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Sexual orientation and bias in self-reported Body Mass Index

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Abstract

Our objective was to determine if sexual orientation groups differ in accuracy of body mass index (BMI kg/m^2) calculated from self-reported height and weight and if weight status modifies possible differences. Using gender-stratified multiple linear regression to analyze Wave III of the National Longitudinal Study of Adolescent Health (n=12,197) we examined the association of sexual orientation with BMI calculated from self-reported height and weight (self-reported BMI) , controlling for BMI calculated from objectively measured height and weight (objectively measured BMI) as well as demographic, health, and behavioral variables. We tested for effect modification of the relationship between sexual orientation and self-reported BMI by objectively-measured BMI. The population underestimated their BMI (females: beta=0.87, p<0.001; males=0.86, p<0.001). Sexual orientation groups differed little in their accuracy of reporting; only gay males had significant underreporting (beta=−0.37, p=0.038) relative to their heterosexual peers. We found no evidence of effect modification of the relationship of sexual orientation and self-reported BMI by objectively measured BMI. With the exception of gay males, sexual orientation groups are consistent in their underreporting of BMI thus providing confidence in most comparisons of weight status based on self-report. Self-reporting of weight and height by gay males may exaggerate the differences in BMI between gay and heterosexual males.

Keywords

sexual orientation; bias; self-reported BMI

INTRODUCTION

Obesity is one of the most pressing public health problems today; though it affects all sociodemographic groups, the burden of disease is not equally distributed. Certain racial/ethnic and gender groups, specifically African-American females and Hispanic males, have been found to have higher rates of overweight/obesity relative to their White peers.[1,23] When examined by sexual orientation, obesity has been found to be higher in lesbian females but lower in gay males when compared to same-gender heterosexuals.[4–8] A recent study of women in California documented that the odds of obesity in lesbians was three and a half times higher compared to heterosexual women.[9] In contrast, heterosexual men have been found to have as much as twice the odds of obesity as gay men.[10]

Historically, our understanding of group level differences in prevalence of overweight/obesity has derived from surveillance relying on self-reported weight and height data.

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We have no affiliation, financial agreement, or other involvement with any company to disclose.

Accuracy of the group level comparisons, therefore, is dependent on the accuracy of reporting, and perhaps more importantly, the similarity between groups in over- or under-reporting of their weight and height. However, we know that reporting bias in general is common [11–13] and that patterns differ by key socio-demographic characteristics including race/ethnicity and gender.[14] Little is known, however, about how reporting patterns compare across sexual orientation groups.

Accuracy in weight reporting has also been shown to differ by other social and health characteristics and behaviors. These include level of education[15] and weight status.[16] Others have speculated that the presence or absence of depressive symptoms and physical activity level may also impact accuracy of reporting.[16] Because these characteristics are not equally distributed across different demographic groups, they may influence and partially explain group-level differences in weight reporting [4,7,9,17,18]

The primary goal of this study was to address the gap in the literature related to the accuracy of BMI based on self-reported height and weight among different sexual orientation groups. As a secondary goal, we sought to understand the potential modifying influence of weight status on the reporting by sexual orientation groups and the potential confounding by physical activity, education and depressive symptoms. We specifically set out to determine: 1) Are there differences in accuracy of BMI calculated from self-reported weight and height (referred to as self-reported BMI) by sexual orientation group? 2) If so, are the differences in accuracy of self-reported BMI by sexual orientation modified by weight status and partially explained by socioeconomic status, physical activity level, and depressive symptoms? Given the literature on differences by sexual orientation and gender in weight satisfaction and body image[19,20,21,18,22] we hypothesized that lesbian women would be less likely and gay men more likely to underestimate their BMI than their same-gender, heterosexual peers. We further hypothesized that depression may lead to more accurate reporting while overweight status would lead to greater underestimation of weight. Finally, we anticipated that both lower educational attainment and lower physical activity levels would lead to less accurate weight reporting.

METHODS AND PROCEDURES

Study population

This research uses data from the third of four Waves of the National Longitudinal Study of Adolescent Health, a nationally representative school-based study of adolescents enrolled in grades 7 through 12 at initial recruitment in 1994–95. Wave III data were collected in 2001–2 when respondents were aged 18–26. The primary sampling unit of the initial wave of the Add Health study is schools. Prior to sampling, schools were sorted by size, school type, census region, level of urbanization, and the percentage of the student body that is white. Add Health used systematic sampling methods and implicit stratification to ensure that the selected schools were representative of US schools. All of the students attending the chosen schools were eligible for the in-home sample. Students were stratified by gender and grade in school with about 17 students randomly selected from each stratum. The final sample in Wave I was 20,745. Every effort was made to find respondents for Wave III; of the 20,745 who participated in Wave I, 15,170 completed the in-home questionnaire for Wave III.

