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Body Image and Attitudes Toward Obesity in College Students

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BODY IMAGE AND ATTITUDES TOWARD OBESITY IN COLLEGE STUDENTS

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Public Health at Virginia Commonwealth University.

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Abstract

BODY IMAGE AND ATTITUDES TOWARD OBESITY IN COLLEGE-AGED

STUDENTS

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The current study was conducted in order to examine the impact of ethnicity on gender

differences in body type preferences and perceptions and add to the literature examining

racial differences in body type preferences and perceptions.

The current study was an expansion of one by Gipson et al conducted at a historically

Black university in 2004, in which responses and BMI measurements of 191 college

students were examined for associations between BMI and gender, and body image and

attitudes toward obesity. For the current study the sample of 176 college students enrolled

at Virginia Commonwealth University, an ethnically diverse institution, completed two body image and attitude inventories and height and weight measurements.

The sample consisted of 94 male and 82 female students between the ages of 18 and 25 years (mean=20.3 years, SD=1.9 years). Women rated their current figure as larger than their ideal, whereas men reported no discrepancy. BMI did not vary by sex or grade level. Within race, Black students (mean BMI 27.1 kg/m^2) were heavier than Caucasians (23.9 kg/m^2). Students generally preferred smaller figures and the students with BMIs < 25 kg/m^2 preferred the smaller figures more than did students with $\geq$ 25 kg/m^2, however neither BMI, sex nor race favored any specific attitudes towards obesity.

The study determined that body image perceptions and attitudes toward obesity vary across racial groups and that the effect of race/ethnicity on body satisfaction depends on gender. The participants may represent a more diverse group than previously tested and provide insight into racial differences.

INTRODUCTION

Obesity has become a global epidemic with many well documented complications resulting in diabetes mellitus and cardiovascular disease.(1) In the United States, obesity is of major concern due to the high rates and the rapidly increasing weight of the youth population.(2) One of the national health objectives of "Healthy People 2010" is to reduce the prevalence of obesity among adults to less than 15%; however current research reports that the situation is worsening.(3)

The purpose of this study is to examine the impact of ethnicity/race on gender differences in body type preferences and perceptions and to add to the literature examining racial differences in body type preference and perceptions. It may help to better improve our understanding and management of the obesity epidemic in the United States.

In recent years, it has become apparent that body image concerns are of interest for understanding the etiology and treatment of both eating disorders and obesity.(4) Body image is relevant to identity and self-esteem. Overemphasis on body weight and shape in self-evaluation may lead to body dissatisfaction which can predispose individuals to developing negative eating behaviors.(5)

The literature reflects gender differences in how individuals perceive, judge, and feel about their bodies.(6) Jackson and McGill report that Black males prefer larger body types for females while Black females prefer slightly thin body types for males. (7) Regarding race/ethnicity, age, and body image, the data are less clear. Some research reports that Black women indicate that body image is less central to their self-evaluation

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and that they are more satisfied at higher body weights than White women. However, between Black and White men few differences in body satisfaction have been noted. Thompson et al state that Black males were more likely to prefer larger female body types than White males, indicating that there are race-specific standards of attractiveness within cultures.(8)

Generally, males do not identify a current body figure perception that differs from their ideal figure, and if they do, they report a desire to be larger. Thus it appears that males believe females desire a large, muscular physique in men.(9) Mintz and Kashubeck examined gender and ethnicity differences in various areas of body satisfaction, including facial features and body size. Males of both Caucasian and Asian-American groups reported a desire to gain weight. This suggests a muscular cultural ideal for men that does not differ between ethnic groups.(10)

Body image is a topic that has been pondered repeatedly for decades and many have attempted to define and describe the concept. Although there is ample research investigating gender differences in body type preference, literature examining the influence of ethnicity on these differences is less extensive. Little is know about body image concerns among women cross-culturally, nor is there much literature examining body satisfaction among men and even less research has been conducted among Latin Americans.

Of particular interest is the Gipson et al study that reports race as a predictor of attitudes towards obesity and perceptions about body image and body-size.(11) Gipson used male and female college students at a historically Black university for the study.

Students selected body figures to identify self and personal preferences and answered 20 questions regarding attitudes and perceptions about obese persons. They were measured for height and weight which was used to calculate BMI. The authors concluded that there was no significant difference in BMI measurements between sex or grade level, however mean z-scores for those under age 20 showed the female students to be more likely to be overweight than male students. The findings about actual and ideal body images for the students were consistent with the BMI findings. The students were largely between the 50th and 75th % BMI percentiles for sex and age, meaning that 25% to 50% of the US population similar in age and sex weighted more than these students. As the study did not compare racial/ethnic groups, it was concluded that the relatively larger body builds may have occurred among the Black females students more than the Black male students because of greater social acceptance, greater sexual attractiveness or both.

Body mass index (BMI) is a tool for indicating weight status in adults and children, measuring weight for height. Calculating body mass index is a popular and proven method for assessing the overweight and obese population because it is easy to use, convenient, inexpensive and allows comparison of an individual weight status to the general population. The mathematical equation is [Weight (pounds) ÷ Height (inches^2)] x 703 (to convert to the metric system kg/m^2). According to the National Center for Chronic Disease Prevention and Health Promotion, BMI for adults aged 20 years or older falls into one of four categories: BMI below 18.5 kg/m^2 is underweight; 18.5-24.9 is normal; 25.0-29.9 is overweight; and 30.0 and above is obese.(12) BMI correlates with body fat and the relation between BMI and fatness differs with age and gender. For example, women typically have

higher percentages of body fat than men with the same BMI and older people may have more body fat than younger adults. BMI for children and teens (2-20 years), also known as BMI-for-age, is based on gender and age specific charts due to the fact that body fatness changes as they grow.(13)

Overweight is defined as increased body weight in relation to height, when compared to some standard of acceptable or desirable weight. Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean body mass.(14) There are numerous health risks associated with obesity including diabetes mellitus, hypertension, heart disease and high cholesterol, making it one of the leading causes of death in the United States.(15)

It is believed that gaining insight into the attitudes towards overweight and obese persons, and the selection of body builds through graphic images describing self and others with an objective measure such as body mass index (BMI) will advance the understanding of cognitive and emotional factors that contribute to the current increase in obesity in youths. It may also help determine effective management of this health issue. Since poor body image can contribute to the development of problematic eating behaviors, it is important to identify factors that contribute to body dissatisfaction.

METHODS

Current study participants were 200 college students from Virginia Commonwealth University, located in Richmond, Virginia. No effort was made to randomly select students. A convenience sample was collected as students were taken on a "first come, first serve" bases in response to flyers and advertisements posted around the academic and medical campuses. Upon protocol approval by the Virginia Commonwealth University Institutional Review Board, the students underwent measurement of height and weight and completed two interview forms (Appendices A and B). Height and weight measurements were conducted in a private location and used to calculate body mass index (BMI). No personal identifying information was collected and each participant was assigned a number between 1 and 200. Each student was paid $5 cash to participate in the study.

Each student completed a 10-minute survey; after taking measurements it took about 15 minutes for each individual to complete the study. Information obtained from each participant included sex, race, date of birth, age, year in school, height, weight and date of measurement. No effort was made to select students based on any category. Each student was asked to select one of 4 racial categories and if they chose "other" they wrote down what racial group they identified with.

Appendix A is the form students used to respond to body figure selections. A green background and blurred non-descript facial characteristics was used in order to eliminate skin color and facial features in body image selection. Appendix B – Attitudes Toward Obese Persons scale (ATOP) was comprised of 20 questions relating to attitudes and perceptions of obese persons.

      Participant age ranged from 17 years old to 60 years old in class levels from freshman to graduate programs. From the initial evaluation of 200 college students we selected those who identified themselves as ages 18-25 for data analysis because IRB approval was for students 18 to 25 years of age. This eliminated 24 participants, leaving a total of 176 to analyze.

MEASURES

Self report surveys were used to evaluate explicit weight attitudes and weight identity. An information document was provided and completion of the survey implied informed consent. Each participant answered 3 questions pertaining to 9 silhouette drawings that ranged from extremely thin (1) to extremely obese (9). Two questions referred to the same gender figures and the last question referred to the opposite sex figures. (Appendix A) Using these figures, participants indicated the number of the same-gender figure that best described (1) their current figure, (2) their ideal figure, and (3) the figure they believed most attractive. Each student answered 20 questions describing attitudes about obesity. (Appendix B) The form used a Likert scale ranging from +3 to -3 but eliminated "0" as a neutral response, making responses either "agree" or "disagree". The Attitudes Toward Obese Persons (ATOP) scale was developed by Yuker (16) and found in Allison's 1995 text (16). Both Appendix A and B were replications of forms used by Gipson et al (11). This study was designed to be a replication of the Gipson et al study using a multi-cultural perspective.

