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## **A Cohort Study Evaluating the Implications of Biology, Weight Status and Socioeconomic Level on Global Self-Esteem Competence Among Female African-American Adolescents**

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### **Abstract**

The link between obesity and self-esteem among minority youth has received minimal empirical evaluation. This study aims to describe the magnitude of risk that body mass index, household income, and transitional age have on global self-esteem levels among African-American adolescents. These analyses were conducted on cross-sectional data obtained from 264 urban-dwelling African-American females between 14 and 18 years of age. Survey data on global self-esteem levels, transitory age, and socioeconomic levels were collected using self-administered questionnaires. Measured height and weight values were used to calculate and categorize weight status according to body mass index. Logistic regression models examined the probability of reporting less than average levels of global self-esteem. Adolescent African-American females residing in low-income households were 10 times more likely to report lower global self-esteem scores than those individuals from more affluent households (95% CI: 1.94, 60.19,  $p < .001$ ). Neither weight status (95% CI: 0.81, 2.55;  $p = .26$ ) nor age (95% CI: 0.05, 1.87;  $p = .82$ ) were significant risk indicators for lower than average levels of global self-esteem among participants in this study. Household income appears to be the greatest predictor of global self-esteem levels. Further research in this area is needed to fully elucidate precursors for psychological health vulnerability and facilitate intervention development.

## Keywords

adolescent; African-Americans; self-esteem

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## Introduction

The increase in overweight and obesity among adolescents in the United States continues to be one of the most significant public health challenges of the 21st century. Evaluation of existing trending patterns and the most current prevalence approximations indicate that the greatest proportion of overweight continues to be observed among youth between 12 and 19 years of age (Ogden et al., 2006; Ogden & Carroll, 2010; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, Kit, & Flegal, 2012).

Shown to stratify demographically by ancestry, the prevalence of overweight among adolescents has been consistently higher among female African-Americans than any other adolescent age group by race, gender, or ethnicity (Centers for Disease Control and Prevention (CDC), 2011; Ogden et al., 2012). Two out of four African-American adolescent girls are overweight. By comparison, one in four European American adolescent girls is overweight. Moreover, the risk of overweight severity also appears to be greatest among individuals of African ancestry (Caprio et al., 2008; Wang, 2011; Wang, Gortmaker, & Taveras, 2010). This means that not only is the likelihood of being overweight greater for female African-American youth, but these teens also tend to be heavier than their similarly aged peers. National trends data for the last 40 years show that female African-American adolescents consistently had the highest body mass index (BMI) at 1.37 kg/m<sup>2</sup>. During this same time frame the BMI for adolescent African-American females was, on average, 0.31 kg/m<sup>2</sup> higher than the BMI for European adolescents (Lee, Lee, Guo, & Harris, 2011). As youth continue to gain weight, the risks for developing medical health problems that adversely affect aspects of individual and collective well-being also increase. A large set of data pertinent to the prevalence and incidence of overweight and obesity co-morbidity among youth consistently demonstrate a link between greater BMI and the rise in physiological health threats previously unseen in this age group. Organ systems adversely affected by overweight include the cardiovascular, metabolic, pulmonary and gastrointestinal systems. Examples of conditions associated with these systems include types 1 and 2 diabetes, metabolic syndrome, and non-alcoholic fatty liver disease (Barshop, Francis, Schwimmer, & Lavine, 2009; Camhi & Katzmarzyk, 2011; Daniels, 2009; Martinson, Teitler, & Reichman, 2011). Equally important, but not as widely studied, is the risk of psychological compromise that may present as a consequence of pediatric overweight.

Global self-esteem is broadly defined as one's positive or negative attitude towards oneself in totality (Harter, 1999; Harter, 2003). Lowered global self-esteem is a frequently cited psychological indicator of mental health distress among youth. A lower rating of global self-esteem in adolescence has been associated with mental health risk behaviors such as depression, aggression, delinquency, and anxiety (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Eaton et al., 2010; Joe, Baser, Neighbors, Caldwell, & Jackson, 2009;

Nemiary, Shim, Mattox, & Holden, 2012) that oftentimes continue into adulthood (Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009; Trzesniewski et al., 2006). Female adolescents who are overweight may be more vulnerable for lowered global self-esteem than their healthy weight peers, and thus at an increased risk for mental health problems.

Findings from studies evaluating the predictive capacity of BMI for lowered global self-esteem among adolescents have been inconclusive. While some studies indicate a link between increased BMI and lowered global self-esteem in youth populations (Biro, Striegel-Moore, Franko, Padgett, & Bean, 2006; Danielsen et al., 2012; Powell-Young, 2009), other studies report no association between weight status and one's level of global self-esteem (French, Story, & Perry, 1995; Griffiths, Parsons, & Hills, 2010; Renman, Engstrom, Silfverdal, & Aman, 1999). Furthermore, few studies over the past 30 years have examined the impact of overweight on global self-esteem among African-American youth.