Several exclusion criteria were applied to create our analytic sample. We excluded those who identified themselves as not attracted to either males or females as the sample size was small (n=68) and it was difficult to interpret the meaning of this category relative to the other sexual orientation groups. Additionally we excluded those who were missing sampling weights as well as those who were missing information either regarding our dependent variable (self-reported BMI based on self-reported height and weight) or key independent

predictors (total of 978 excluded due to missing either self-reported BMI or measured BMI). However, prior to this final exclusion, we addressed a high non-response rate (approximately 10%) for the two variables measuring socioeconomic status—parent-reported maternal education and household income. In an effort to avoid selection bias and inaccurate inferences resulting from listwise deletion, we imputed these variables by using the Gaussian normal regression imputation method. [2324] After this imputation and all exclusions, our final sample contained 12,797 adolescents and young adults.

Study Variables

Outcome variable—Our primary outcome of interest was BMI calculated from the participants' self-reported height and weight (referred to as self-reported BMI).

Primary predictor variables—Our primary predictor variable was BMI calculated from objectively measured height and weight (referred to as objectively measured BMI) recorded by field interviewers in a standard way. Our second predictor of interest was sexual orientation. Participants were asked to "choose the description that best fits how you think about yourself," with the following possible responses: (1) 100% heterosexual (straight), (2) mostly heterosexual (straight), but somewhat attracted to people of your own sex, (3) bisexual—that is attracted to men and women equally, (4) mostly homosexual (gay), but somewhat attracted to people of the opposite sex, (5) 100% homosexual (gay), and (6) not sexually attracted to either males or females. As noted above, we excluded those who chose option 6 as this category was difficult to interpret. Additionally, due to small cell sizes we collapsed "mostly homosexual" (n=84) and "homosexuals" (n=113) into a single category called "gay/lesbian."

Additional independent variables—Race/ethnicity was constructed from two questions, one that asked participants to indicate if they were of Hispanic/Latino origin and a second that asked them to choose a category of race that best describes them. We constructed 6 categories: Hispanic, black or African-American (not Hispanic), Asian/Pacific Islander, white (not Hispanic), Native American/American Indian, and Multi-racial/Other. Depression score was taken from a modified version of the Center for Epidemiologic Studies Depression Scale (CES-D) and treated as a continuous variable with a range of 0–26[25] We elected to control for socioeconomic markers of the household of origin (i.e. Wave I household income and highest educational attainment of mother/caregiver) in Wave III due to the expected heterogeneity of professional and/or educational development in Wave III participants who were ages 18–26 at the time of data collection. Maternal education was treated as an ordinal variable with four categories (less than high school; high school or vocational school; some college or trade; and college and beyond). Maternal report of household income was also treated as a continuous variable. Due to a high degree of missingness for the maternal report of household income and maternal education, we imputed these variables using the Gaussian normal regression imputation method. Additionally, we controlled for age, gender, and reported physical activity (taken from 7 different questions asking the number of times in the last 7 days participated in different groups of activities) treated as a continuous variable with values ranging from 0–49.

Analyses

All analyses were performed using STATA/SE 10.0. In all models, we accounted for the complex survey design using svy commands in STATA and applied weights to account for the unequal likelihood of being sampled for certain subpopulations. We performed bivariate analyses of our covariates of interest with our outcome variable to test for significant relationships. We then used multiple linear regression to test for bias in weight status reporting among different sexual orientation groups accounting for objectively measured

BMI. We show our model building strategy starting with a model only controlling for our primary predictor variables, objectively measured BMI and sexual orientation group (Model A), then a fully controlled model (Model B). Regression diagnostic procedures showed no evidence of multicollinearity, heteroscedasticity, or substantial influence from outliers.

We tested for effect modification of the association of sexual orientation group and self-reported BMI by weight status. Specifically, we tested for improvement of fit of our model with the inclusion of the interaction terms measured BMI × sexual orientation group using a global test, generalized linear hypothesis (GLH) testing. We compared the −2* log likelihood ratios of models with and without the interaction terms. Because of our a priori hypotheses regarding differences by gender within sexual orientation groups, we performed all analyses stratified by gender.

In order to assess for the potential influence of over- or under-reporting of either height or weight, we did sensitivity analyses with height and weight as separate outcomes.