After the completion of the measures, the participants were asked to have their weight and height measured. A digital bathroom scale was used to measure weight in pounds, height was measured in inches using a ruler affixed to the wall. Height was measured to the nearest inch. Height and weight measurements were used to calculate body mass index (BMI) as defined as [Weight (pounds) ÷ Height (inches^2)] x 703. This was done for participants over age 20. For participants under 20 years of age, we used the

Nutstat module of *Epi Info* to obtain BMI measurement, BMI percentile and BMI z-score.(17)

DATA ANALYSES

Our analytic approach centered on the hypothesis that there are gender & racial differences among BMI measurements and body image perceptions and attitudes toward obesity. The examined exposure was race, sex, and BMI; the outcome was body image perception and attitude towards obesity.

Due to the small sample size in the "Hispanic/Latino" racial group, they were re-coded and combined with the "Other racial" category to form "Other".

As BMI is a continuous variable and ≥ 25 kg/m^2 identifies adults who are overweight, we used this value to categorize the study population into dichotomous groups: <25 kg/m^2 "normal weight" and ≥ 25 kg/m^2 "overweight". The "normal weight" includes both underweight and normal BMI measurements and the "overweight" includes both overweight and obese measurements.

Descriptive statistics and exploratory analyses such as frequency distribution, mean, standard error and 95% confidence intervals were conducted to characterize the sample in terms of race, gender, and class. The variables were compared with normal BMI and overweight BMI categories as well as continuous BMI measurements by using logistic regression and cross-tabulation statistical functions. To examine difference between groups, independent *t*-tests were performed. ANOVA and *t*-tests were included to test specifically an association of gender and ethnicity. A *p*-value of 0.05 was set for statistical significance. Statistical analyses and data were created using SPSS Version 11.5 for Windows and Epi Info 6 software from the Centers For Disease Control.

For responses on Appendix A and Appendix B, two approaches were taken to separate the males and females and analyze them independently. For the first approach BMI was re-coded into the two categories of [1] normal and [2] overweight and calculated the frequencies and Pearson's chi-square test of association for each body figure selection. For the second approach a one-way ANOVA was conducted on the mean BMI to obtain the F-statistic and p-values for each body figure selection.

Appendix A did not give instruction as to what gender question 3 (the figure they believed most attractive) pertained to. As the majority of participants answered the question as it related to the opposite sex, all of the responses to the question were arbitrarily converted to the corresponding number of the opposite sex.

For Appendix B- ATOP, the responses used a Likert scale ranging from +3 to -3 but eliminated the neutral response "0", therefore making responses either "agree" (+3, +2, +1) or "disagree" (-3, -2, -1). For example, a (+3) response "strongly agrees" and a (+1) response "slightly agrees". The numerical responses were recoded into a different variable with categories "agree" and "disagree". Using the BMI categories of "normal" and "overweight" males and females were stratified and used to conduct frequencies, Pearson's *chi*-square test and two-tailed p-values.

RESULTS

There were a total of 176 participants after eliminating students outside of the target age range. Of these participants there were 94 (53%) males (mean age 20.4 ± [SD] 1.7 years) and 82 (47%) females (mean age 20.2 [SD] ± 1.9 years) (total participants mean age =20.31, SD=1.8). Of these, 53 (30%) were freshman, 52 (29%) sophomores, 33 (19%) juniors, 18 (10%) seniors, and 20 (11%) other (graduate level program). The two largest ethnic groups were Caucasian/White (53%) and Black (25%), together compromising about 80% of the sample. There were 6 (4%) Hispanics/Latinos and 32 (18%) people identified themselves of other races, which we re-coded and combined to form one racial category of "Other" (22%).

Body mass index (BMI) ranged from 17.71 to 51.50 kg/m^2 (mean=24.86 SD=5.31). For the male students the mean BMI was 24.9 ± [SEM] 0.5 kg/m^2 and 24.8 ± [SEM] 0.6 kg/m^2 for the females (Table 1a). BMI measurements for race were Blacks 27.1 ± [SEM] 1.1 kg/m^2, Whites 23.9 ± [SEM] 0.4 kg/m^2, and Other 24.7 ± [SEM] 0.9 kg/m^2 (Table 1b). There were no significant differences in mean BMI measurements by sex or grade level (ANOVA). According to class/grade level the mean BMI measurements were freshman 24.3 ± [SEM] 0.7 kg/m^2, sophomores 25.3 ± [SEM] 0.8 kg/m^2, juniors 25.9 ± [SEM] 1.0 kg/m^2, seniors 24.9 ± [SEM] 1.4 kg/m^2, and other (graduate programs) 23.4 ± [SEM] 0.8 kg/m^2 (Table 1c). Table 1e further presents data on BMI stratified by sex and race. Chart 1 displays the distribution of BMI measurements within males and females.

When BMI was categorized as normal or overweight, the majority of all participants were considered normal. Forty percent of the men and 37% of the women

were considered overweight. The distributions were different when examined by race with 52% of the Blacks being overweight versus 33% of Whites and 37% of Others.(Chart 1)

Of the 94 men, 49% were under age 20 and of the 82 women, 57% were under age 20. For this group of participants that are under 20 years of age the *Nutstat* module of *EpiInfo* (17) was used to determine mean BMI, BMI percentiles, and z-scores so that they could be compared to national norms from the 2000 CDC Growth Charts.(17) For the 46 (49%) men the measurements were mean BMI 24.9 ± [SEM] 0.5 kg/m^2, BMI percentile of 58.26 ± [SD] 32.87, and z-score of 0.31 ± [SD] 1.21. For the men, the mean *z*-score places them in the 58.26 BMI percentile. For the 47 (57%) females the measurements were mean BMI 24.8 ± [SEM] 0.6 kg/m^2, BMI percentile of 68.86 ± [SD] 27.32, and z-score of 0.64 ± [SD] .95. The mean *z*-score places the women in the 68.86 BMI percentile. There was a statistically significant difference between the male and female groups.

Table 2 displays responses for all of the Appendix A questions. For Appendix A, question 1 (Which body number best shows who you ARE now?) there was a significant difference in male and female "normal" and "overweight" students (p<0.001) using the Pearson chi-square test of association. Figures 3 and 4 have the most responses from the males and figures 3 and 5 for the females. (Table 2.1a, Table 2.1b, Charts 2, 3 & 6).

For Appendix A, question 2 (Which body number best shows who you would LIKE to be?), there was a significant difference in male and female "normal" and "overweight" students (p<.0001) using the Pearson chi-square test of association. Figures 3 and 4 have the most responses from the males and figures 2 and 3 from the females (Table 2.2a & Table 2.2b). As in previous studies, males rated their current figure as similar to

their ideal figure.(18) Women reported their current figure was larger than their ideal figure. (Charts 2, 3 & 7)

For Appendix A, question 3 (Which body number do you find most SEXUALLY attractive?) there was no significant difference in male and female "normal" and "overweight" students (p=0.07) using the Pearson chi-square test of association. Figures 2 and 3 have the most responses from the males and figures 3 and 4 from the females (Table 2.3a & Table 2.3b).

Table 3 displays Appendix A, questions 1, 2 and 3 stratified by sex and race. It shows significant differences between Black, White, and Other responses, comparable to those in Table 2. (Charts 4 & 5)

For Appendix B, questions 1 through 20, the statements did not separate by sex using the BMI categorization of "normal" and "overweight". Therefore the attitudes toward obese persons are similar regardless of weight and sex. There were no significant differences among the 20 attitude statements, although statement 13 ("Very obese people are ashamed of their weight") showed disagreement in the responses between normal (78%) and overweight (22%) participants (p-value=.008).(Table 4) There were approximately 4 questions that had extreme responses with the majority choosing either "agree" or "disagree". For example, 88% disagree that obese people cannot expect to lead normal lives (statement 16), 88% disagree that obese people are just as healthy as non-obese people (statement 17); 79% disagree that obese workers cannot be as successful as other workers (statement 4); and 71% disagree that most people feel uncomfortable when they associate with obese people (statement 10).

DISCUSSION

This study examined body type preference and attitudes in females and males of different racial groups. The study sample consisted of 176 undergraduate and graduate students attending Virginia Commonwealth University, an ethnically diverse school. The students were comparably distributed by sex and class/grade level. Each participant underwent BMI determination, answered 20 questions relating to attitudes toward obese persons and selected body images pertaining to their perceptions and ideals.

There was no significant difference of sex or class/grade level among the BMI measurements of the students (Tables 1a, 1b, 1c). Males and females had very similar mean BMI (24.92, 24.78 respectively) and the class/grade levels were consistent, with sophomores and juniors having slightly higher means (25.29, 25.86 respectively). The variance in class/grade level BMI could be a result of aging as body fatness tends to increase with age. The infamous "freshman 15" could be a factor in weight gain and BMI increase. The decrease among seniors and graduate students could be due to increased activity, responsibility, education and health consciousness. It could also be the result of growth & maturity with age so body fatness may have stabilized. Many sophomores and juniors are 20-years of age or older so BMI-by-age calculations and the 2000 CDC growth charts do not apply after age 20 (18).