In addition to body weight, gender, and ancestral distinctions, variance in other individual-level factors such as transitional age, phases of adolescence, and socioeconomic level (SEL) between human groups may also contribute to differences in adolescent perception of global self-esteem competence. Extant findings suggest that normative changes in global self-esteem competence among youth appear to be transitionally age-dependent (Birkeland, Melkevik, Holsen, & Wold, 2012; Robins & Trzesniewski, 2005; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Specifically, changes in perception of global self-esteem competence may be observed during those years that coincide with mid- (13 to 16 years) and late- (17 to 19 years) adolescent phases of growth (McClure, Tanski, Kingsbury, Gerrard, & Sargent, 2010; Orth, Trzesniewski, & Robins, 2010; Robins et al., 2002). Twenge and Campbell (2002) conducted a meta-analysis that provided some evidence to support a link between low household income and lowered global self-esteem competence in young people. The low income-low global self-esteem phenomenon may be of particular significance for African-American adolescents who are 3 times more likely to live in poverty than European American children (Children's Defense Fund, 2011; Costello, Keeler, & Angold, 2001; DeNavas-Walt, Proctor, & Smith, 2012).

The main purpose of this descriptive exploratory investigation was to expand the current literature by analyzing the impact of BMI, mid- and late-adolescent transitory age, and socioeconomic level on the magnitude of risk for lowered global self-esteem in a cohort of female African-American adolescents. Consideration for these factors in current and future research may help to clarify the influence of potential global self-esteem risk factors; thereby, promoting a more robust understanding of the global self-esteem phenomena, particularly among diverse adolescent populations.

## Methodology

### Design and Sample

This project used data obtained as part of a larger, cross-sectional study that investigated health-promoting behaviors among healthy, self-identified female African-American adolescents. Three hundred and ten participants ( $N = 310$ ) were recruited from a southern Louisiana metropolis and were invited to participate in the parent study. Sampling

framework, inclusion criteria, and exclusion criteria are described in detail elsewhere (Powell-Young, 2010; Powell-Young, 2012). Based on missing value analysis (missing completely at random,  $p > .05$ ) (Howell, 2007; Little, 1998; Little & Rubin, 2002) and sample size, casewise deletion was selected as the treatment for handling missing data with this study (Tabachnick & Fidell, 2012). Data obtained from  $n = 264$  of the parent study volunteers were included in the current analyses.

### **Institutional Review Board Approval**

Before protocol implementation, written approvals to conduct the study and recruit volunteers were obtained from the relevant university institutional review board (IRB). Written informed consent was obtained from participants  $> 18$  years of age and from a parent or guardian of those  $< 18$  years old. Written assent was also obtained from minor participants prior to study inclusion. Participants were compensated for their participation according to the IRB protocol.

### **Data Collection and Instrumentation**

**Sociodemographic Characteristics**—The Demographic Questionnaire included information about age and grade of each participant. In an effort to facilitate comparative analysis with findings from other global self-esteem studies and to provide a better understanding of the individual differences of age with respect to global self-esteem, age was analyzed as a categorical variable based on developmental phase (i.e., mid-adolescence [14 to 16 years of age] vs. late-adolescence [17 to 18 years of age]).

**Household Income**—Enrollment in the federal school lunch program served as a proxy measurement for household income and, as such, SEL. Eligibility for participation in the program is determined by a family income below 130% of the poverty guidelines issued by the U.S. Department of Health and Human Services (Lindsey, 2009). These guidelines are based on the poverty thresholds determined annually by the U.S. Census Bureau, which are rounded and adjusted for family size. Household income was categorized as either low (LSEL) ( $< 130\%$  poverty) or not low SEL (NLSEL) referent.

**Weight, Height and BMI**—In minimal clothing using a professional floor scale (Health o meter, Bedford, Heights, OH) and portable stadiometer (Seca, Hanover, MD) weight (lb) and height (in) were measured by trained assistants following a standardized protocol. Values were then converted to the nearest 0.1 unit of measurement used in Quetelet's equation for body mass index (BMI) ( $\text{wt}[\text{kg}]/\text{height}[\text{m}^2]$ ). Using recommended nomenclature (Krebs et al., 2007) and CDC gender-, age-specific growth chart reference standards, and percentiles, BMI was investigated as a categorical variable using established cut-offs. Subjects were dichotomized as either healthy weight (HW) (BMI  $> 5$ th percentile but  $< 85$ th percentile) or overweight (OW) (BMI  $> 85$ th percentile). Healthy weight was the referent category.

**Global Self-esteem**—Harter's Self-Perception Profile for Adolescents [SPPA] (Harter, 1988) was used to measure global self-esteem. In research settings, the SPPA is recognized as one of the most widely used multidimensional measures of global self-esteem among

youth. Per manual instructions, scores were calculated as the mean response to the five global self-esteem items rated 1 through 4, where higher numbers corresponded to higher perceptions of one's worth as a person.