RESULTS

Sexual orientation groups differed on several of our variables of interest (Table 1). Gay (average BMI= 25.2) and bisexual males (average BMI=24.5) had on average lower measured BMIs compared to those of male heterosexuals (average BMI=26.4) while bisexual females (average BMI=28.7) and lesbians (average BMI=26.8) had on average higher BMIs compared to heterosexual females (average BMI=26.3). The depression score was lower in the heterosexual males and females compared to all other same sex sexual orientation groups. Gay males and lesbians had the highest reported physical activity levels across sexual orientation groups. Heterosexual and mostly heterosexual males and females were more likely to have mothers with some college education compared to homosexual males and females.

Tables 2 and 3 present results from our partially and fully adjusted multiple linear regression models examining the association of sexual orientation groups and BMI calculated from self-reported height and weight taking into account objectively-measured BMI. We tested for improvement of fit of our models with the addition of interaction terms sexual orientation group×objectively-measured BMI. Though our GLH testing indicated improvement in the overall fit of our model with the addition of these interaction terms, none of the individual interaction terms were significant. Results of models with the interaction terms therefore are not presented.

For females, in the fully adjusted model we see that with every one-unit increase in measured BMI, there is a 0.87 increase in self-reported BMI indicating that on average females underreported their BMI by 13% There was no significant difference by sexual orientation group in amount of underreporting of BMI. We also see that there is a slight increase in self-reported BMI (β=0.02) resulting in improved accuracy with increasing depression score; in contrast there is a modest decrease in self-reported BMI with increase in physical activity (β=−0.02). There is also a slight decrease in self-reported BMI with an increase in maternal education (β=−0.07) but no significant difference related to household income.

Findings in males are overall similar to those in females. In males, the intercept in the fully adjusted model is approximately one BMI unit lower than the model not fully adjusted. In the fully adjusted model, with every one unit increase in measured BMI there is an average increase in self-reported BMI of 0.85 BMI units indicating that on average males underreport their BMI by 15%. In addition gay males on average report a BMI 0.37 units lower than heterosexual males of the same BMI, indicating that gay males underreport their

BMI to a greater degree than do heterosexual males. There are no other significant differences by sexual orientation group. As in females, there is a modest increase in reported BMI with an increase in depression score (β=0.02), resulting in improved accuracy. However, in males, there is no association between physical activity level nor marker of socioeconomic status and self-reported BMI.

In Figures 1 and 2, we show prototypical plots of the self-reported BMI versus measured BMI for the different gender-specific sexual orientation groups. In both Figures, we see that there is an overall underreporting of BMI across the population and that at the absolute value of underreporting is higher at higher BMIs. In the gender-specific sexual orientation groups, we see an overall underreporting of BMI but a great degree of similarity between the groups.

In order to assess for undue influence of over- or under-reporting on either height or weight, we examined models with height and weight as separate outcomes (see Tables in the Appendix). In females, bisexual females over-reported their weight relative to their heterosexual peers (β=1.94, p=0.047) as did Black females relative to their White peers (β=1.41, p=0.033). Both Black (β=−0.15, p=0.011) and Hispanic β=−0.23, p=0.022) females under-reported their height relative to their White peers. In males, Hispanics and Asians under-reported both their height (Hispanics: β=−0.36, p<0.001; Asians: β=−0.43, p<0.001) and weight (Hispanics: β=−1.32, p<0.001; Asians: β=−0.43, p<0.001) relative to their White peers. Blacks both over-reported their weight (β=1.07, p=0.23) and under-reported their height (β=−0.25, p<0.001) relative to Whites. In males there were no statistically significant differences in accuracy of reporting height or weight by sexual orientation group thought all had under-reporting of weight and over-reporting of height relative to their heterosexual peers.

Discussion

In this nationally representative sample of 18–26 year old males and females we found few differences in reporting of BMI between gender-specific sexual orientation minority groups and same gender heterosexuals. Counter to our hypotheses, lesbians did not underreport their BMI to a lesser degree than heterosexual females, but consistent with our hypotheses, gay males showed greater reporting bias than did heterosexual males. Specifically, gay males were the only group who underreported their BMI to a greater degree than same-gender heterosexuals. Similar trends were found in other male sexual orientation groups when looking at height and weight separately though no statistically significant associations were noted. However, it is notable that there was significant underreporting of BMI by all groups and that the absolute value of underreporting increased with increasing measured BMI. This is the first study of which we are aware to examine sexual orientation-related bias in self-reported BMI.

