Do Depression, Self-Esteem, Body-Esteem, and Eating Attitudes Vary by BMI Among African American Adolescents?

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Objective   To examine how psychosocial factors vary by body weight and gender among African-American adolescents.   **Methods**   A community sample of 235 low-income, predominantly African-American adolescents completed measures of depression, self-esteem, body-esteem, and eating attitudes. Measured weight and height were converted to body mass index (kg/m^2) age and gender-adjusted z-scores. Data were analyzed using 2-factor multivariate analysis of variance.   **Results**   Obese youths had significantly worse scores on all psychosocial domains than normal weight youths, with no differences between overweight and normal weight youths. Obese youths had significantly worse scores than overweight youths on body-esteem and self-esteem. Female adolescents had significantly worse scores than males on depressed mood, body-esteem, and eating attitudes.   **Conclusions**   Among a community sample of predominantly African-American adolescents, obesity, not overweight, was associated with poor psychosocial health. Findings suggest that overweight may be perceived as normative, and that weight-related programs consider adolescents' psychosocial functioning.

Key words   adolescents; African-American; depression; obesity; psychosocial functioning.

Childhood obesity is a major public health problem, especially in economically disadvantaged minority populations. Based on estimates from the 2009–2010 National Health and Nutrition Examination Survey, among children and adolescents aged 6–19 years, 18.2% were obese[1] and 15% were overweight, far higher than the expected rates of 5 and 10%, respectively (Ogden, Carroll, Kit, & Flegal, 2012). The pattern was accentuated among African-American children with an obesity rate of 25.7%. The long-term physical and mental health complications resulting from childhood obesity (Dietz, 1998) have raised concerns about psychosocial conditions during childhood that may be important for identification and intervention (Swallen, Reither, Haas, & Meier, 2005), particularly in minority populations.

Obesity and Psychosocial Complications

Previous research among adolescents has shown that weight status was often negatively related to mental health (Swallen, Reither, Haas, & Meier, 2005; Wang, Wild, Kipp, Kuhle, & Veugelers, 2009). Adolescence is a crucial period in youths' psychosocial development, associated with significant physical, social, and cognitive changes, including a heightened awareness of body size (Lawler & Nixon, 2011). The bullying and weight-related teasing that often accompany obesity (McCormack et al., 2011) can increase adolescents' feelings of loneliness, low self-esteem, and depression. In addition, increases in body mass index (BMI) have been described among children with mood and affective disorders (Rofey et al., 2009).

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[1] Obese is defined by body mass index (BMI, weight in kilograms/ height in meters[2]) ≥95th percentile based on the Centers for Disease Control and Prevention growth references. Overweight is defined by BMI ≥ 85th percentile and <95th percentile.

However, investigations of the relationship between childhood obesity and psychosocial functioning have often been limited to depressed mood and yielded inconsistent findings (Puder & Munsch, 2010; Swallen, Reither, Haas, & Meier, 2005) or conducted among adolescents with extreme obesity (Zeller, Modi, Noll, Long, & Inge, 2009). Clinical investigations that have examined the association between depression and weight status among treatment seeking youths have reported that obese children were often unhappy with their weight and experienced high rates of psychosocial distress, particularly depressed mood (Erickson, Robinson, Haydel, & Killen, 2000; Vander Wal & Mitchell, 2011). In a recent analysis of adolescents from the 2009 Youth Risk Behavior Survey, racial differences were found in rates of depression. Among Caucasian adolescents, obese females had significantly higher rates of depression than healthy weight females and obese males. However, among African-American adolescents, no significant differences in depression were found based on either weight status or gender (Whaley, Smith, & Hancock, 2011).

Previous studies have also examined the relationship between obesity and self-esteem with mixed findings. Self-esteem may be influenced by age, gender, and race/ethnicity (Gray-Little & Hafdahl, 2000; Russell-Mayhew, McVey, Bardick, & Ireland, 2012). For example, one study found that low self-esteem was not characteristic of obese inner city African-American youths (Kaplan & Wadden, 1986), and another reported that Caucasian and Hispanic girls were more vulnerable to poor self-esteem related to obesity than were African-American girls (Strauss, 2000). Among African-American pre-adolescent girls, there was no significant difference in self-esteem based on BMI above or below the 85th percentile (Stockton et al., 2009).