Approximately half of the sample was under 20 years old and we were able to determine BMI means, percentiles and *z*-scores with *Nutstat* (17) and compare them to the 2000 CDC growth charts (18). For the 46 (49%) men the measurements were mean BMI 24.61 ± [SEM] 0.7427 kg/m^2, BMI percentile of 58.26 ± [SD] 32.87, and z-score of 0.31 ±

[SD] 1.21. For the men, the mean *z*-score places them in the 58.26 BMI percentile (18). This means that about 42% of the general US male population similar in age and sex weighed more than our male participants. For the 47 (57%) females the measurements were mean BMI 25.33 ± [SEM] 0.855 kg/m^2, BMI percentile of 68.86 ± [SD] 27.32, and z-score of 0.64 ± [SD] .95. The mean *z*-score places the women in the 68.86 BMI percentile. (18) About 32% of the general US female population weighed more than our female participants. These measurements are agreeable with Gipson et al (11) for men and women under age 20 placing in the 62.69 and 72.31 BMI percentiles, respectively.

Seven of the 46 (13%) men had BMIs above the 95th percentile and five of the 47 women (17%) had BMIs above the 95th percentile. According to the 2000 CDC Growth Charts (18) these participants are considered overweight. In comparison with the 1999-2000 NHANES that reports the 95th percentile among 12-19 year olds is 15.5% (2), our women had somewhat of an increased prevalence of obesity. These findings are comparable with Gipson et al (11) in which the 12.5% of the men and 17.4% of the females were above the 95th percentile.

According to the 2000 CDC growth charts for children under age 20, those with BMI below the 85th percentile are considered "normal", BMI between the 85th and 95th percentile is "at risk for overweight" and BMI over the 95th percentile is "overweight".In regards to adults, BMI between 18.5 and 25 kg/m^2 is "normal", ≥25 kg/m^2 is "overweight" and ≥30 kg/m^2 is "obese".(18) As there are many available definitions, to eliminate confusion and replicate Gipson et al (11), BMI of 25 kg/m^2 was used to categorize participants into "normal" and "overweight".

The findings replicate and extend earlier reports that that there was no significant difference of sex or grade level among the BMI measurements. Gipson et al (11) did not compare racial groups but stated that the larger body builds could have been more in the Black females than males due to greater social acceptance and/or greater sexual attractiveness. Furthermore, several studies have found that weight status is closely associated to judgments of relationship desirability of women but not men.(19) Therefore it might be expected that women in our culture would be more attuned to being overweight and may explain why women are the majority in seeking weight loss.

Blacks were heavier than whites (27.12 vs. 23.85 kg/m^2, p<.0001, respectively).(Chart 1) Gipson et al reported a mean BMI of 26.02 kg/m^2 for Black males and 24.66 kg/m^2 for Black females. Similar to previous findings for females (20) both Caucasian and Black females rated their current figure as larger than their ideal figure, representing a desire to be thinner. White females also chose thinner ideal body images than Black women. However there was no difference in the ideal figures selected by Caucasian and Black males.(Charts 3 & 7) Traditionally, cultural standards of attractiveness have been linked more to problems with female rather than male body image and eating behaviors.(21) Several explanations have been offered to explain racial differences in body image including socioeconomic status (22), religious affiliation and cultural values of specific ethnic groups (23). We also know that Black women and Hispanics of both sexes have the highest prevalence of obesity.(24) Our findings combined Hispanic and Other races to form one category "Other" with a mean BMI of 24.7, placing

them between Black and Whites. More research is needed on the Hispanic population due to the increasing population and prevalence of obesity in this group.

For Appendix A, question 1 which asks for current body image perceptions, males tended to select figures with a mean BMI measurement between 23.4 and 25.8 kg/m^2, which is consistent with the mean BMI of 24.9 kg/m^2 for all 94 male participants. Females tended to select figures with a mean BMI measurement between 22.2 and 26.3 kg/m^2, which is consistent with the mean BMI of 24.8 for all 82 female participants.(Charts 2 & 6) Among both males and females, question 2 (Which body number best shows who you would LIKE to be?) the mean BMI measurements increased with the figures, showing that the heavier the participant the larger figure they selected (Tables 2.2a, 2.2b, Charts 3 & 7). These results are comparable to the Gipson et al VSU group as males had a mean BMI of 26.0 kg/m^2 and chose figures between 23.2 and 26.4 kg/m^2 and females had a mean BMI of 24.7 kg/m^2 and chose figures between 20.2 and 29.9 kg/m^2. The mean BMI measurements also increased with figure selections for question 2 (ideal body image).(11)

As for race, the results were similar in that the majority of Blacks, Whites and Others chose the same figures for questions 1, 2 and 3. Students generally preferred "trim" figures and the students with BMIs < 25 kg/m^2 preferred the smaller figures than did students with ≥ 25 kg/m^2, however neither BMI, sex or race favored any specific attitudes towards obesity.(Charts 4 & 5) This shows that both males and females of all races tend to identify with others similar to their body size, and although men are as overweight as women, they may not perceive themselves as being overweight.

For Appendix B "Attitudes Toward Obese Persons" scale, responses to the questions did not separate for sex when BMI was categorized as "normal" < 25 kg/m^2 or "overweight" ≥ 25 kg/m^2 (none of the p-values reached statistical significance). As determined in Gipson et al (11), maybe the "findings reflect great tolerance for different body sizes by our study sample." This could possibly be due to the sample population in that they are college students at a metropolitan multi-cultural university. Students could be more educated about health issues and more tolerant and accepting of differences. Some people may not want to admit to certain beliefs or perceptions, even in confidentiality, that they feel may be different from the norm or perceived as negative.

Gipson et al adapted the 9 silhouette figures (Appendix B) used by Bulik et al (25) in order to differentiate thin and obese individuals. Bulik et al (25) used the figures in a Caucasian twin study to establish BMI norms for the silhouettes and determined that the figures were efficient in categorizing individuals as thin or obese.

There are a number of factors that could present a confounding effect on determining body image and attitude towards obesity. As previously discussed, many people may not want to disclose personal beliefs or perceptions for fear of rejection or criticism. They may have family or friends who are overweight or obese so they sympathize with others. The participant could have previously been obese and lost weight and could have feelings of sympathy or apathy towards overweight people. They could base their concept of attractiveness on other factors such as personal style or facial characteristics. There could be a family history of obesity, eating disorders or medical issues. What if they have a recent or current pregnancy causing weight gain?

There may also be socio-economic factors (e.g. family or personal income, housing conditions) that could be confounders. Many students live on a fixed budget, in on-campus housing or apartments with other students, eating fast, convenient meals in between classes. The students who selected "Other" as a racial category were asked to write the race they identified with. Among them were Asians, Pacific Islanders, and bi-racial participants which were all categorized into one group and analyzed. There could be gender and racial differences within the "Other" group. Also as some of the participants were from other countries-they may just in the United States to attend college-so should they be included when generalizing measurements and results to the US population? Besides race, no information was obtained on these potentially confounding variables.

STRENGTHS & WEAKNESSES

Considerations and limitations to the present study should be noted. Unfortunately the sample was predominantly Caucasian with a large minority of African-American and "other" races. This occurred because the focus was placed on the participants in the target age-range, therefore failing to control for number of students according to variables of sex, race, or class. The measures were based on self-reports which may introduce error due to self-report bias. Height and weight measurements were taken with digital bathroom scales and a ruler affixed to the wall, possibly causing measuring error. The sample consisted of a "convenience sample" of college students, mostly undergraduates, limiting the generalizability of this study to non-clinical samples. There was a significant number of participants over the age of 25 and enrolled graduate programs. Students age 25 and over were excluded from the analyses, however if they did not even participate we would have been able to obtain a larger sample population.

In using the Nutstat module of Epi Info (17) to obtain BMI measurement, z-score, and percentiles for students under age 20, it could be questionable as to whether the results are comparable to the SPSS BMI calculations for students over age 20. However, the 2000 CDC Growth Charts (18) state that BMI-for-age is useful in tracking body-size past puberty and throughout life. Results may not generalize to students in other geographic areas or universities and a larger sample size could have provided better gender-race comparisons.

Many of the results replicated those of previous investigations completed in various locations and institutions, including Virginia State University which was used as a model

and comparison group for results. A very important strength was the ability to calculate actual BMI measurements and obtain BMI, percentile and z-score data for students under 20 years of age and compare them to national norms.(15,17) Future research should address the interaction between gender and race in body type preferences for other racial groups, such as Hispanic or Asian samples as well as the underweight population. Future research should also investigate the role cultural standards play in body image in men and women.

CONCLUSIONS

In conclusion, this study predicted and found that body image perceptions and attitudes toward obesity vary across racial groups and that the effect of race/ethnicity on body satisfaction depends on gender. According the Attitudes Toward Obese Persons Scale, the was little evidence that obese people face a severe level of social discrimination among college students. The findings expanded the research on differences and similarities in body image and attitude based on gender and race.