It is worth noting that groups differed in under- and over-reporting of height and weight. Specifically, all male racial/ethnic groups with the exception of the Multi-racial males under-reported their height relative to Whites. Also, Hispanic and Asian males significantly under-reported their weight relative to Whites. However, when examining BMI, only Black males differed significantly in their reporting accuracy relative to Whites. In females, the patterns for height and weight reporting were similar for height and weight when compared to BMI.

Current evidence from the literature based on self-report data has documented elevated obesity in sexual minority females and reduced obesity in sexual minority males relative to same-gender heterosexual peers.[4–8] Our findings among females based on objectively measured and self-report BMI indicate that these observed sexual orientation disparities

cannot be explained by orientation-related bias in self-reported BMI. Among males, while a greater degree of underreporting of BMI among gay males may lead to overestimates of orientation-related obesity disparities, in our study, group differences persisted even when BMI was objectively measured, providing further evidence that heterosexual males are at greater risk for elevated BMI than are gay males despite the presence of reporting bias.

Though certain sociodemographic factors such as gender have been shown to be associated with the accuracy of weight reporting,[26272816] there has been less information about the impact of other behavioral and health factors. In their review of the accuracy of self-reported weight in adolescents, Sherry et al called for further studies to investigate the influence of physical activity, socioeconomic status, and mental health status on accuracy of weight reporting.[16] In our analysis of females, we found a modest influence by all 3 (depression score, physical activity, and maternal education) on self- reported BMI; in males we found only depression to be significantly associated with self- reported BMI.

There are limitations to this study that should be noted. First, we were limited in our BMI data by the equipment used; persons weighing more than 400 pounds could not be weighed by the scales used. Thus if there were different patterns occurring on the high-end extreme of weight status, we would be unable to capture them. Second, participants were aware that they would be weighed so may have been more accurate in their reporting than if they had not known that objective measurements would be taken. Finally, sexual orientation was discerned by a single item assessing sexual orientation identity. In public health research, sexual orientation is typically understood to be multidimensional construct make up of three primary dimensions: (1) attractions; (2) sex of sexual partners; and (3) identity labeling as heterosexual, bisexual, or lesbian/gay.[29, 30] Associations between sexual orientation and health have been found to differ by the dimension measured.[31]

Conclusions

Understanding both the overall accuracy of self-reported BMI as well as the relative accuracy between groups is key to determining how to allocate often scarce public health intervention dollars. Because reliance on self-reported data is common, especially in large state-run surveys such as the Centers for Disease Control and Prevention's Youth Risk Behavior Surveillance System[32] and Behavioral Risk Factor Surveillance System,[33] it is all the more important to understand the accuracy of these data. Our findings are reassuring that in most cases the relative accuracy of self- reported BMI is similar across sexual orientation groups. Thus, targeting specific sexual orientation groups for intervention based on self-reported weight status data is reasonable especially when obtaining measured data is not feasible.

Obesity disparities have been identified as among the most critical public health problems facing the nation, and research into the causes of racial/ethnic and gender disparities in obesity is receiving increasing scholarly attention.[1, 34] Sexual orientation-related disparities in obesity have now been consistently documented across samples and, importantly, our study indicates that observed disparities are robust and cannot be attributed to reporting bias. It is now time for researchers focused on health disparities and obesity to devote concerted efforts to identifying the causes of these disparities, which will provide us with the scientific knowledge essential to designing effective interventions to eliminate sexual orientation-related disparies in obesity.