Researchers that speak to the reliability and validity of the SPPA global self-esteem domain with African-American youth have reported alpha estimates that range from .68 to .85 with a standard mean alpha coefficient of .70 (Powell-Young & Spruill, 2011; Rose, Hands, & Larkin, 2011; Rudasill & Callahan, 2008; Thomson & Zand, 2002). Cronbach's alpha for the global self-esteem subscale with the current sample was an acceptable .71 (George & Mallery, 2010; Nunnally & Bernstein, 1994).

In the absence of recognized cut-point-based indicators, the guidelines outlined by Carle, Blumberg, Moore and Mbwana (2011) in constructing cut-points for this study were followed. Briefly, a gender-specific mean reliability estimate was calculated from normative and other psychometric literature pertaining to global self-esteem among adolescents. Subsequently, raw cut-points were developed using  $\pm 1$  standard deviation (*SD*) from the mean estimate. Derived cut-points for categorically identifying global self-esteem in this study are similar to those suggested in other studies that have included global self-esteem as a categorical variable (Franklin, Denyer, Steinbeck, Caterson, & Hill, 2006; Goodman & Whitaker, 2002; Hesketh, Wake, & Waters, 2004). Global self-esteem was categorically indexed as below average (mean score [*MS*] < 2.2, [percentile rank < 15th]), average (*MS* > 2.3 < 3.5), or referent above average (*MS* > 3.5, [percentile rank > 85th]).

## Data Analyses

Coded data were analyzed using the Statistical Package for the Social Sciences (SPSS®, Chicago, USA). Prior to analyses, all variables were edited separately for accuracy, completion, and credible values. Frequencies, central tendency measures, and measures of variability ( $\pm$  *SD*) were used to generate descriptive summarization of the study variables. Main effects logistic regression models examined the likelihood of reporting low global self-esteem among the participants in this study. Diagnostics and residual plots for these models were examined for heteroskedasticity, multicollinearity, and/or non-normality. Exact methods were employed when the main effects to be estimated had less than 20 events per covariate parameter in the sample data (Tabachnick & Fidell, 2012). Probabilities for relative risk (RR) were calculated from log odds ratios (OR) and 95% confidence interval (95% CI) were estimated using the bootstrap technique. Significance was set at an alpha level of .05 for tests, and by upper and lower 95% CI not containing the value of 1.0 for odds ratios.

## Results

Data from this sample describe an adolescent population with a mean age of 15.8 years  $\pm$  1.2 years. Seventy-eight percent of the participants resided in LSEL households and the remaining 22% resided in homes with income levels correspondent to NLSEL. Fifty-six percent of the sample participants were HW (> 5th but < 85th kg/m<sup>2</sup>) and the remaining 44% were OW (> 85th kg/m<sup>2</sup>). Mean BMI was 26.1 kg/m<sup>2</sup>  $\pm$  5.2 kg/m<sup>2</sup> (range: 22.6 – 54.5

kg/m<sup>2</sup>). The largest proportion of teens (64%) was in the mid-adolescent age range. Approximately 78% of the sample reported average global self-esteem, while 27% of the participants reported above average global self-esteem. Global self-esteem scores ranged from 2.3 to 4.0. Average global self-esteem scores for this study were lower for OW teens ( $3.44 \pm 0.51$ ) living in LSEL households ( $3.40 \pm 0.49$ ) when compared with HW teens ( $3.53 \pm 0.45$ ) residing in NLSEL households ( $3.63 \pm 0.42$ ). There were no scores reported for this sample equivalent to a below average level of global self-esteem.

Residing in a LSEL household was shown to independently increase the risk for reporting a lower sense of self-esteem ( $p < .001$ ). Girls from LSEL households were 10.5 times as likely to report a lower sense of global self-esteem as those from NLSEL households. Adjustment for BMI and age did not affect the significant association between LSEL and global self-worth. Neither BMI (RR = 1.45; 95% CI: 0.81, 2.55;  $p = .26$ ) nor transitory age (RR = 1.02; 95% CI: 0.05, 1.87;  $p = .82$ ) was significant risk factors for lowered global self-esteem among this sample (See Table 1).

## Discussion

In the current study, the higher levels of global self-esteem typically reported for female African-American adolescents were substantiated (Birndorf, Ryan, Auinger, & Aten, 2005; Biro et al., 2006; Twenge & Crocker, 2002). Among OW teens in this study, it was found that the mean global self-esteem score was comparatively lower than the mean score for teens categorized as HW. However, scores were not representative of “low” global self-esteem. In fact, the minimum individual global self-esteem score reported for this sample was between the 15th and 90th percentile of observations and qualified as an intermediate (average) level of global self-esteem.

As expected, the lowest self-esteem scores for teens in this study were found at the highest level of BMI (Franklin et al., 2006; Strauss, 2000). This is similar to previously documented findings among female adolescents (Ozmen et al., 2007; Renman, Engstrom, Silfverdal, & Aman, 1999; Strauss, 2000). However, the magnitude or effect of the relationship between an increased BMI and decreased self-esteem was negligible, and moreover, did not significantly increase the risk burden for low global self-esteem among OW teens. This small association between a higher BMI and global self-esteem, as well as the preservation of global self-esteem in spite of weight status among this sample, may be a protective reflection of the cultural norms that nurture the development and sustainment of global self-esteem competence among African-Americans. This theory has been introduced and discussed by several others.