REFERENCES

REFERENCES

(1) Must, A., Spadano, J., Coakley, E.H., Field, A.E., Colditz, G., Dietz, W.H. The disease burden associated with overweight and obesity. *JAMA* 1999; 282-1523-1529.

(2) Ogden, C.L., Flegal, K.M., Carroll, M.D., Johnson, C.L. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002; 288:1728-1732.

(3) U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

(4) Thompson, J.K., Altabe, M.N., Johnson, S., & Stormer, S. (1996). Treatment of body image disturbance in eating disorders. In J.K., Thompson (Ed.), Body image, eating disorders, and obesity: An integrative guide for assessment and treatment (pp. 303-319), Washington, DC: *American Psychological Association*.

(5) Leon, G.R., Fulkerson, J.A., Perry, C.L., & Early-Zald, M.B. (1995). Prospective analysis of personality and behavioral vulnerabilities and gender influences in the later development of disordered eating. *Journal of Abnormal Psychology*, 104, 140-149.

(6) Serdula, M.K., Collins, M.E., Wiliamson, D.F., Anga, R.F., Pamuk, E.R., & Byers, T.E. (1993). Weight control practices of U.S. adolescents and adults. *Annuals of Internal Medicine*, 119, 667-671.

(7) Jackson, L.A., McGill, O.D. Body type preferences and body characteristics associated with attractive and unattractive bodies by African Americans and Anglo Americans. *Sex Roles* 1996; 35, 295-307.

(8) Thompson, S.H., Sargent, R.G., Kemper, K.A. Black and White adolescents males' perceptions of ideal body size. *Sex Roles* 1996; 34:391-406.

(9) Davis, C. & Katzman, M. Perfection as acculturation: Psychological correlates of eating problems in Chinese male and female students living in the United States. *International Journal of Eating Disorders* 1999, 25, 65-70.

(10) Mintz, I.B., & Kashubeck, S. Body image and disordered eating among Asian American and Caucasian college students: An examination of race and gender differences. *Psychology of Women Quarterly* 1999, 23, 781-796.

(11) Gipson, G.W., Reese, S., Vieweg, W.V., et. al. Body image and attitude toward obesity in a historically black university. *Journal of the National Medical Association* 2004.

(12) National Center for Chronic Disease Prevention and Health Promotion. Department of Nutrition and Physical Activity. Defining overweight and obesity. 10/2004. www.cdc.gov/nccdphp/dnpa/obesity/defining.htm .

(13) Gallagher, D. et al. How useful is BMI for comparision of body fatness across age, sex and ethnic groups? *American Journal of Epidemiology* 1996;143:228-239.

(14) Stunkard, A.J., Wadden, T.A. (Editors) Obesity: theory and therapy, Second Edition. New York: Raven Press, 1993.

(15) Mokad, A.H., Marks, J.S., Stroup, D.F., Gerberding, J.L. Actual causes of death in the United States, 2000. *JAMA* 2004; 291:1238-45.

(16) Yuker, H.E., Allison, D.B., Faith, M.S. Methods for measuring attitudes and beliefs about obese people. In: Allison, D.B., editor. Handbook of assessment methods for eating behaviors and weight-related problems. First ed. Thousand Oaks, CA: Sage Publications; 1995.p. 81-118.

(17) Division of Public Health Surveillance and Informatics. Epi Info 2002 – Revision 2 Released Date: January 30, 2003. www.cdc.gov/epiinfo/2003;1-500.

(18) Kuczmarski, R.J., Ogden, C.L., Grummer-Strawn, L.M. et al. 2000 CDC growth charts: United States. *Adv Data* 2000;314:1-28.

(19) Muth, J.L. & Cash, T.F. Body-image attitudes: what difference does gender make? *Journal of Applied Social Psychology*, 1997;27:p.1438.

(20) Tiggemann, M., & Pennington, B. The development of gender differences in body size dissatisfaction. *Australian Psychologist* 1990, 25, 306-313.

(21) Faludi, S. (1999) Stiffed: The betrayal of the American man. New York: W. Morrow & Co.

(22) Akan, G.E. & Grilo, C.M. Sociocultural influences on eating attitudes and behaviors, body image, and psychological functioning: A comparison of African-American, Asian-American, and Caucasian college women. *International Journal of Eating Disorders*, 1995;18:181-187.

(23) Ahmad, S., Waller, G., & Verduyn, C. Eating attitudes and body satisfaction among Asian and Caucasian adolescents. *Journal of adolescence* 1994;17:461-470.

(24) Allison, D.B., Saunders,S.E. Obesity in North America. An overview. *Med Clin North America* 2000;84:305-32.

(25) Bulik, C.M., Wade, T.D., Heath, A.C., Martin, N.G., Stunkard, A.J., Eaves, L.J. Relating body mass index to figural stimuli: population –based normative data for Caucasians. *International Journal Obes Relat Metabolic Disorders* 2001;25:1517-24.
{List of Sources Begins Here} The reference section begins with a cover sheet headed

APPENDIX A

1. ___ Which body number best shows who you ARE now?

2. ___ Which body number best shows who you would LIKE to be?

3. ___ Which body number do you find most SEXUALLY ATTRACTIVE?

Appendix A. Figures used by students to respond to the 3 questions listed above. A green background and blurred facial characteristics led to racial ambiguity.

<u>APPENDIX B</u>

ATTITUDES TOWARD OBESE PERSONS SCALE (ATOP)

Please mark each statement below in the left margin, according to how much you agree or disagree with it. Please do not leave any blank. Write a +1, +2, +3, or −1, −2, or −3, according to the scale below.

Agree	Disagree
+3 = I **strongly** agree	−1 = I **slightly** disagree
+2 = I **moderately** agree	−2 =I **moderately** disagree
+1 = I **slightly** agree	−3 = I **strongly** disagree

1. _____ Obese people are as happy as non-obese people.

2. _____ Most obese people feel that they are not as good as other people.

3. _____ Most obese people are more self-conscious than other people.

4. _____ Obese workers cannot be as successful as other workers.

5. _____ Most non-obese people would not want to marry anyone who is obese.

6. _____ Severely obese people are usually untidy.

7. _____ Obese people are usually sociable.

8. _____ Most obese people are not dissatisfied with themselves.

9. _____ Obese people are just as self-confident as other people.

10. _____ Most people feel uncomfortable when they associate with obese people.

11. _____ Obese people are often less aggressive than non-obese people.

12. _____ Most obese people have different personalities than non-obese people.

13. _____ Very obese people are ashamed of their weight.

14. _____ Most obese people resent normal weight people.

15. _____ Obese people are more emotional than other people.

16. _____ Obese people should not expect to lead normal lives.

17. _____ Obese people are just as healthy as non-obese people.

18. _____ Obese people are just as sexually attractive as non-obese people.

19. _____ Obese people tend to have family problems.

20. _____ One of the worst things that could happen to a person would be for her/him to become

obese.

TABLE 1

DESCRIPTIVE ANALYSIS

Table 1a. BMI measurements for male and female students

BMI measurement (kg/m^2)	Men (n=94, 53%)		Women (n=82, 47%)	
< 25 kg/m^2 (normal)	56	(60%)	52	(63%)
≥ 25 kg/m^2 (over)	38	(40%)	30	(37%)
Mean	24.92		24.79	
Standard error	0.50		0.64	
Lower 95% CI	23.91		23.52	
Upper 95% CI	25.92		26.07	
Min	17.86		17.71	
Max	41.81		51.50	

p-value= 0.880

Table 1b. BMI measurements according to race

BMI measurement (kg/m^2)	Black (n=44, 25%)		White (n=94, 53%)		Other (n=38, 22%)	
< 25 kg/m^2 (normal)	21	(48%)	63	(67%)	24	(63%)
≥ 25 kg/m^2 (over)	23	(52%)	31	(33%)	14	(37%)
Mean	27.14		23.85		24.71	
Standard error	1.09		0.39		0.86	
Lower 95% CI	24.94		23.07		22.97	
Upper 95% CI	29.34		24.62		26.46	
Min	18.01		17.92		17.71	
Max	51.50		34.37		41.15	

p-value= 0.003

Table 1c. BMI measurements combined by sex according to class level

BMI measurement (kg/m^2)	Freshman (n=53, 30%)	Sophomore (n=52, 30%)	Junior (n=33, 19%)	Senior (n=18, 10%)	Grad/Other (n=20, 11%)
< 25 kg/m^2 (normal)	31 (58%)	30 (58%)	19 (58%)	13 (72%)	15 (75%)
≥ 25 kg/m^2 (over)	22 (42%)	22 (42%)	14 (42%)	5 (27%)	5 (25%)
Mean	24.34	25.29	25.86	24.90	23.44
Standard error	0.67	0.78	1.04	1.41	0.75
Lower 95% CI	22.99	23.71	23.73	21.93	21.87
Upper 95% CI	25.69	26.86	27.99	27.88	25.01
Min	17.86	17.71	19.27	18.80	19.53
Max	41.81	51.50	43.26	44.30	33.00

p-value= 0.493

Table 1d. BMI category by sex.