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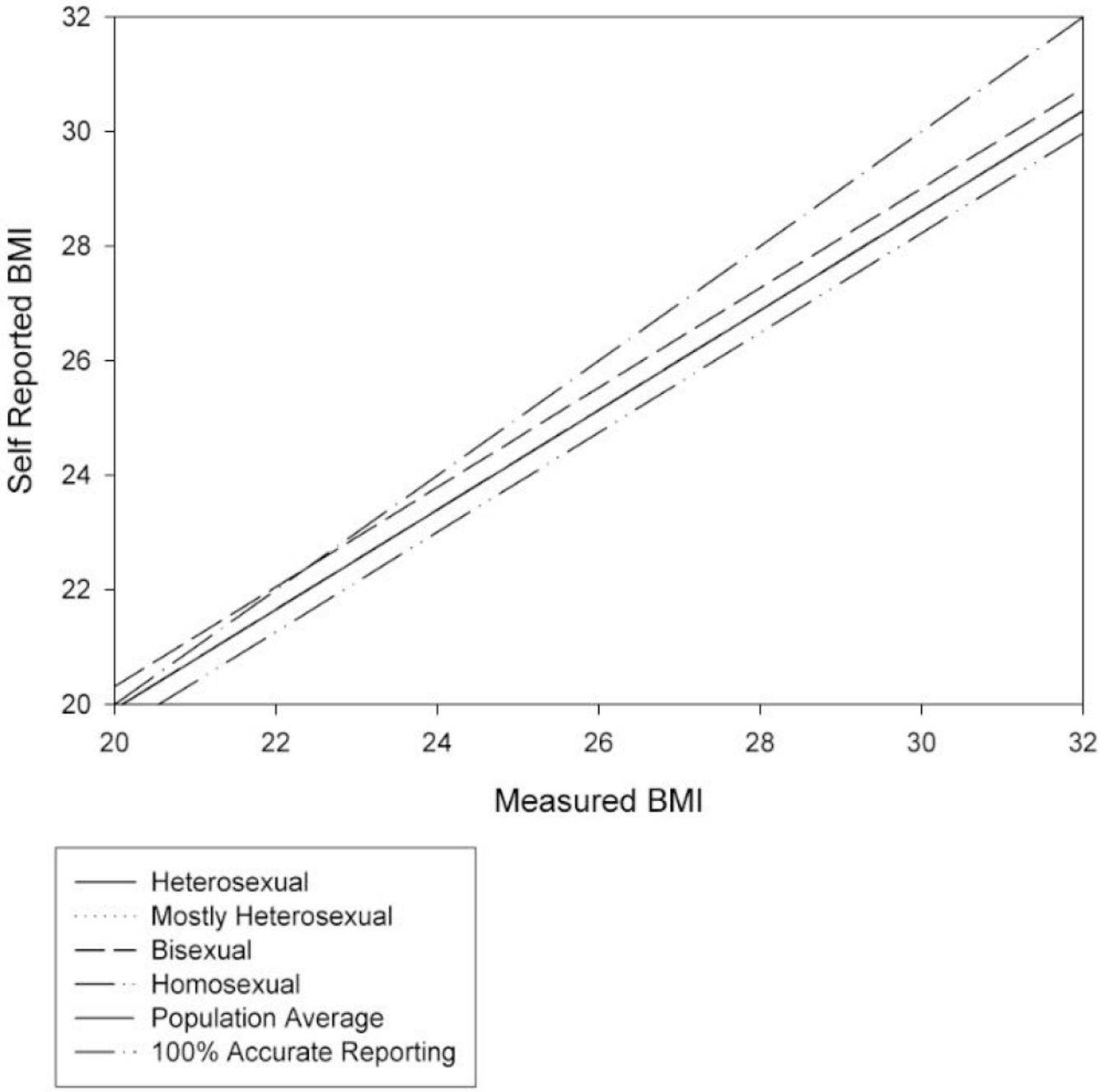

Figure 1. Measured vs. Self Reported BMI in Females by Sexual Orientation

Female self-reported v. measured BMI by sexual orientation in a nationally representative sample of young adults

