequency and satisfaction; yet it may not necessarily affect whether or not one has a person whom they consider a “sexual partner.”

Physical and emotional health problems also take a direct and significant toll on men’s sexual satisfaction and frequency. Issues with sexual dysfunction can impede both physical attempts at sexual activity and men’s confidence when seeking sexual encounters. Emotional health, measured here as negative affect, was strongly and inversely associated with all three outcomes. This association could reflect several processes, including poor body image, and anxiety which provokes avoidance of sexual encounters. Depressed persons may be less desirable romantic and/or sexual partners, and the negative emotional climate created by a depressed partner could strain a relationship (Whisman, Uebelacker, and Weinstock 2004), leading to lower frequency and quality of sexual relations.

Obesity Stigma and Sexual Satisfaction

We initially posited that obesity increases an individual’s risk of stigmatization, teasing, and discriminatory treatment—experiences which may compromise sexual satisfaction and activity. Our results show that perceived mistreatment accounts for roughly 10 percent of the effect of obese II/III status on sexual satisfaction, although neither of the two behavioral outcomes are affected in this way. These findings suggest that perceived interpersonal mistreatment may affect one’s confidence and ability to negotiate enjoyable sexual activity. Some studies demonstrate that persons in committed relationships who are uncomfortable with their bodies have less power in the romantic dyad and are less able to negotiate the sexual activities they desire (e.g., Moskowitz and Seal 2010).

Our results also provide suggestive evidence that the obesity stigma may negatively affect men’s sexual satisfaction and behaviors. Men who did not report their weight in MIDUS had even *lower* sexual frequency than obese II/III men; prior research suggests that men who fail to report their body weight in surveys also report elevated levels of weight-related discrimination (Carr and Friedman 2005). Men who feel self-conscious about their bodies to the point that they do not report their weight in surveys may also avoid opportunities for sexual encounters (e.g., Kolotkin et al. 2006).

The Long-term Effects of Early Body Weight

One of the most surprising results is that youthful body weight suppressed the already strong association between adult obesity and men’s sexual outcomes. This

suppression effect occurred because obese II/III men have less satisfying sexual outcomes than slimmer men; yet they also were more likely to be overweight in adolescence—an attribute associated with more *positive* sexual outcomes in adulthood. We offer two potential explanations for this counterintuitive finding. First, youthful body weight may be indicative of one's "natural" size or "set point." Although lean muscle mass declines with age for most men, anthropometric studies suggest that men with higher body weight during the transition to adulthood also had more lean muscle mass and larger, denser bones than their slimmer peers (Leonard et al. 2004). Men who have been large since their youth may adapt easily to their "natural" body size, whereas other men may struggle to adjust their sexual repertoire to accommodate a large body to which they are not accustomed.

Second, age twenty-one represents a formative stage of social development for young men, and men who were larger in their youth might have developed a comfortable or "proud" identity which encompasses their larger size, given the perceived linkages among size, power, and masculinity (Monaghan and Hardey 2009). This sense of confidence in one's sexual prowess and power may have long-term protective consequences for their sexual satisfaction and activity (e.g., Taga, Markey, and Friedman 2006). It is important to note, however, that 85 percent of men classified as overweight or above at age twenty-one had BMI levels that were "overweight," and only a handful were obese II/III at that time; this may account for the largely positive effect of youthful high weight on sexual outcomes. Despite the advantages associated with being a large young man, when youthful weight is held constant, highly obese (II/III) adult men evidence poorer sexual satisfaction, perhaps reflecting the stigma and physical health problems that accompany adult obesity.

Limitations and Future Directions

We have found that the social, interpersonal, and physical costs of adult obesity extend to a new and previously unexplored set of outcomes: sexual satisfaction and sexual behavior. However, our study has its limitations. First, we focused on the main effects of BMI and did not consider heterogeneity within BMI categories. In supplementary analyses, we evaluated whether the effects of BMI were moderated by race and early life weight. We found no statistically significant interactions; however, this may reflect the small cell sizes. We look forward to future studies that consider a broader range of sources of within-BMI category heterogeneity (e.g., sexual orientation, social class, and age) with respect to sexual outcomes. For example, a large literature documents that conceptualizations of "masculinity" vary by race and sexual orientation (e.g., Connell 1995); delving more fully into the ways these identities intersect will reveal important insights into the diverse ways that masculinity expectations shape men's well-being.