SEX	< 25 kg/m2 (normal)	≥ 25 kg/m2 (overweight)	Total
Men	56 (52%)	38 (56%)	94
Women	52 (48%)	30 (44%)	82
TOTAL	108 (61%)	68 (38.6%)	176

p-value= 0.604

Table 1e. BMI measurements for sex according to race
Males

BMI measurement (kg/m^2)	Black (n=17, 18%)		White (n=52, 55%)		Other (n=25, 27%)	
< 25 kg/m^2 (normal)	6	(35%)	36	(69%)	14	(56%)
≥ 25 kg/m^2 (over)	11	(65%)	16	(30%)	11	(44%)
Mean	27.25		23.80		25.65	
Standard error	1.32		0.52		1.18	
Lower 95% CI	24.44		22.75		23.19	
Upper 95% CI	30.07		24.85		28.10	
Min						
Max						

p-value= 0.042

Females

BMI measurement (kg/m^2)	Black (n=27, 33%)		White (n=42, 51%)		Other (n=13, 16%)	
< 25 kg/m^2 (normal)	15	(56%)	27	(64%)	10	(77%)
≥ 25 kg/m^2 (over)	12	(44%)	15	(36%)	3	(23%)
Mean	27.07		23.91		22.92	
Standard error	1.58		0.59		0.93	
Lower 95% CI	23.81		22.71		22.92	
Upper 95% CI	30.34		25.10		24.96	
Min						
Max						

p-value= 0.425

TABLE 2

STRATA ANALYSIS

Table 2.1 Stratification by sex according to the body image question "Which body number best shows who you ARE now? (Appendix A)

2.1a Male students

Figure	BMI <25 kg/m^2		BMI $\geq$ 25 kg/m^2		Total		Mean BMI
1	4	(7.1%)	0		4	(2.3%)	20.58
2	15	(26.8%)	0		15	(8.5%)	20.52
3	23	(41.1%)	6	(15.8%)	29	(17.0%)	23.45
4	12	(21.4%)	15	(39.5%)	27	(15.3%)	25.82
5	2	(3.6%)	12	(31.6%)	14	(8.0%)	29.11
6	0		4	(10.5%)	4	(2.3%)	31.57
7	0		1	(2.6%)	1	(0.6%)	41.14

p-value = <.0001

2.1b Female Students

Figure	BMI <25 kg/m^2		BMI $\geq$ 25 kg/m^2		Total		Mean BMI
1	1	(1.9%)	0		1	(0.6%)	17.71
2	11	(21.2%)	0		11	(6.3%)	19.92
3	22	(40.4%)	3	(10.0%)	25	(13.6%)	22.21
4	10	(19.2%)	6	(20.0%)	16	(9.1%)	24.53
5	8	(15.4%)	12	(43.3%)	21	(11.9%)	26.38
6	0		5	(16.7%)	5	(2.8%)	31.23
7	0		2	(6.7%)	2	(1.1%)	43.78
8	0		1	(3.3%)	1	(0.6%)	51.49

p-value = <.0001

Table 2.2 Stratification by sex according to the body image question "Which body number best shows who you would LIKE to be? (Appendix A)

2.2a Male students

Figure	BMI <25 kg/m^2	BMI ≥ 25 kg/m^2	Total	Mean BMI
2	6(10.7%)	1(2.6%)	6 (4.0%)	23.04
3	32(57.1%)	22(57.9%)	54 (31.3%)	24.53
4	16(28.6%)	11(28.9%)	27 (15.3%)	25.13
5	2(3.6%)	4(10.5%)	6 (3.4%)	29.62

p-value = 0.07

2.2b Female Students

Figure	BMI <25 kg/m^2	BMI ≥ 25 kg/m^2	Total	Mean BMI
1	1 (3.8%)	0	1 (0.6%)	20.80
2	21 (40.4%)	6 (20.0%)	27 (15.3%)	22.63
3	29 (53.8%)	14 (46.7%)	43 (23.9%)	24.03
4	1 (1.9%)	9 (30%)	10 (5.7%)	34.17
5	0	1 (3.3%)	1 (0.6%)	28.83

p-value = <.0001

Table 2.3. Stratification by sex according to the body image question "Which body number do you find most SEXUALLY ATTRACTIVE? (Appendix A)
When same sex selections were made, we arbitrarily changed them to opposite-sex selections.

2.3a Male students

Figure	BMI <25 kg/m^2	BMI ≥ 25 kg/m^2	Total	Mean BMI
1	0	2 (5.3%)	2 (1.7%)	28.20
1	9 (16.1%)	3 (7.9%)	12 (8.0%)	22.79
3	41 (73.2%)	28 (73.7%)	69 (40.3%)	25.00
4	6 (10.7%)	5 (13.2%)	11 (6.3%)	26.43

p-value = .323

2.3b Female Students

Figure	BMI <25 kg/m^2	BMI ≥ 25 kg/m^2	Total	Mean BMI
1	1 (1.9%)	0	1 (0.6%)	20.80
2	8 (15.4%)	1 (3.3%)	9 (4.0%)	21.87
3	28 (51.9%)	13 (43.3%)	41 (22.2%)	24.54
4	14 (26.9%)	15 (50.0%)	29 (16.5%)	26.36
5	1 (3.8%)	1 (3.3%)	2 (1.1%)	23.84

p-value = .385

TABLE 3

Table 3.1 Stratification by sex and race according to the body image question "Which body number best shows who you ARE now? (Appendix A)

3.1a Male students

Figure	Black	White	Other	Total
1 normal	0	2 (50%)	2 (50%)	4
over	0	0	0	0
2 normal	2 (13.3%)	11 (73%)	2 (13.3%)	15
over	0	0	0	0
3 normal	5 (20.8%)	13(54.1%)	6 (25%)	24
over	2 (28.5%)	4 (57.1%)	0	7
4 normal	0	8 (66.7%)	4 (33.3%)	12
over	6 (40%)	7 (46.6%)	2 (13.3%)	15
5 normal	0	2 (100%)	0	2
over	3 (25%)	4 (33.3%)	5 (41.6%)	12
6 normal	0	0	0	0
over	0	1 (25%)	3 (75%)	4
7 normal	0	0	0	0
over	0	0	1 (100%)	1

3.1b Female students

Figure	Black	White	Other	Total
1 normal	0	0	1 (100%)	1
over	0	0	0	0
2 normal	5 (45.5%)	6 (54.5%)	0	11
over	0	0	0	0
3 normal	4 (19%)	12 (57%)	5 (23.8%)	21
over	2 (66.7%)	1 (33.3%)	0	3
4 normal	3 (30%)	6 (60%)	1 (10%)	10
over	1 (16.6%)	4 (66.7%)	1 (16.6%)	6
5 normal	2 (25%)	3 (37.5%)	3 (37.5%)	8
over	4 (30.7%)	8 (61.5%)	1 (7.6%)	13
1 normal	0	0	0	0
over	2 (40%)	2 (40%)	1 (20%)	5
1 normal	0	0	0	0
over	2 (100%)	0	0	2
1 normal	0	0	0	0
over	1 (100%)	0	0	1

Table 3.2 Stratification by sex and race according to the body image question "Which body number best shows who you would LIKE to be? (Appendix A)

3.2a Male students

Figure	Black	White	Other	Total
2 normal	0	5 (83.3%)	1 (16.6%)	6
over	0	1 (100%)	0	1
3 normal	4 (12.1%)	23 (69.7%)	6 (18.2%)	33
over	9 (40.9%)	9 (40.9%)	4 (18.2%)	22
4 normal	2 (12.5%)	8 (50%)	6 (37.5%)	16
over	2 (18.2%)	6 (54.5%)	3 (27.2%)	11
5 normal	1 (50%)	0	1 (50%)	2
over	0	0	4 (100%)	4

3.2b Female students

Figure	Black	White	Other	Total
1 normal	0	1 (100%)	0	1
over	0	0	0	0
2 normal	3 (14.2%)	12 (57.1%)	6 (28.5%)	21
over	1 (16.6%)	5 (83.3%)	0	6
3 normal	10 (35.7%)	14 (50%)	4 (14.2%)	28
over	4 (28.5%)	8 (57.1%)	2 (14.2%)	14
4 normal	1 (100%)	0	0	1
over	6 (66.7%)	2 (22%)	1 (11.1%)	9
1 normal	0	0	0	0
over	1 (100%)	0	0	1

Table 3.3. Stratification by sex and race according to the body image question "Which body number do you find most SEXUALLY ATTRACTIVE? (Appendix A) *When same sex selections were made, we arbitrarily changed them to opposite-sex selections.*

3.3a Male students

Figure	Black	White	Other	Total
1 normal	0	0	0	0
over	1 (50%)	1 (50%)	0	2
2 normal	1 (11.1%)	8 (88%)	0	9
over	0	3 (100%)	0	3
3 normal	5 (11.9%)	25 (59.5%)	12 (28.5%)	42
over	9 (32.1%)	12 (42.8%)	7 (25%)	28
4 normal	1 (16.6%)	3 (50%)	2 (33.3%)	6
over	1 (20%)	0	4 (80%)	5

3.3b Female students

Figure	Black	White	Other	Total
1 normal	0	1 (100%)	0	1
over	0	0	0	0
2 normal	3 (37.5%)	2 (25%)	3 (37.5%)	8
over	0	1 (100%)	0	1
3 normal	7 (25.9%)	18 (66.7%)	2 (7.4%)	27
over	5 (38.4%)	6 (46.1%)	2 (15.3%)	13
4 normal	3 (21.4%)	6 (42.8%)	5 (35.7%)	14
over	7 (46.6%)	7 (46.6%)	1 (6.6%)	15
5 normal	1 (100%)	0	0	1
over	0	1 (100%)	0	1

TABLE 4

Table 4. Appendix B "Attitudes Toward Obese Persons" –ATOP Responses
Responses were stratified by sex and the female analyses appear in bold italic parentheses.