Findings regarding the relationship between body weight and body-esteem among African-American adolescents have been inconsistent. Although some studies found dissatisfaction related to weight and body size among overweight and obese African-American adolescent females (Mellin, Neumark-Sztainer, Story, Ireland, & Resnick, 2002), others have found that overweight/obese African-Americans adolescents were accepting or even preferred a larger body size (Flynn & Fitzgibbon, 1998; Mitola, Papas, Le, Fusillo, & Black, 2007).

Unhealthy eating attitudes, habits, and behaviors, including symptoms of eating disorders, are relatively widespread among adolescent girls (CDC, 2009) and may be increasing, as obesity is a leading risk factor for eating disorder development (Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Russell-Mayhew, McVey, Bardick, & Ireland, et al., 2012; Vander Wal & Thomas, 2004). Like obesity, disordered eating behaviors have been associated with mental health problems including depression (Jones, Bennett, Olmsted, Lawson, & Rodin, 2001). Although research has shown relatively low rates of disordered eating behaviors among African-American adolescent females (Bisaga et al., 2005), there has been little research among early adolescents (Jones, Bennett, Olmsted, Lawson, & Rodin, 2001). With the staggering increase in the prevalence of adolescent obesity, it becomes increasingly important to understand associations between weight status and eating disorders (Nicklas, Baranowski, Cullen, & Berenson, 2001; Vander Wal & Thomas, 2004.

Gaps in Previous Literature

Four common methodological problems have interfered with the interpretation of the relationship between weight status and psychosocial functioning among adolescents. First, studies with clinical samples may reflect referral bias; adolescents seeking treatment for obesity may be more affected by their weight status than non-treatment seeking adolescents (Erickson, Robinson, Haydel, & Killen, 2000; Goodman & Must, 2011). Second, studies have often relied on a single index of psychosocial problems. Multiple indices of psychosocial functioning may provide a more comprehensive understanding of the relationship between psychosocial functioning and weight status, than single indices, particularly when considering symptoms, not diagnoses. Third, many studies have combined overweight and obese adolescents together, thereby limiting findings, particularly as the proportion of overweight and obese adolescents increases (Goodman & Must, 2011). Finally, many studies have combined adolescents who vary in race/ethnicity, age and gender (Puhl & Latner, 2007), even though base rates of psychosocial functioning often vary by age, ethnicity, and gender (Croll, Neumark-Sztainer, Story, & Ireland, 2002). For example, Brown and colleagues (1998) found that self-esteem began to decline at 11 years of age in Caucasian girls, but appeared to stabilize in African-American girls aged between 9 and 14 years, and female adolescents were often at higher risk for both obesity and psychosocial problems than males. Thus, community-based studies are needed that include early adolescents of similar age and race/ethnicity, that examine multiple indicators of psychosocial functioning, and that use clearly defined weight status categories.

The objective of this cross-sectional analysis is to examine how self-reported psychological distress varies based on body weight and gender among a sample of predominantly urban African-American adolescents. We tested two

hypotheses: (a) there is a relationship between weight status and psychosocial functioning, with the poorest scores among obese adolescents, moderate scores among overweight adolescents, and the best scores among normal weight adolescents and (b) females have poorer psychosocial functioning than males. A finding that poor psychosocial functioning is limited to obese, but not overweight, adolescents would clarify the relationship between weight status and psychosocial functioning among community samples of urban African-American adolescents, leading to two clinical implications in similar samples: (a) overweight may be regarded as normative and (b) weight-related programs for obese adolescents consider their psychosocial functioning.

Methods
Sample
Participants were enrolled in Challenge!, a health promotion/obesity prevention randomized controlled trial for adolescents. Challenge! was designed to evaluate the efficacy of a manualized home and community-based health promotion intervention delivered by college-age mentors among low-income urban adolescents (Black et al., 2010). Participants were recruited from two sources: (a) a longitudinal study of urban youths (Black, Dubowitz, Krishnakumar, & Starr 2007) and (b) middle schools in a low income urban community (Black et al., 2010). We described the project to potential participants by sending letters to participants in the longitudinal study and distributing information in classrooms in the middle schools. Eligibility criteria included middle school enrollment (age 11–16 years) and residence in the low-income communities surrounding the medical center. Weight was not mentioned in the recruitment materials and was not a criterion for enrollment. Of the 128 eligible participants in the longitudinal study, 84 (66%) enrolled and completed the baseline evaluation; 151 students recruited from the middle schools enrolled and completed the baseline evaluation. The groups did not differ by age, race/ethnicity, weight status, or gender. The majority of the 235 adolescents ($n = 228$, 97%) were African-American (50% male, $n = 119$) with a mean age of 13.27 years (Table I).