Specifically, among female adolescents, a major determinant to global self-esteem is satisfaction with physical attractiveness and peer acceptance of beauty (Harter, 2003; van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010), which in the United States is based heavily on thinness. As a distinct subculture, however, the general acceptance of a more robust current and ideal feminine stature among African-Americans may buffer the vulnerability effect of the “ideal skinny” on female global self-esteem among adolescents. For example, studies indicate that African-American women are more satisfied

with a more curvaceous figure (Gluck & Geliebter, 2002; Thomas, Moseley, Stallings, Nichols-English, & Wagner, 2008) with both African-American males and females reporting a preference for this body shape (Freedman, Carter, Sbrocco, & Gray, 2004; Rosenfeld, Stewart, Stinnett, & Jackson, 1999). Further, this trend appears to extend to adolescent African-Americans. Studies indicate that African-American teen girls appear to have less body shape appearance concerns than their European American counterparts (Brown et al., 1998; White, Kohlmaier, Varnado-Sullivan, & Williamson, 2003). As well, adolescent African-American males reported a larger female body size as the ideal preference (Jones, 2009).

Dietary customs, along with the social acceptance of food and eating traditions intrinsic to Southern culture (James, 2004; Liburd, 2003; Neumark-Sztainer, Story, Perry, & Casey, 1999), from which this sample was recruited, may also mediate the view of a larger ideal body size, and shape positive self-assessments of global self-esteem regardless of BMI with individuals who are demographically similar to this cohort. For example, the preparation and frequent consumption of high-salt high-fat foods such as fried chicken or smothered (gravy) pork chops, considered traditional soul food staples, is actively encouraged in the homes of African-Americans living in the Southern United States. As such, the contextual importance of food may help members of this population to circumvent the internalization of potential physiological and psychological health threats often associated with food lifestyle and excess weight.

When evaluating age, this study found no significant association with level of global self-esteem. Within this sample, the risk of reporting a lower global self-esteem score was just as likely during both mid- (14 to 16 years) and late- (17 to 18 years) adolescence. These findings are clearly different from developmental perspectives (Harter, 1999; Newman & Newman, 2008) of global self-esteem that suggest ages that encompass early through mid-adolescence, in general, have a greater predictive capacity for low self-esteem among individuals in these age categories. This study was, however, able to closely replicate Biro and colleagues' (Biro et al., 2006) and Brown et al.'s (Brown et al., 1998) findings of no explanatory effect of age on low self-esteem risk among multi-ethnic samples of adolescent females.

Socioeconomic level had an obvious and measurable effect on global self-esteem among individuals in this sample. The distinction between these results and earlier findings lies in the strength of the increased risk for low global self-esteem attributable to low socioeconomic status. The proportion of female African-American adolescents from LSEL households reporting lower global self-esteem competence was 900% higher than those not in this group. These findings support the concept of lower-class susceptibility and middle-upper-class insulation for low self-esteem risk proposed by others (Birndorf et al., 2005; Goldhagen et al., 2005; Larson & Haifon, 2010; Nuru-Jeter, Sarsour, Jutte, & Thomas Boyce, 2010).

These data demonstrate that global self-esteem scores were significantly different between OW and HW teens. However, the probability that the difference in these scores would pose a risk for reporting a less than adequate level of global self-esteem level among OW

African-American adolescents was not apparent. It appears that the most salient attributable risk factor for lowered self-esteem is socioeconomic disadvantage. It is acknowledged that the fairly wide confidence intervals reflect some imprecision with respect to estimated relative risk. However, this sample was highly homogenous for LSEL, with only a small percentage in the referent NLSEL group. It may be that, in a larger study, more precise confidence interval estimates would be generated for the SEL effect. Nevertheless, it is felt that these findings yield valuable information that could provide guidance for future public health prevention and intervention strategies targeting African-American adolescents.

Currently, much of the adolescent self-esteem research has focused on the associations of weight status risk variables and domain specific competence (e.g., body image). Following this trend, prevention and intervention research has largely concentrated on weight loss, weight management, or modifications in weight-related lifestyle behaviors (e.g., physical activity, diet) as restorative or enhancement influences on self-esteem. One of the consistent methodological limitations noted in the extant literature is that very few of these studies have incorporated sociodemographic factors that may independently or rnterdependently influence low global self-esteem vulnerability. These findings imply that the degree of relative risk associated with LSEL is such that integrating an SEL component into future study designs may better inform self-esteem prevention-intervention design.

### Limitations of the Study

A few methodological considerations should be discussed regarding these study findings. First, this is a non-random, largely homogeneous sample with respect to ancestry, geography, and socioeconomic level. Therefore, generalizability beyond this sample is unknown. Data from this study are cross-sectional in nature, which preclude causal inference. Also, given gender differences often reported for global self-esteem (Gentile, Grabe, Dolan-Pascoe, Twenge, Wells, & Maitino, 2009; Kling, Hyde, Showers, & Buswell, 1999; Wilgenbusch & Merrell, 1999), incorporating African-American males would facilitate further evaluation and explanation of gender divergence among individuals within an at-risk population.