Second, we used only self-reported measures of the biological and physiological pathways through which high BMI may impair sexual performance. The

MIDUS data also have biomarker indicators of blood pressure and other physiological factors for a subsample of respondents; in future analyses, we will investigate the extent to which the effects documented here are attributable to such factors. Third, we did not consider other health behaviors, such as smoking, exercise, and alcohol use that may confound or suppress the association between BMI and sexuality. Some studies show that smoking is inversely related to BMI (Klesges, Klesges, and Meyers 1999), yet positively associated with problematic sexual health outcomes including impotence (Kmietowicz 2004). Future studies should explore how health behaviors contribute to the association between BMI and sexual outcomes.

Fourth, the MIDUS questions assessing sexual frequency, number of partners, and satisfaction did not specify a particular sexual activity; participants could interpret the meaning of the phrase “have sex” however they liked. This nonspecificity is an advantage because it allows us to understand how BMI affects sexual activities of greatest personal relevance for participants. For instance, men whose health or weight prevents them from having intercourse may still answer the questions in reference to those sexual activities in which they participate. However, this nonspecificity is also a limitation because we are interested in understanding BMI effects on specific sexual behaviors. Prior research suggests that most US adults include penile–vaginal intercourse in their definition of “have sex,” although there are age, cohort, sexual orientation, and socioeconomic status differences in the extent to which people also include oral, anal, or manual–genital stimulation in their definitions of “sex” (Sanders et al. 2010). Future studies should include a general measure like ours, as well as a range of partnered and solo sexual activities when assessing sexual satisfaction and activity, to identify the precise ways that BMI affects men’s sexual lives.

Finally, our study is based on cross-sectional data thus we cannot definitively ascertain causal ordering; however, most epidemiological studies document that high body weight is a cause, not a consequence of ill health; underweight is a more plausible consequence of ill health (e.g., Imai et al. 2008; Stevens, McClain, and Truesdale 2008). Despite these limitations, we hope our findings encourage other researchers to explore more fully how the stigma of overweight and obesity affects the sexual experiences of men in the United States.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The Midlife Development in the United States (MIDUS) was supported by a grant from the National Institute on Aging (P01-AG020166; Carol D. Ryff, Principal Investigator).

Notes

1. A second wave of MIDUS data also was collected in 2004. We use the earlier (1995) wave in order to (a) minimize the duration of the recall period between time of interview and when the respondent was age twenty-one and (b) include in our analysis, a sizable proportion of young adults ages twenty-five to forty-four, a time when body weight may be particularly important to one's ability to pursue and maintain satisfying sexual relations. The youngest sample members in 2004 are age thirty-five.
2. In preliminary analyses, we also considered total number of partners, and whether one had zero, one, or at least two partners. Models with the dichotomous outcome of "any partners" had the best model fit, so we focus our analyses on that outcome (all models available upon request).
3. These estimates likely undercount gay and bisexual identities. Although other studies vary in their measures of sexual orientation, prior work shows that 5–8 percent of men and women in the United States report homosexual behavior and/or desire (Laumann et al. 1994; Smith 2003).
4. Supplementary analyses show that men who were overweight or obese at age twenty-one report higher adult sexual satisfaction, and more frequent sexual activity than men who were normal weight at age twenty-one. They are also less likely to have zero (vs. 1+) sex partners in the year prior to interview.

References

- Ackard, D. M., A. Kearney-Cooke, and C. B. Peterson. 2000. "Effect of Body Image and Self-Image on Women's Sexual Behaviors." *International Journal of Eating Disorders* 28: 422-29.
- Adolfsson, B., S. Elofsson, S. Rössner, and A. Undén. 2004. "Are Sexual Dissatisfaction and Sexual Abuse Associated with Obesity? A Population-Based Study." *Obesity Research* 12:1702-1709.
- Averett, S., and S. Korenman. 1996. "The Economic Reality of the Beauty Myth." *Journal of Human Resources* 31:304-30.
- Bajos, N., K. Wellings, C. Laborde, and C. Moreau. 2010. "Sexuality and Obesity, A Gender Perspective: Results from a French National Random Probability Survey of Sexual Behaviours." *British Medical Journal* 340:c2573.
- Baum, C. L. and W. F. Ford. 2004. "The Wage Effects of Obesity: A Longitudinal Study." *Health Economics* 13:885-99.
- Bell, K. and D. McNaughton. 2007. "Feminism and the Invisible Fat Man." *Body & Society* 13:107-31.
- Bhasin, S., P. Enzlin, A. Coviello, and R. Basson. 2007. "Sexual Dysfunction in Men and Women with Endocrine Disorders." *The Lancet* 369:597-611.
- Bodenmann, G., T. Ledermann, and T. N. Bradbury. 2007. "Stress, Sex, and Satisfaction in Marriage." *Personal Relationships* 14:407–25.
- Boyes, A. D. and J. D. Latner. 2009. "Weight Stigma in Existing Romantic Relationships." *Journal of Sex & Marital Therapy* 35:282-93.