Question	Agree		Disagree		*Chi-square*	*p*-value
1- Obese people are as happy as non-obese people						
Normal	23	(*31)*	33	(*21)*	0.124	0.724
Overweight/obese	17	(*19)*	21	(*11)*	*(0.111)*	*(0.740)*
Total	40	(*50)*	54	(*32)*		
2- Most obese people feel they are not as good as other people						
Normal	34	(*33)*	22	(*19)*	0.075	0.785
Overweight/obese	22	(*20)*	16	(*10)*	*(0.085)*	*(0.770)*
Total	56	(*53)*	38	(*29)*		
3-Most obese people are more self-conscious than other people						
Normal	37	(*37)*	19	(*15)*	0.084	0.771
Overweight/obese	24	(*25)*	14	(*5)*	*(1.530)*	*(0.216)*
Total	61	(*62)*	33	(*20)*		
4-Obese workers cannot be as successful as other workers						
Normal	1	(*12)*	8	(*40)*	2.687	0.261
Overweight/obese	0	(*6)*	10	(*24)*	*(0.105)*	*(0.746)*
Total	1	(*18)*	18	(*64)*		
5-Most non-obese people would not want to marry anyone who is obese						
Normal	34	(*24)*	22	(*28)*	0.057	0.811
Overweight/obese	24	(*13)*	14	(*17)*	*(0.061)*	*(0.805)*
Total	58	(*37)*	36	(*45)*		
6-Severely obese people are usually untidy						
Normal	23	(*13)*	33	(*38)*	2.006	0.367
Overweight/obese	18	(*9)*	19	(*21)*	*(0.779)*	*(0.677)*
Total	41	(*22)*	52	(*59)*		
7-Obese people are usually sociable						
Normal	38	(*30)*	18	(*22)*	0.108	0.742
Overweight/obese	27	(*24)*	11	(*6)*	*(4.210)*	*(0.045)*
Total	65	(*54)*	29	(*28)*		
8-Most obese people are not dissatisfied with themselves						
Normal	21	(*17)*	35	(*35)*	0.908	0.341
Overweight/obese	18	(*9)*	20	(*20)*	*(1.778)*	*(0.411)*
Total	39	(*26)*	55	(*55)*		
9-Obese people are just as self-confident as other people						
Normal	32	(*26)*	24	(*26)*	2.049	0.152
Overweight/obese	16	(*16)*	22	(*14)*	*(0.085)*	*(0.771)*
Total	48	(*42)*	46	(*40)*		

Question	Agree		Disagree		*Chi-* square	*p*-value
10-Most people feel uncomfortable when they associate with obese people						
Normal	18	*(14)*	38	*(38)*	0.044	0.834
Overweight/obese	13	*(6)*	25	*(24)*	*(0.494)*	*(0.482)*
Total	31	*(20)*	63	*(62)*		
11-Obese people are often less aggressive than non-obese people						
Normal	22	*(16)*	33	*(33)*	0.080	0.961
Overweight/obese	15	*(9)*	32	*(21)*	*(1.858)*	*(0.395)*
Total	37	*(25)*	55	*(54)*		
12-Most obese people have different personalities than non-obese people						
Normal	23	*(12)*	33	*(39)*	0.024	0.877
Overweight/obese	15	*(8)*	23	*(22)*	*(0.685)*	*(0.710)*
Total	38	*(20)*	56	*(61)*		
13-Very obese people are ashamed of their weight						
Normal	36	*(35)*	19	*(17)*	9.554	0.008
Overweight/obese	35	*(23)*	3	*(7)*	*(0.805)*	*(0.370)*
Total	71	*(58)*	22	*(24)*		
14-Most obese people resent normal weight people						
Normal	27	*(23)*	29	*(28)*	4.623	0.099
Overweight/obese	11	*(15)*	26	*(15)*	*(0.767)*	*(0.681)*
Total	38	*(38)*	55	*(43)*		
15-Obese people are more emotional than other people						
Normal	19	*(17)*	36	*(34)*	0.081	0.960
Overweight/obese	13	*(10)*	24	*(20)*	*(0.584)*	*(0.747)*
Total	32	*(27)*	60	*(54)*		
16-Obese people should not expect to lead normal lives						
Normal	7	*(2)*	48	*(50)*	1.841	0.398
Overweight/obese	8	*(3)*	30	*(27)*	*(1.258)*	*(0.262)*
Total	15	*(5)*	78	*(77)*		
17-Obese people are just as healthy as non-obese people						
Normal	8	*(2)*	47	*(50)*	0.722	0.697
Overweight/obese	5	*(5)*	33	*(25)*	*(4.005)*	*(0.045)*
Total	13	*(7)*	80	*(75)*		
18-Obese people are just as sexually attractive as non-obese people						
Normal	11	*(19)*	44	*(33)*	0.953	0.621
Overweight/obese	6	*(15)*	32	*(15)*	*(1.420)*	*(0.233)*
Total	17	*(34)*	76	*(48)*		
19-Obese people tend to have family problems						
Normal	12	*(9)*	42	*(43)*	0.119	0.942
Overweight/obese	9	*(6)*	28	*(24)*	*(0.092)*	*(0.761)*
Total	21	*(15)*	70	*(67)*		

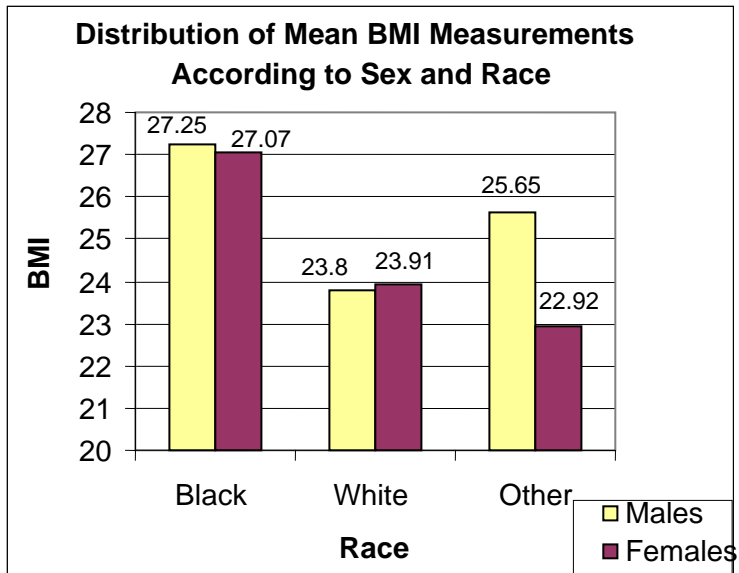| Question	Agree		Disagree		*Chi-square*	*p*-value
20-One of the worst things that could happen to a person would be for him/her to become obese						
Normal	21	(*13*)	35	(*39*)	2.871	0.090
Overweight/obese	8	(*10*)	30	(*20*)	(*0.655*)	(*0.418*)
Total	29	(*23*)	65	(*59*)		

FIGURE 1

Chart 1: Mean BMI Measurements for Gender and Race.