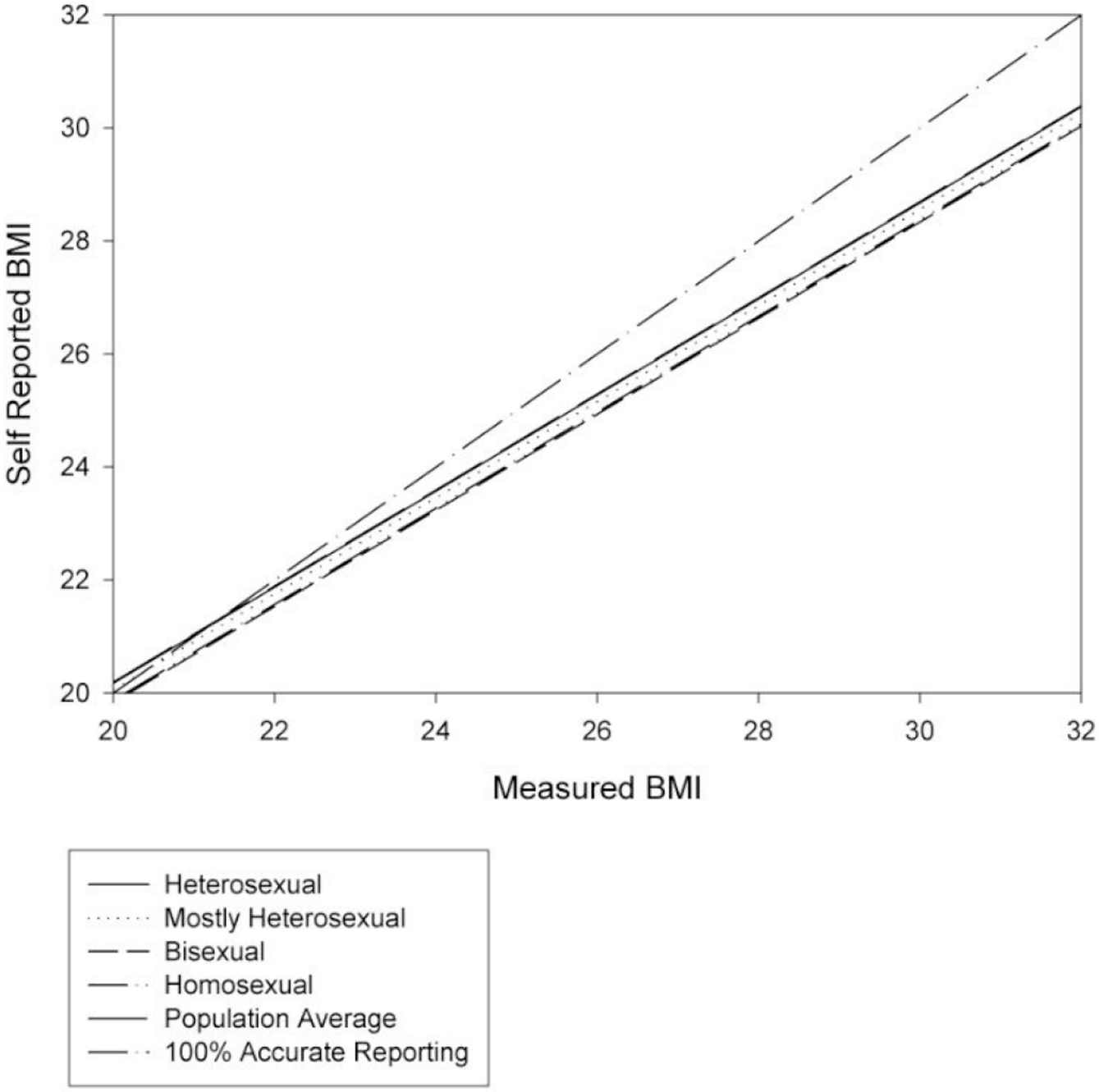

Figure 2. Measured vs. Self Reported BMI in Males by Sexual Orientation

Male self-reported v. measured BMI by sexual orientation in a nationally representative sample of young adults

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Table 1

Sociodemographic and health characteristics by race/ethnicity *

	African-American	Hispanic	White	Asian/Pacific Islander	Native American	Multi-racial
MALES						
Bmibio	26.64 (0.23)	26.68 (0.27)	26.32 (0.14)	25.66 (0.58)	30.46 (1.97)	25.61 (0.57)
Age	22.09 (0.24)	22.06 (0.26)	21.83 (0.14)	21.78 (0.30)	21.31 (0.32)	21.69 (0.25)
Depression score	4.63 (0.21)	4.67 (0.23)	3.69 (0.07)	4.62 (0.32)	4.68 (0.91)	4.51 (0.30)
Household income of origin (thousands of dollars)	30.21 (1.59)	34.42 (2.91)	50.24 (1.87)	51.78 (2.89)	21.00 (4.18)	44.09 (2.84)
Mom's education (% with some college plus)	44%	28%	55%	65%	32%	56%
Physical activity level (# of activities per week)	7.16 (0.29)	7.66 (0.34)	6.71 (0.18)	7.31 (0.65)	6.63 (1.08)	7.90 (0.70)
% overweight/obese	53%	57%	53%	47%	73%	39%
FEMALES						
Bmibio	28.08 (0.34)	27.28 (0.31)	25.87 (0.19)	23.16 (0.41)	28.89 (1.64)	27.08 (0.70)
Age	21.86 (0.20)	21.79 (0.25)	21.63 (0.14)	21.97 (0.28)	21.69 (0.33)	21.69 (0.20)
Depression score	5.26 (0.23)	5.62 (0.22)	4.52 (0.10)	4.80 (0.31)	5.82 (0.68)	5.94 (0.43)
Household income of origin (in thousands of dollars)	29.21 (1.56)	34.29 (2.39)	52.64 (2.25)	56.97 (4.75)	37.05 (8.13)	40.04 (2.01)
Mom's education (% with some college plus)	42%	26%	55%	59%	42%	50%
Physical activity level (# of activities per week)	3.82 (0.18)	5.43 (0.25)	5.09 (0.14)	4.64 (0.44)	4.41 (0.44)	5.40 (0.50)
%overweight/obese	58%	56%	42%	26%	66%	47$

* Continuous variables are presented as Mean ± SE, categorical variables are presented as %.