- Braziel, J. E. 2001. "Deterritorializing the Fat Female Body." In *Bodies Out of Bounds: Fatness and Transgression*, edited by J. E. Braziel and K. LeBesco, 231-54. Berkeley: University of California Press.
- Buss, D. M. 2003. *The Evolution of Desire: Strategies of Human Mating*. Rev. ed. New York: Basic Books.
- Carmalt, J. H., J. Cawley, K. Joyner, and J. Sobal. 2008. "Body Weight and Matching with a Physically Attractive Romantic Partner." *Journal of Marriage and Family* 70:1287-96.
- Carr, D. and M. A. Friedman. 2005. "Is Obesity Stigmatizing? Body Weight, Perceived Discrimination and Psychological Well-Being in the United States." *Journal of Health & Social Behavior* 46:244-59.
- Carr, D., M. A. Friedman, and K. Jaffe, 2007. "Understanding the Relationship between Obesity and Positive and Negative Affect: The Role of Psychosocial Mechanisms." *Body Image* 4:165-77.
- Cawley, J., K. Joyner, and J. Sobal. 2006. "Size Matters: The Influence of Adolescent's Weight and Height on Dating and Sex." *Rationality and Society* 18:67-94.
- CDC (Centers for Disease Control and Prevention). 2000. "CDC Growth Charts for the United States: Methods and Development." Series Report 11, No. 246, Washington, DC: Centers for Disease Control and Prevention.
- CDC (Centers for Disease Control and Prevention). 2010. *Health, United States, 2009: With Special Feature on Medical Technology*. Washington, DC: Centers for Disease Control and Prevention. Accessed January 4, 2011. <http://www.cdc.gov/nchs/data/hus/09.pdf#072>.
- Chen, E. and M. Brown. 2005. "Obesity Stigma in Sexual Relationships." *Obesity Research* 13:1393-97.
- Connell, R. W. 1995. *Masculinities*. Berkeley: University of California Press.
- Donnelly, D. and E. Burgess. 2008. "The Decision to Remain in an Involuntarily Celibate Relationship." *Journal of Marriage and Family* 70:519-35.
- Ettner, S. L. 1996. "New Evidence on the Relationship between Income and Health." *Journal of Health Economics* 15:67-86.
- Ferraro, K. F. and M. M. Farmer. 1999. "Utility of Health Data from Social Surveys: Is there a Gold Standard for Measuring Morbidity?" *American Sociological Review* 64: 303-15.
- Ford, E., A. H. Mokdad, and W. H. Giles 2003. "Trends in Waist Circumference among U.S. adults." *Obesity Research* 11:1223-31.
- Frederick, D. A. and M. G. Haselton. 2007. "Why is Muscularity Sexy? Tests of the Fitness Indicator Hypothesis." *Personality and Social Psychology Bulletin* 33:1167-83.
- Imai, K., E. W. Gregg, Y. J. Chen, P. Zhang, N. de Rekeneire, and D. E. Williamson. 2008. "The Association of BMI with Functional Status and Self-rated Health in U.S. Adults." *Obesity* 16:402-408.
- Isidori, A. M., E. Giannetta, D. Gianfrilli, E. A. Greco, V. Bonifacio, A. Aversa, A. Isidori, A. Fabbri, and A. Lenzi. 2005. "Effects of Testosterone on Sexual Function in Men: Results of a Meta-Analysis." *Clinical Endocrinology* 63:381-94.