Distribution of Mean BMI Measurements According to Sex and Race

FIGURE 2

Chart 2a: Male Mean BMI Measurements and Figure Selections for "Which body number best shows who you are NOW?" (Appendix A – Question 1).
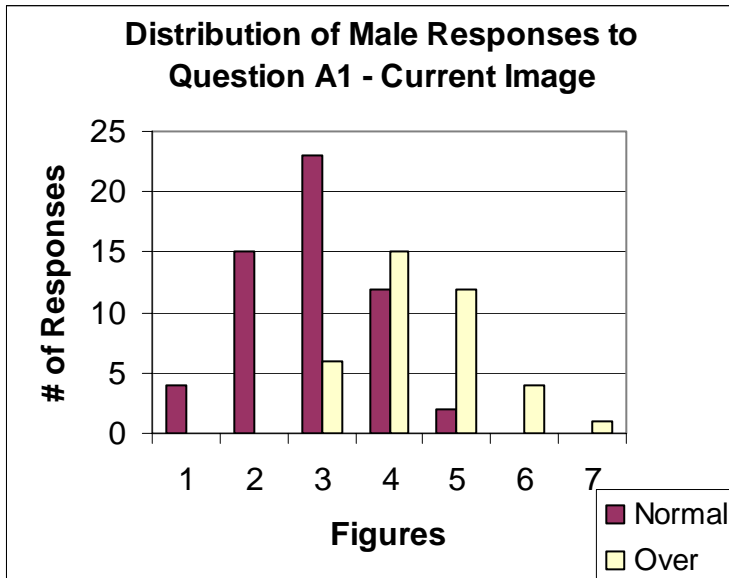
Chart 2b: Female Mean BMI Measurements and Figure Selections for "Which body number best shows who you are NOW?" (Appendix A – Question 1).
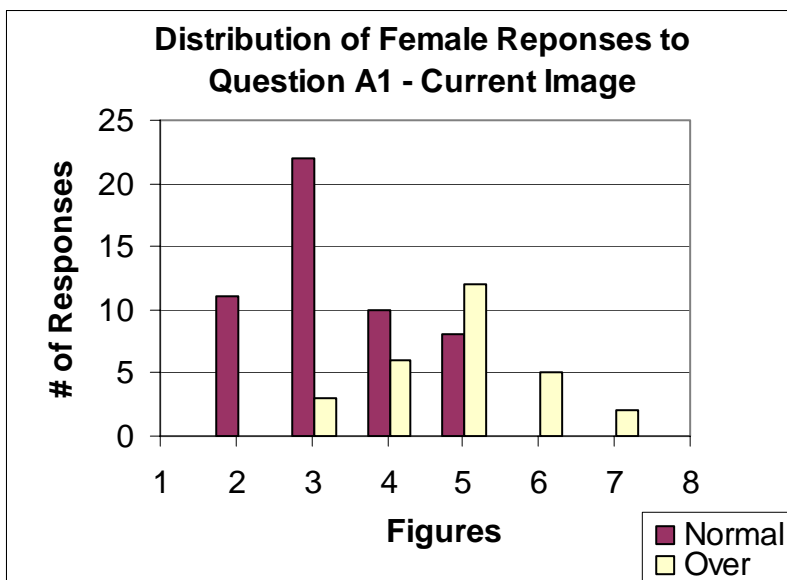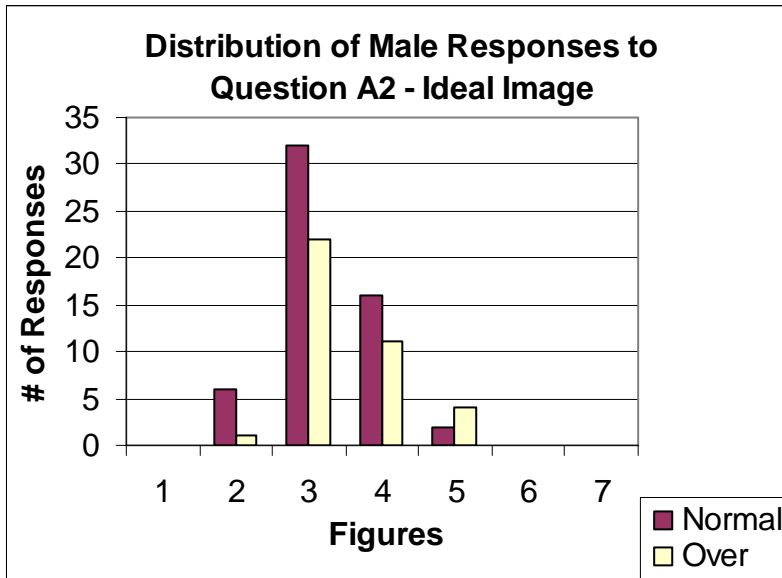
FIGURE 3

Chart 3a: Male BMI Measurements and Figure Selections for "Which body number best shows who you would LIKE to be?" (Appendix A – Question 2).

Chart 3a: Female BMI Measurements and Figure Selections for "Which body number best shows who you would LIKE to be?" (Appendix A – Question 2).
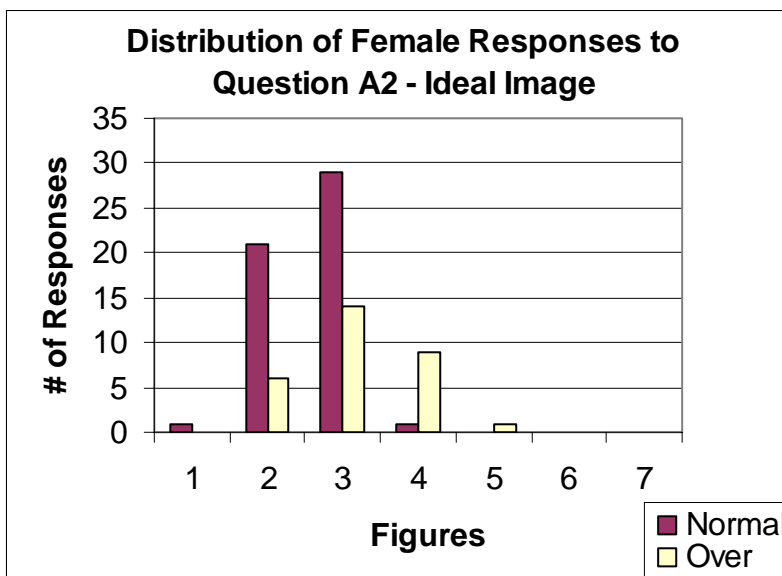
FIGURE 4

Chart 4: Comparison of Male Figure Selections for "Current" and "Ideal" Body Images (Appendix A – Questions 1 vs. Question 2).
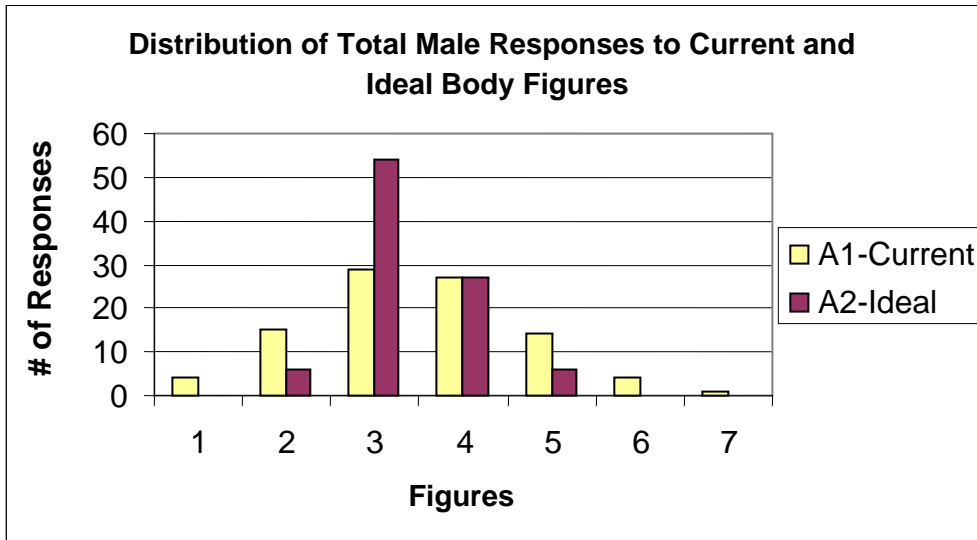
FIGURE 5