Table 2

Sociodemographic and health characteristics by sexual orientation group[a]

	Heterosexual (N=11531)	Mostly Heterosexual (N=860)	Bisexual (N=209)	Homosexual (N=197)	Population (N=12797)
MALES	N=5872	N=185	N=42	N=125	N=6224
Bmibio	26.45 (0.12)	25.87 (0.55)	24.54 (0.84)*	25.16 (0.59)*	26.40 (0.12)
bmiself	25.80 (0.11)	25.14 (0.45)	23.77 (0.84)*	24.36 (0.58)*	25.74 (0.11)
Age	21.88 (0.12)	21.96 (0.22)	21.01 (0.37)*	22.31 (0.26)	21.89 (0.12)
Depression score	3.94 (0.07)	5.28 (0.48)*	5.25 (0.91)	4.87 (0.44)*	4.00 (0.07)
Household income of origin (in thousands of dollars)	44.56 (1.54)	55.58 (5.27)*	84.90 (27.79)	44.10 (2.99)	45.15 (1.62)
Mom's education (% some college plus)	51%	49%	43%	46%	51%
Physical activity level (# of activities per week)	6.97 (0.15)	5.53 (0.39)*	7.94 (1.40)	7.77 (0.84)	6.94 (0.14)
% ovwt/obese (based on msrd)	54%	41%*	50%	43%	53%
% Ovwt/obese (based on self rep)	50%	40%*	36%	38%	50%
Race/Ethnicity					
White	66.14%	70.5%	61.0%	65.1%	66.0%
Black	14.7%	9.3%	14.2%	11.1%	14.5%
Hispanic	11.8%	9.9%	11.1%	16.4%	11.8%
Asian	3.7%	4.5%	0.2%	4.8%	3.7%
Native American	0.6%	0.4%	0.0%	1.4%	0.6%
Multi-Racial	3.1%	5.5%	13.4%	1.1%	11.8%
FEMALES	N=5659	N=675	N=167	N=72	N=6573
Bmibio	26.29 (0.17)	25.88 (0.34)	28.69 (0.97)*	26.75 (1.11)	26.31 (0.16)
bmiself	25.25 (0.16)	24.89 (0.30)	27.71 (0.92)*	25.26 (1.02)	25.28 (0.15)
Age	21.71 (0.12)	21.66 (0.15)	21.36 (0.23)	22.03 (0.29)	21.70 (0.12)
Depression score	4.57 (0.09)	6.33 (0.25)*	6.47 (0.45)*	5.26 (0.64)	4.81 (0.09)
Household income of origin (in thousands of dollars)	46.11 (1.69)	53.94 (3.81)*	40.79 (2.71)*	44.92 (5.63)	46.81 (1.83)

	Heterosexual (N=11531)	Mostly Heterosexual (N=860)	Bisexual (N=209)	Homosexual (N=197)	Population (N=12797)
Mom's Education (some college plus)	49%	57%*	50%	41%	50%
Physical activity level (# of activities per week)	4.85 (0.12)	5.09 (0.28)	5.79 (0.52)	6.93 (1.18)	4.93 (0.11)
% ovwt/obese (based on msrd)	46%	41%*	53%	50%	46%
% ovwt/obese (based on self rep)	40%	34%*	48%	44%	40%
Race/Ethnicity					
White	65.8%	73%	77.1%	65%	66.9%
Black	16.1%	7.2%	5.9%	13.0%	14.8%
Hispanic	11%	10.9%	13.1%	14.0%	11.1%
Asian	3.6%	3.8%	0.1%	0.1%	3.5%
Native American	0.4%	1.0%	1.0%	3.9%	0.5%
Multi-Racial	3.0%	4.1%	3.2%	4.0%	3.2%

[a]Continuous variables are presented as Mean ± SE, categorical variables are presented as %.

*indicates sexual orientation group significantly differs from Heterosexuals ($p<0.05$).