- Johnston, C. A. B., and T. G. Morrison. 2007. "The Presentation of Masculinity in Everyday Life: Contextual Variations in the Masculine Behavior of Young Irish Men." *Sex Roles* 57: 661-74.
- Karelis, A. D., D. H. St-Pierre, F. Conus, R. Rabasa-Lhoret, and E. T. Poehlman. 2004. "Metabolic and Body Composition Factors in Subgroups of Obesity: What Do We Know?" *Journal of Clinical Endocrinology & Metabolism* 89:2569-75.
- Keesey, R. A. and M. D. Hirvonen. 1997. "Body Weight Set Points: Determination and Adjustment." *The Journal of Nutrition* 27:1875S-83S.
- Kimmel, M. 1996. *Manhood in America: A Cultural History*. New York: Free Press.
- Kip, K. E., O. C. Marroquin, D. E. Kelley, B. D. Johnson, S. F. Kelsey, L. J. Shaw, W. J. Rogers, and S. E. Reis. 2004. "Clinical Importance of Obesity versus the Metabolic Syndrome in Cardiovascular Risk in Women: A Report from the Women's Ischemia Syndrome Evaluation (WISE) Study." *Circulation* 109:706-13.
- Klein, R. 2001. "Fat Beauty." In *Bodies out of Bounds: Fatness and Transgression*, edited by J. E. Braziel and K. LeBesco, 19-38. Berkeley: University of California Press.
- Klesges, R. C., L. M. Klesges, and A. W. Meyers. 1999. "Relationship of Smoking Status, Energy Balance, and Body Weight: Analysis of the Second National Health and Nutrition Examination Survey." *Journal of Consulting and Clinical Psychology* 59: 899-905.
- Kmietowicz, Z. 2004. "Smoking is Causing Impotence, Miscarriages, and Infertility." *British Medical Journal* 328:364.
- Kolotkin, R. L. M., Binks R. D. Crosby, T. Østbye, R. E. Gress, and T. D. Adams. 2006. "Obesity and Sexual Quality of Life." *Obesity* 14:472-79.
- Larsen, S. H., G. Wagner, and B. L. Heitmann. 2007. "Sexual Function and Obesity." *International Journal of Obesity* 31:1189-98.
- Laumann, E. O., J. Gagnon, R. Michael, and S. Michaels. 1994. *The Social Organization of Sexuality: Sexual Practices in the United States*. Chicago, IL: University of Chicago Press.
- Lawton, M. P., and E. M. Brody. 1969. "Assessment of Older People: Self-Maintaining and Instrumental Activities of Daily Living." *The Gerontologist* 9:179-86.
- Leonard, M. B., J. Shults, B. A. Wilson, A. M. Tershakovec, and B. S. Zemel. 2004. "Obesity during Childhood and Adolescence Augments Bone Mass and Bone Dimensions." *The Journal of Clinical Nutrition* 80:514-23.
- MacDonald, A. A., G. P. Herbison, M. Showell, and C. M. Farquhar. 2010. "The Impact of Body Mass Index on Semen Parameters and Reproductive Hormones in Human Males: A Systematic Review with Meta-Analysis." *Human Reproduction Update* 16:293-311.
- MacKinnon, D. P., J. L. Krull, and C. M. Lockwood. 2000. "Equivalence of the Mediation, Confounding and Suppression Effect." *Prevention Science* 1:173-81.
- Mokdad, A. H., B. A. Bowman, E. S. Ford, F. Vinicor, J. S. Marks, and J. P. Koplan. 2003. "The Continuing Epidemics of Obesity and Diabetes in the United States: 2001." *Journal of American Medical Association* 286:1195-200.
- Monaghan, L. F. and M. Hardey. 2009. "Bodily Sensibility: Vocabularies of the Discredited Male Body." *Critical Public Health* 19:341-62.