Chart 5: Comparison of Female Figure Selections for "Current" and "Ideal" Body Images (Appendix A – Questions 1 vs. Question 2).
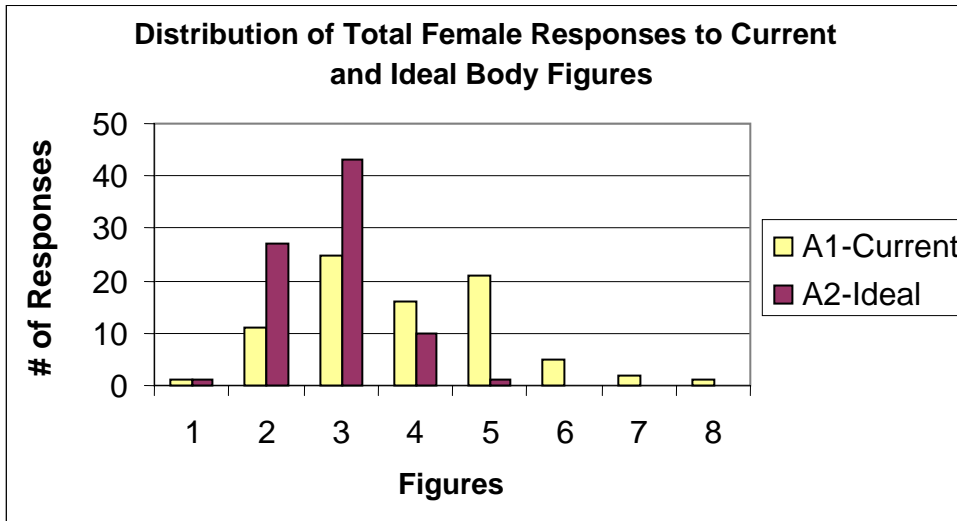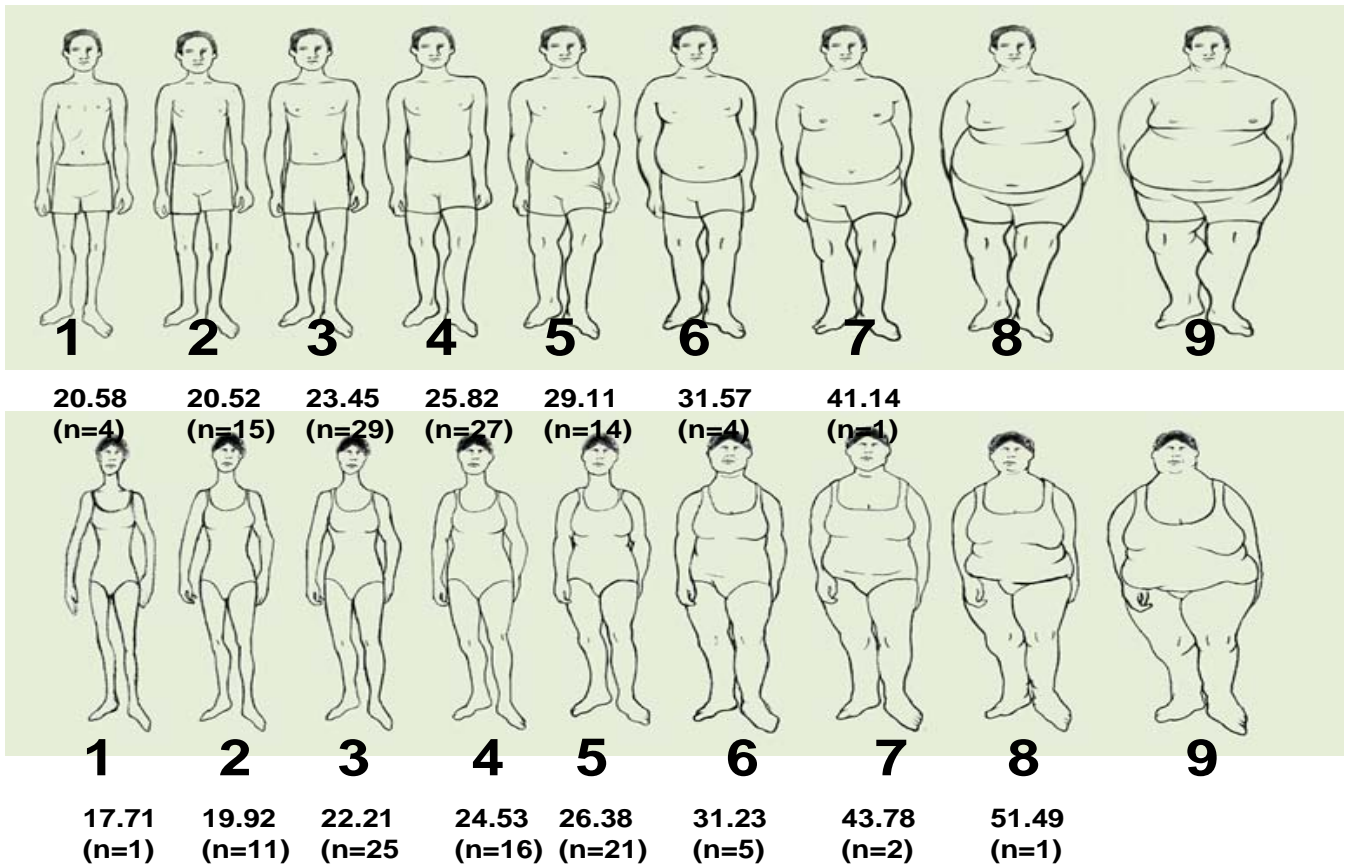
FIGURE 6

1	2	3	4	5	6	7	8	9
20.58 (n=4)	20.52 (n=15)	23.45 (n=29)	25.82 (n=27)	29.11 (n=14)	31.57 (n=4)	41.14 (n=1)		

| 1	2	3	4	5	6	7	8	9
17.71 (n=1)	19.92 (n=11)	22.21 (n=25	24.53 (n=16)	26.38 (n=21)	31.23 (n=5)	43.78 (n=2)	51.49 (n=1)	

CHART 6

Mean BMI Measurements According to Figure Selections for Males and Females for the body image question:

1. Which body number best shows who you ARE now?

* All BMI measurements are kg/m2.*

Appendix A. Figures used by students to respond to the 3 body image questions. A green background and blurred facial characteristics led to racial ambiguity.

FIGURE 7
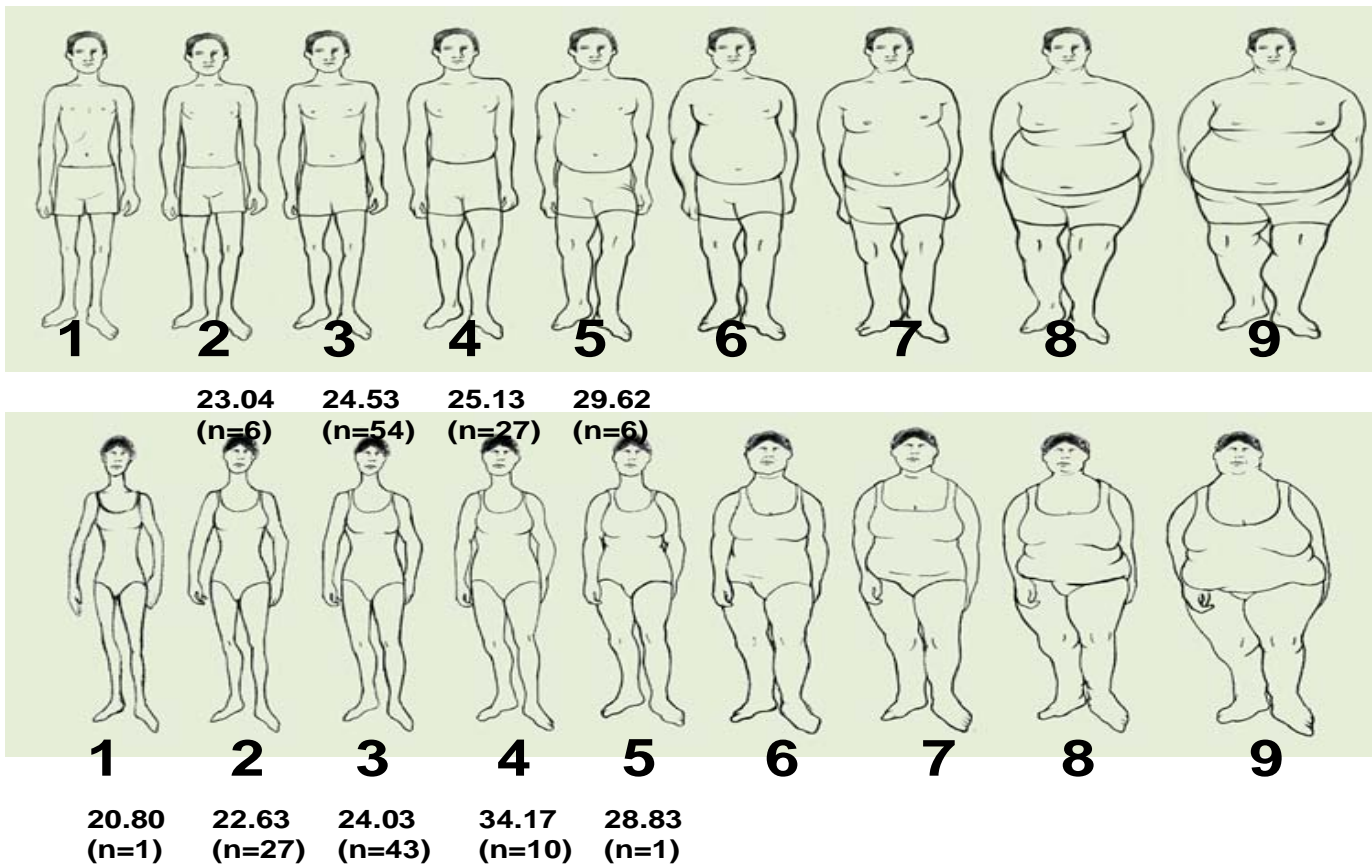
CHART 7

Mean BMI Measurements According to Figure Selections for Males and Females for the body image question:

2. Which body number best shows who you would LIKE to be?

* All BMI measurements are kg/m2.*

Appendix A. Figures used by students to respond to the 3 body image questions. A green background and blurred facial characteristics led to racial ambiguity.

<u>VITA</u>

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