Table 3

a. Characteristics associated with difference in BMI calculated from self-reported v. measured anthropometrics in *females*			
	Model A	**Model B**	**Model C**
Covariates			
Intercept	2.34*** (1.96, 2.72)	2.21*** (1.33, 3.09)	2.27*** (1.36, 3.19)
Bmibio	0.87*** (0.86, 0.89)	0.87*** (0.85, 0.88)	0.86*** (0.84, 0.88)
Heterosexual (referent)	0.00	0.00	0.00
Mostly heterosexual	−0.001 (−0.19, 0.19)	0.02 (−0.17, 0.22)	0.03 (−1.03, 1.10)
Bisexual	0.37 (−0.12, 0.85)	0.41~ (−0.06, 0.87)	−0.69 (−2.10, 0.72)
Homosexual	−0.39 (−1.22, 0.43)	−0.38 (−1.21, 0.45)	−0.08 (−4.85, 4.69)
White (referent)		0.00	0.00
Black		0.40** (0.15, 0.64)	0.40** (0.16, 0.64)
Hispanic		0.31** (0.10, 0.53)	0.32** (0.10, 0.53)
Asian		−0.004 (−0.21, 0.20)	−0.01 (−0.22, 0.20)
Native American		0.26 (−0.59, 1.10)	0.24 (−0.64, 1.11)
Multi-racial		0.04 (−0.34, 0.42)	0.04 (−0.34, 0.42)
Depression score		0.02* (0.004, 0.03)	0.02* (0.003, 0.03)
Age		0.02 (−0.01, 0.05)	0.02 (−0.02, 0.05)
Physical activity		−0.02*** (−0.03, −0.01)	−0.02*** (−0.03, −0.01)
Maternal Education		−0.07* (−0.14, −0.002)	−0.07* (−0.14, −0.003)
Income		−0.001 (−0.001, 0.001)	−0.001 (−0.002, 0.001)
Interactions			
Measured BMI and Sexual Orientation Group			
Bmibio*mostly heterosexual			−0.0004 (−0.04, 0.04)
Bmibio*bisexual			0.04 (−0.02, 0.09)
Bmibio*homosexual			−0.01 (−0.22, 0.19)
R-square	0.9093	0.9109	0.9110
Model to which we are comparing		A	A

b. Characteristics associated with difference in BMI calculated from self-reported v. measured anthropometrics in *males*			
	Model A	**Model B**	**Model C**
Covariates			
Intercept	3.11*** (2.67, 3.54)	2.01*** (1.27, 2.76)	1.93*** (1.19, 2.68)
Bmibio	0.86*** (0.84, 0.88)	0.85*** (0.84, 0.87)	0.86*** (0.84, 0.88)
Heterosexual	0.00	0.00	0.00
Mostly heterosexual	−0.16 (−0.52, 0.20)	−0.15 (−0.51, 0.20)	1.51 (−0.73, 3.74)
Bisexual	−0.39 (−1.07, 0.29)	−0.35 (−1.00, 0.31)	−1.71 (−4.47, 1.05)
Homosexual	−0.33 (−0.69, 0.02)	−0.37* (−0.73, −0.01)	0.53 (−2.95, 4.01)

b. Characteristics associated with difference in BMI calculated from self-reported v. measured anthropometrics in *males*			
	Model A	**Model B**	**Model C**
White		0.00	0.00
Black		0.35 *** (0.18, 0.51)	0.34 *** (0.18, 0.51)
Hispanic		0.03 (−0.16, 0.23)	0.04 (−0.16, 0.23)
Asian		−0.13 (−0.32, 0.05)	−0.12 (−0.31, 0.06)
Native American		0.91 * (0.17, 1.66)	0.90 * (0.16, 1.64)
Multi-racial		−0.07 (−0.35, 0.21)	−0.07 (−0.35, 0.21)
Depression score		0.02 * (0.001, 0.03)	0.02 * (0.0004, 0.03)
Age		0.05 ** (0.02, 0.09)	0.05 * (0.02, 0.09)
Physical activity		0.004 (−0.01, 0.01)	0.003 (−0.01, 0.01)
Maternal Education		−0.02 (−0.09, 0.04)	−0.02 (−0.09, 0.04)
Income		−0.001 (−0.002, 0.001)	−0.001 (−0.001, 0.001)
Interactions			
Measured BMI and Sexual Orientation Group			
Bmibio*mostly heterosexual			−0.06 (−0.15, 0.03)
Bmibio*bisexual			0.06 (−0.06, 0.18)
Bmibio*homosexual			−0.04 (−0.17, 0.10)
R-square	0.8968	0.8983	0.8985
Model to which we are comparing		A	A

Key:

~ p<0.10

* p<0.05

** p<0.01

*** p<0.001