As previously mentioned, the data show signs of unbalance. Proportions of respondents with low LSEL and global self-esteem scores in the lower percentiles seem low and yielded wide confidence intervals for the effect of SEL. To compensate, no interaction terms were considered and convergence was documented during logistic regression estimation. However, confirmation of these findings is needed on a more balanced dataset. Finally, a proxy measure of SEL rather than an individual, direct assessment of income was used. Despite this, a significant effect between SEL and global self-esteem was found. Further research should aim to recruit a larger, more representative sample of African-Americans. Future research should also endeavor to look at the longitudinal effects of adiposity, age, and SEL on global self-esteem.



## Conclusions

These limitations notwithstanding, results from this study contribute to advancing the body of self-esteem research in vulnerable populations and especially in those at risk for obesity and related chronic disease. At present, knowledge about global self-esteem among overweight African-American adolescents is limited. Information is especially sparse for urban-dwelling female African-American adolescents residing in LSEL households. To our knowledge, this is the first study to evaluate and quantify the risk association of overweight, age, and SEL among a population that is disparately affected by disease burden and other adverse health conditions. Although more research is needed, these findings clearly provide much needed insight regarding population-specific referent and attributable risk empirics for overweight African-American adolescents.

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## References

- Barshop NJ, Francis CS, Schwimmer JB, Lavine JE. Nonalcoholic fatty liver disease as a comorbidity of childhood obesity. *Pediatric Health*. 2009; 3(3):271–281.10.2217/phe.09.21 [PubMed: 20556232]
- Birkeland MS, Melkevik O, Holsen I, Wold B. Trajectories of global self-esteem development during adolescence. *Journal of Adolescence*. 2012; 35(1):43–54.10.1016/j.adolescence.2011.06.006 [PubMed: 21764114]
- Birndorf S, Ryan S, Auinger P, Aten M. High self-esteem among adolescents: Longitudinal trends, sex differences, and protective factors. *The Journal of Adolescent Health*. 2005; 37(3):194–201.10.1016/j.jadohealth.2004.08.012 [PubMed: 16109338]
- Biro FM, Striegel-Moore RH, Franko DL, Padgett J, Bean JA. Self-esteem in adolescent females. *The Journal of Adolescent Health*. 2006; 39(4):501–507.10.1016/j.jadohealth.2006.03.010 [PubMed: 16982384]
- Brown KM, McMahon RP, Biro FM, Crawford P, Schreiber GB, Similo SL, Striegel-Moore R. Changes in self-esteem in black and white girls between the ages of 9 and 14 years. *The NHLBI growth and health study. The Journal of Adolescent Health*. 1998; 23(1):7–19. [PubMed: 9648018]
- Camhi SM, Katzmarzyk PT. Prevalence of cardiometabolic risk factor clustering and body mass index in adolescents. *The Journal of Pediatrics*. 2011; 159(2):303–307.10.1016/j.jpeds.2011.01.059 [PubMed: 21429506]
- Caprio S, Daniels SR, Drewnowski A, Kaufman FR, Palinkas LA, Rosenbloom AL, Schwimmer JB. Influence of race, ethnicity, and culture on childhood obesity: Implications for prevention and treatment: A consensus statement of shaping America's health and the obesity society. *Diabetes Care*. 2008; 31(11):2211–2221.10.2337/dc08-9024 [PubMed: 18955718]
- Carle AC, Blumberg SJ, Moore KA, Mbwana K. Advanced psychometric methods for developing and evaluating cut-point-based indicators. *Child Indicators Research*. 2011; 4(1):101–126.10.1007/s12187010-9075-1
- Centers for Disease Control and Prevention (CDC). Overweight prevalence among children and adolescents, 2007–2008. 2011. Retrieved 03/11, 2012 from: [http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_07\\_08/obesity\\_child\\_07\\_08.htm](http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm)
- Children's Defense Fund. Portrait of inequality 2011: Black children in America. Children's Defense Fund: Washington, D.C.; 2011. Retrieved from <http://www.childrensdefense.org/programs-campaigns/black-community-crusade-for-children-H/bccc-assets/portrait-of-inequality.pdf>
- Costello EJ, Keeler GP, Angold A. Poverty, race/ethnicity, and psychiatric disorder: A study of rural children. *American Journal of Public Health*. 2001; 91(9):1494–1498. [PubMed: 11527787]