Procedure
The protocol was approved by the University of Maryland, School of Medicine Institutional Review Board. Adolescents and caregivers completed assent and consent forms, respectively. All participants were compensated for transportation and participation. Adolescents participated in the baseline evaluation that included anthropometrics and questionnaires on psychosocial functioning (depression, self-esteem, body-esteem, and eating attitudes) and demographics that were self-administered on a laptop computer, and they presented aurally through headphones. Caregiver baseline evaluations included anthropometrics and questionnaires in paper format.

Measures
Anthropometry
A trained staff member collected all anthropometric measurements. Weight was measured to the nearest 100 g with a Tanita digital scale, and height was measured to the nearest 0.5 cm with a wall-mounted stadiometer. BMI was calculated, and the values were converted to BMI z-scores and percentiles based on the 2000 Centers for Disease Control and Prevention age- and gender-specific tables using algorithms provided at http://www.cdc.gov/growthcharts (CDC, 2000). Participants were divided into categories based on their BMI percentiles: Normal weight (<85th percentile), overweight ($\geq$85th and <95th percentile), and obese ($\geq$95th percentile).

Demographics
Adolescents reported basic demographic information including age, gender, and race/ethnicity. Caregivers reported on family size and family income. Using this information and the poverty ratio equation provided by the US Census Bureau, each family's poverty ratio was calculated and compared with the 2003 poverty index, based on household size, number of dependents, and income (US Census Bureau, 2004).

Depressed Mood
Depressed mood was assessed by the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), a 21-item scale that includes symptoms of depression in the past 2 weeks (e.g., hopelessness, feeling of guilt, and appetite). Responses range from 0 to 3 with 3 representing more frequency or severity. The total score was calculated for each participant to indicate depressed mood, with a higher total score indicating more severity. Clinical cutoffs for the BDI in adolescent populations have ranged from 16 to 20. Depressed mood is classified according to the absence of or mild symptoms (0–15), moderate symptoms (16–19), moderate-to-severe symptoms (20–63) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Panzarine, Slater, & Sharps, 1995). The reliability and validity of the BDI have been demonstrated among adolescents aged 12 to 19 years (Ambrosini, Metz, Bianchi, Rabinovich, & Undie, 1991). For the current study, the Cronbach's alpha was 0.88, scores ranged

Table I. *Descriptive Data and Anthropometric Characteristics by Weight Status*

Characteristics	Weight status			
	Normal weight	Overweight	Obese	All
Males	85 (71.4%)	12 (10.1%)	22 (18.5%)	119
Females	62 (53.4%)	14 (12.1%)	40 (34.5%)	116
All	147 (62.6%)	26 (11.1%)	62 (26.4%)	235
Age, years (M, SD)	13.31 (1.04)	13.45 (1.08)	13.10 (1.01)	13.27 (1.04)
Ethnicity				
African Am	142 (62.3%)	26 (11.4%)	60 (26.3%)	228
Caucasian	4 (66.7%)	0	2 (33.3)	6
Other	1 (100%)	0	0	1
Psychosocial score range, means and standard deviation				
BDI				0–44, 7.65 (8.77)
Rosenberg self-esteem				10.00–35.00, 27.00 (5.52)
Children's eating attitudes				0.00–41.00, 8.90 (7.04)
Body esteem – appearance				0.10–4.00, 3.00 (.96)
Caregiver education				
<H.S. diploma				25.0%
H.S. diploma				31.6%
Some college or vocational				43.4%
Caregiver income[a]				
At or below poverty level				56.1%
Caregiver weight				
Underweight or normal				23.6%
Overweight				24.0%
Obese				52.4%

[a]Based on the poverty index.

from 0 to 44. The BDI was chosen rather than the Children's Depression Index because some of the participants would exceed the age limit for the Children's Depression Index by the conclusion of the study.