- Mosher, J. 2001. "Setting Free the Bears: Refiguring Fat Men on Television." In *Bodies out of Bounds: Fatness and Transgression*, edited by J. E. Braziel and K. LeBesco, 166-93. Berkeley: University of California Press.
- Moskowitz, D. A. and D. W. Seal. 2010. "Revisiting Obesity and Condom Use in Men Who Have Sex with Men." *Archives of Sexual Behavior* 39:761-65.
- Mroczek, D. K. 2004. "Positive and Negative Affect at Midlife." In *How Healthy Are We? A National Study of Well-Being at Midlife*, edited by O. G. Brim, C. D. Ryff, and R. C. Kessler, 205-26. Chicago, IL: University of Chicago Press.
- NHLBI (National Heart, Lung, and Blood Institute). 1998. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. Bethesda, MD: NHLBI.
- Palta, M., R. J. Prineas, R. Berman, and P. Hannan. 1982. "Comparison of Self-Reported and Measured Height and Weight." *American Journal of Epidemiology* 115:223-30.
- Puhl, R. M. and K. D. Brownell. 2001. "Bias, Discrimination, and Obesity." *Obesity Research* 9:788-805.
- Puhl, R. M., C. A. Moss-Racusin, M. B. Schwartz, and K. D. Brownell. 2008. "Weight Stigmatization and Bias Reduction: Perspectives of Overweight and Obese Adults." *Health Education Research* 23:347-58.
- Sanders, S. A., B. J. Hill, W. L. Yarber, C. A. Graham, R. A. Crosby, and R. R. Milhausen. 2010. "Misclassification Bias: Diversity in Conceptualisations about Having 'Had Sex.'" *Sexual Health* 7:31-34.
- Shumei, G. S. and W. Chumlea. 1999. "Tracking of Body Mass Index in Children in Relation to Overweight in Adulthood." *The American Journal of Clinical Nutrition* 70:145S-48S.
- Smith, T. W. 2003. "American Sexual Behavior: Trends, Socio-demographic Differences and Risk Behavior." GSS Topical Report No. 25. Chicago, IL: National Opinion Research Center, University of Chicago.
- Spencer, E. A., A. W. Roddam, and T. J. Key. 2004. "Accuracy of Self-Reported Waist and Hip Measurements in 4492 EPIC-Oxford Participants." *Public Health Nutrition* 7:723-27.
- Stevens, J. J., E. McClain, and K. P. Truesdale. 2008. "Selection of Measures in Epidemiologic Studies of the Consequences of Obesity." *International Journal of Obesity* 32:S60-66.
- Streeter, S. A. and D. H. McBurney. 2003. "Waist-hip Ratio and Attractiveness: New Evidence and a Critique of a Critical Test." *Evolution and Human Behavior* 24:88-98.
- Taga, K., C. Markey, and H. Friedman. 2006. "A Longitudinal Investigation of Associations between Boys' Pubertal Timing and Adult Behavioral Health and Well-Being." *Journal of Youth and Adolescence* 35:401-11.
- Ulaby, N. 2001. "Roscoe Arbuckle and the Scandal of Fatness." In *Bodies out of Bounds: Fatness and Transgression*, edited by J. E. Braziel and K. LeBesco, 153-65. Berkeley: University of California Press.
- Whisman, M. A., L. A. Uebelacker, and L. M. Weinstock. 2004. "Psychopathology and Marital Satisfaction: The Importance of Evaluating Both Partners." *Journal of Consulting and Clinical Psychology* 72:830-38.
- Witt, K. A. and E. A. Bush. 2005. "College Athletes with an Elevated Body Mass Index Often Have a High Upper Arm Muscle Area, but Not Elevated Triceps and Subscapular Skin-folds." *Journal of the American Dietetic Association* 105:599-602.

Author Biographies

Deborah Carr is a professor of sociology at Rutgers University and the Institute for Health, Health Care Policy and Aging Research. Her research focuses on the psychosocial consequences of body weight, stress over the life course, and death and dying. Her work on body weight and obesity has appeared in journals such as *Annals of Behavioral Medicine*, *Journal of Health and Social Behavior*, and *Social Psychology Quarterly*.

Lauren F. Murphy is a PhD student in sociology at Rutgers University. Her research focuses on the structural determinants of health disparities and social stratification, with a particular focus on the effect of neighborhood conditions on sleep quality.

Heather D. Batson is a PhD candidate in sociology at Rutgers University after more than a decade of work in public health research, focusing in HIV prevention and safer sex decision-making. Her current research focuses on mental and physical health, particularly the long-term impact of socially structured experiences.

Kristen W. Springer is an associate professor of sociology at Rutgers University and the Institute for Health, Health Care Policy and Aging Research. Her research centers on gender, aging, and health with a particular focus on masculinity and men's health. Her research on masculinity and men's health has appeared in journals such as *Journal of Health and Social Behavior*, *Gender & Society*, and *Social Science Research*.