- Daniels SR. Complications of obesity in children and adolescents. *International Journal of Obesity* (2005). 2009; 33(Suppl 1):S60–S65.10.1038/ijo.2009.20 [PubMed: 19363511]
- Danielsen YS, Stormark KM, Nordhus IH, Maehle M, Sand L, Ekornas B, Pallesen S. Factors associated with low self-esteem in children with overweight. *Obesity Facts*. 2012; 5(5):722–733.10.1159/000338333
- DeNavas-Walt, C.; Proctor, BD.; Smith, JC. Income, poverty, and health insurance coverage in the United States: 2011. Washington, D.C.: U.S. Census Bureau; 2012. (No. P60-243)
- Donnellan MB, Trzesniewski KH, Robins RW, Moffitt TE, Caspi A. Low self-esteem is related to aggression, antisocial behavior, and delinquency. *Psychological Science*. 2005; 16(4):328–335.10.1111/j.0956-7976.2005.01535.x [PubMed: 15828981]
- Eaton DK, Kann L, Kinchen S, Shanklin S, Ross J, Hawkins J, CDC. Youth risk behavior surveillance – United States, 2009. *MMWR Surveillance Summaries: Morbidity and Mortality Weekly Report*. 2010; 59(5):1–142.
- Franklin J, Denyer G, Steinbeck KS, Caterson ID, Hill AJ. Obesity and risk of low self-esteem: A statewide survey of Australian children. *Pediatrics*. 2006; 118(6):2481–2487.10.1542/peds.2006-0511 [PubMed: 17142534]
- Freedman RE, Carter MM, Sbrocco T, Gray JJ. Ethnic differences in preferences for female weight and waist-to-hip ratio: A comparison of African-American and White American college and community samples. *Eating Behaviors*. 2004; 5(3):191–198.10.1016/j.eatbeh.2004.01.002 [PubMed: 15135331]
- French SA, Story M, Perry CL. Self-esteem and obesity in children and adolescents: A literature review. *Obesity Research*. 1995; 3(5):479–490. [PubMed: 8521169]
- Gentile B, Grabe S, Dolan-Pascoe B, Twenge JM, Wells BE, Maitino A. Gender differences in domain-specific self-esteem: A meta-analysis. *Review of General Psychology*. 2009; 13(1):34–45.
- George, D.; Mallery, P. SPSS for windows step by step: A simple guide and reference 18.0 update. 11. Boston: Allyn & Bacon; 2010.
- Gluck ME, Geliebter A. Racial/ethnic differences in body image and eating behaviors. *Eating Behaviors*. 2002; 3(2):143–151. [PubMed: 15001011]
- Goldhagen J, Remo R, Bryant T 3rd, Wludyka P, Dailey A, Wood D, Livingood W. The health status of southern children: A neglected regional disparity. *Pediatrics*. 2005; 116(6):e746–753.10.1542/peds.2005-0366 [PubMed: 16263972]
- Goodman E, Whitaker RC. A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics*. 2002; 110(3):497–504. [PubMed: 12205250]
- Griffiths LJ, Parsons TJ, Hill AJ. Self-esteem and quality of life in obese children and adolescents: A systematic review. *International Journal of Pediatric Obesity*. 2010; 5(4):282–304.10.3109/17477160903473697 [PubMed: 20210677]
- Harter, S. Manual for the self-perception profile for adolescents. Denver, CO: University of Denver; 1988.
- Harter, S. The construction of self: A developmental perspective. New York: Guilford Press; 1999.
- Harter, S. The development of self-representations during childhood and adolescence. In: Leary, M.; Tangney, J., editors. *Handbook of self and identity*. New York: Guilford Press; 2003. p. 610-642.
- Hesketh K, Wake M, Waters E. Body mass index and parent-reported self-esteem in elementary school children: Evidence for a causal relationship. *International journal of Obesity and Related Metabolic Disorders*. 2004; 28(10):1233–1237.10.1038/sj.ijo.0802624 [PubMed: 15314637]
- Howell, DC. The treatment of missing data. In: Outhwaite, W.; Turner, SP., editors. *The SAGE handbook of social science methodology*. Thousand Oaks, CA: Sage Inc; 2007. p. 208-225.
- James DC. Factors influencing food choices, dietary intake, and nutrition-related attitudes among African Americans: Application of a culturally sensitive model. *Ethnicity & Health*. 2004; 9(4): 349–367. [PubMed: 15570680]
- Joe S, Baser RS, Neighbors HW, Caldwell CH, Jackson JS. 12-month and lifetime prevalence of suicide attempts among black adolescents in the national survey of American life. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2009; 48(3):271–282.10.1097/CHI.0b013e318195bccf [PubMed: 19182692]

- Jones R. Extracting, storing and distributing DNA for a birth cohort study. *Paediatric and Perinatal Epidemiology*. 2009; 23(Suppl 1):127–133.10.1111/j.1365-3016.2008.01005.x [PubMed: 19490452]
- Kling KC, Hyde JS, Showers CJ, Buswell BN. Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin*. 1999; 125(4):470–500. [PubMed: 10414226]
- Krebs NF, Hirnes JH, Jacobson D, Nicklas TA, Guilday P, Styne D. Assessment of child and adolescent overweight and obesity. *Pediatrics*. 2007; 120(Suppl 4):S193–S228.10.1542/peds.2007-2329D [PubMed: 18055652]
- Larson K, Halfon N. Family income gradients in the health and health care access of US children. *Maternal and Child Health Journal*. 2010; 14(3):332–342.10.1007/s10995-009-0477-y [PubMed: 19499315]
- Lee H, Lee D, Guo G, Harris KM. Trends in body mass index in adolescence and young adulthood in the United States: 1959–2002. *The Journal of Adolescent Health*. 2011; 49(6):601–608.10.1016/j.jadohealth.2011.04.019 [PubMed: 22098770]
- Liburd LC. Food, identity, and African-American women with type 2 diabetes: An anthropological perspective. *Diabetes Spectrum*. 2003; 1.6(3):160–165.10.2337/diaspect.16.3.160
- Lindsey, D. *Childhood poverty and inequality*. New York: Oxford University Press; 2009.
- Little RJA. A test for missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*. 1998; 83:1198–1202.
- Little, RJA.; Rubin, DB. *Statistical analysis with missing data*. 2. Hoboken, New Jersey: Wiley-Interscience; 2002.
- Martinson ML, Teitler JO, Reichman NE. Health across the life span in the United States and England. *American Journal of Epidemiology*. 2011; 173(8):858–865.10.1093/aje/kwq325 [PubMed: 21389038]
- McClure AC, Tanski SE, Kingsbury J, Gerrard M, Sargent JD. Characteristics associated with low self-esteem among US adolescents. *Academic Pediatrics*. 2010; 10(4):238–44.e2.10.1016/j.acap.2010.03.007 [PubMed: 20605547]
- Nemiary D, Shim R, Mattox G, Holden K. The relationship between obesity and depression in adolescents. *Psychiatric Annals*. 2012; 42(8):305–308.10.3928/00485713-20120806-09 [PubMed: 23976799]
- Neumark-Sztainer D, Story M, Perry C, Casey MA. Factors influencing food choices of adolescents: Findings from focus-group discussions with adolescents. *Journal of the American Dietetic Association*. 1999; 99(8):929–937.10.1016/S0002-8223(99)00222-9 [PubMed: 10450307]
- Newman, BM.; Newman, PR. *Development through life: A psychosocial approach*. 10. Belmont, CA: Wadsworth Cengage Learning; 2008.
- Nunnally, JA.; Bernstein, I. *Psychometric theory*. 3. New York: McGraw-Hill; 1994.
- Nuru-Jeter AM, Sarsour K, Jutte DP, Boyce WT. Socioeconomic predictors of health and development in middle childhood: Variations by socioeconomic status measure and race. *Issues in Comprehensive Pediatric Nursing*. 2010; 33(2):59–81.10.3109/01460861003663953 [PubMed: 20384474]
- Ogden, CL.; Carroll, MD. Prevalence of obesity among children and adolescents: United States, trends, 1963–1965 through 2007–2008. 2010. Retrieved 11/28, 2010 from: [http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_07\\_08/obesity\\_child\\_07\\_08.htm](http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm)
- Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007–2008. *Journal of the American Medical Association*. 2010; 303(3):242–249.10.1001/jama.2009.2012 [PubMed: 20071470]
- Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999–2004. *Journal of the American Medical Association*. 2006; 295(13):1549–1555.10.1001/jama.295.13.1549 [PubMed: 16595758]
- Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999–2010. *Journal of the American Medical Association*. 2012; 307(5):483–490.10.1001/jama.2012.40 [PubMed: 22253364]

- Orth U, Robins RW, Trzesniewski KH, Maes J, Schmitt M. Low self-esteem is a risk factor for depressive symptoms from young adulthood to old age. *Journal of Abnormal Psychology*. 2009; 118(3):472–478.10.1037/a0015922 [PubMed: 19685945]
- Orth U, Trzesniewski KH, Robins RW. Self-esteem development from young adulthood to old age: A cohort-sequential longitudinal study. *Journal of Personality and Social Psychology*. 2010; 98(4): 645–658.10.1037/a0018769 [PubMed: 20307135]
- Ozmen D, Ozmen E, Ergin D, Cetinkaya AC, Sen N, Dundar PE, Taskin EO. The association of self-esteem, depression and body satisfaction with obesity among Turkish adolescents. *BMC Public Health*. 2007; 16(7):80.10.1186/1471-2458-7-80 [PubMed: 17506879]
- Powell-Young YM, Spruill IJ. Measuring self-concept among African Americans: Validating the factor structure of the self-perception profile for adolescents. *Journal of the National Black Nurses Association*. 2011; 22(2):29–37. [PubMed: 23061177]
- Powell-Young YM. The mediating effect of global self-worth on physical activity in African-American adolescent females. *Journal of National Black Nurses Association*. 2009; 20(1):19–24.
- Powell-Young YM. The validity of self-report weight and height as a surrogate method for direct measurement. *Applied Nursing Research*. 2010; 25(1):25–30.10.1016/j.apnr.2010.06.001 [PubMed: 20974100]
- Powell-Young YM. Household income and spiritual well-being but not body mass index as determinants of poor self-rated health among African American adolescents. *Research in Nursing & Health*. 2012; 35(3):219–230.10.1002/nur.21473 [PubMed: 22456912]
- Renman C, Engstrom I, Silfverdal SA, Aman J. Mental health and psychosocial characteristics in adolescent obesity: A population-based case-control study. *Acta Paediatrica*. 1999; 88(9):998–1003. [PubMed: 10519343]
- Robins RW, Trzesniewski KH. Self-esteem development across the lifespan. *Current Directions in Psychological Science*. 2005; 14(3):158–162.
- Robins RW, Trzesniewski KH, Tracy JL, Gosling SD, Potter J. Global self-esteem across the life span. *Psychology and Aging*. 2002; 17(3):423–434. [PubMed: 12243384]
- Rose E, Hands B, Larkin D. Reliability and validity of the self-perception profile for adolescents: An Australian sample. *Australian Journal of Psychology*. 2011; 64(2):92–99.10.1111/j.1742-9536.2011.00031.x
- Rosenfeld LB, Stewart SC, Stinnett HJ, Jackson LA. Preferences for body type and body characteristics associated with attractive and unattractive bodies: Jackson and McGill revisited. *Perceptual and Motor Skills*. 1999; 89(2):459–470. [PubMed: 10597583]
- Rudasill KM, Callahan CM. Psychometric characteristics of the Harter self-perception profiles for adolescents and children for use with gifted populations. *Gifted Child Quarterly*. 2008; 52(1):70–86.
- Strauss RS. Childhood obesity and self-esteem. *Pediatrics*. 2000; 105(1):e15. [PubMed: 10617752]
- Tabachnick, BG.; Fidell, LS. *Using multivariate statistics*. 6. Boston: Pearson; 2012.
- Thomas AM, Moseley G, Stallings R, Nichols-English G, Wagner PJ. Perceptions of obesity: Black and white differences. *Journal of Cultural Diversity*. 2008; 15(4):174–180. [PubMed: 19202719]
- Thomson NR, Zand DH. The Harter Self-Perception Profile for Adolescents: Psychometrics for an early adolescent, African American sample. *International Journal of Testing*. 2002; 2(3 & 4):297–310.
- Trzesniewski KH, Donnellan MB, Moffitt TE, Robins RW, Poulton R, Caspi A. Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Developmental Psychology*. 2006; 42(2):381–390.10.1037/0012-1649.42.2.381 [PubMed: 16569175]
- Twenge JM, Campbell WK. Self-esteem and socioeconomic status: A meta-analytic review. *Personality and Social Psychology Review*. 2002; 6(1):59–71.
- Twenge JM, Crocker J. Race and self-esteem: Meta-analyses comparing Whites, Blacks, Hispanics, Asians, and American Indians and comment on Gray-Little and Hafdahl (2000). *Psychological Bulletin*. 2002; 128(3):371–408. discussion 409–20. [PubMed: 12002695]
- van den Berg PA, Mond J, Eisenberg M, Ackard D, Neumark-Sztainer D. The link between body dissatisfaction and self-esteem in adolescents: Similarities across gender, age, weight status, race/

ethnicity, and socioeconomic status. *The Journal of Adolescent Health*. 2010; 47(3):290–296.10.1016/j.jadohealth.2010.02.004 [PubMed: 20708569]

Wang Y. Disparities in pediatric obesity in the United States. *Advances in Nutrition* (Bethesda, Md). 2011; 2(1):23–31.10.3945/an.H0.000083

Wang YC, Gortmaker SL, Taveras EM. Trends and racial/ethnic disparities in severe obesity among US children and adolescents, 1976–2006. *International Journal of Pediatric Obesity*. 2010; 6(1): 12–20.10.3109/17477161003587774 [PubMed: 20233157]

White MA, Kohlmaier JR, Varnado-Sullivan P, Williamson DA. Racial/ethnic differences in weight concerns: Protective and risk factors for the development of eating disorders and obesity among adolescent females. *Eating and Weight Disorders*. 2003; 8(1):20–25. [PubMed: 12762621]

**Table 1**

Measures of effect size and 95% confidence intervals between global self-esteem scores and characteristics of African-American females 14–18 years of age ( $N = 264$ )

Outcome Measure: Self-Esteem Competence Absolute Risk		Relative Risk (95% CI)	Unadjusted Odds (95% CI) Univariate	Adjusted Odds (95% CI) Multivariate main effects
<b>OW</b>	<b>HW<sup>a</sup></b>			
18%	12%	1.67 (0.94, 2.99)	1.55 (0.77, 3.09)	1.50 (0.74, 3.04)
<b>LSEL</b>	<b>NLSEL<sup>a</sup></b>			
18%	2%	10.5 (1.94, 60.19)*	12.59 (1.69, 93.83)*	12.59 (1.68, 94.12)*
<b>14–16 yr</b>	<b>17–18 yr<sup>a</sup></b>			
15%	15%	1.02 (0.56, 1.87)	0.977 (0.48, 1.98)	4.09 (0.53, 2.26)

LSEL = low socioeconomic level, NLSEL = not low socioeconomic level.

<sup>a</sup> = reference group.

\* Upper and lower 95% CI does not contain the value of one and is statistically significant at  $\alpha < .05$ .