Self-Esteem
The Rosenberg Self-esteem scale was used to assess adolescents' global feelings of self-worth or self-acceptance (Rosenberg, 1965). The measure consists of 10 items, and respondents report using a four-point response format (strongly agree, agree, disagree, strongly disagree). Scores range from 10 to 40, with higher scores representing higher self-esteem. The Rosenberg Self-esteem scale has demonstrated validity with reported Cronbach's alphas ranging from 0.77 to 0.88 (Fleming & Courtney, 1984), test–retest correlation of 0.82 (Silber & Tippett, 1965). In our sample, the Cronbach's alpha was 0.83, and scores ranged from 10 to 35.

Body-Esteem
Body-esteem, the self-evaluation of body appearance, was measured using the Appearance subscale of the Body-esteem Scale for Adolescents and Adults (Mendelson, Mendelson, & White, 2001). The Appearance subscale of the Body-esteem Scale for Adolescents and Adult is a 10-item self-report Likert scale that includes general feelings about appearance, with Cronbach alpha of 0.92 and test–retest correlation of 0.89 (Mendelson, Mendelson, & White, 2001). The Cronbach alpha for the BE-Appearance subscale from our sample was 0.90 and scores ranged from .10 to 4.00.

Eating Attitudes
The children's version of the Eating Attitudes Test (ChEAT) was used to measure eating attitudes and behaviors associated with eating disorders, specifically, anorexia nervosa and bulimia nervosa (Maloney, McGuire, & Daniels, 1988; Smolak & Levine, 1994). Like the Eating Attitude Test (Garner, Olmsted, Bohr, & Garfinkel, 1982), the ChEAT is a 26-item self-report questionnaire; each item is rated on a Likert scale from 1 (always) to 6 (never). The ChEAT has four subscales (dieting, bulimia, food preoccupation, and oral control). For each item, the most suggestive response is recoded to a three, the next most indicative a two, and the next one. The remaining three choices are recoded to zero. Thus, ChEAT total scores can range from 0 to 78.

Studies using a clinical cutoff score of 20 have found associations with disturbed eating attitudes and behaviors and vulnerability toward development of an eating disorder (Garner, Olmsted, Bsohr, & Garfinkel, 1982). ChEAT has adequate test–retest reliability (0.81) and internal reliability (0.76) (Maloney, McGuire, & Daniels, 1988). Smolak and Levine (1994) reported Cronbach's alpha of 0.87 and scores that were significantly correlated with weight management behavior (i.e., extreme dieting) and body dissatisfaction. The alpha for the current sample was 0.81; scores ranged from 0 to 41.

Data Analyses

Analyses were designed to assess differences in psychosocial functioning by gender and weight status (normal, overweight, and obese). For all questionnaires, mean scores were calculated and converted to z-scores for comparison; lower values represent poorer functioning. Gender-specific Pearson's correlation analyses were conducted to examine relationships between demographic variables and psychosocial functioning to identify confounding variables.

A two-factor multivariate analysis of variance (ANOVA) was conducted to examine differences in psychosocial functioning by gender and weight status (normal, overweight, and obese). An alpha level of 0.05 was set *a priori*. Two-factor ANOVA were planned to examine gender and weight status differences within each psychosocial variable. We reported mean differences and confidence intervals. If a significant gender by weight status interaction occurred, stratified analyses were planned.

Results
Preliminary Analyses

Eleven percent of the adolescents were overweight and 26% were obese (Table I); almost 11% of the adolescents were above the clinical cutoff for depression and <6% for disordered eating. Seventy-six percent of the caregivers were overweight or obese, and 75% completed high school. Over half (56%) of the families lived below the federal poverty line.

There were no significant relationships between demographic variables (poverty, adolescent age, maternal education, or parent depression) and either weight status or psychosocial variables overall or for either gender. Therefore, no covariates were included in the analyses.

Among females, the correlations among the four psychosocial functioning variables were significant, ranging from 0.54 to 0.68. Among males, the correlations among depressed mood, self-esteem, and body-esteem were significant and ranged from 0.36 to 0.54. The correlations between eating attitudes with self-esteem and body-esteem were significant (0.37 and 0.21, respectively); the correlation with depressed mood was not significant (0.11).

Female adolescents had significantly higher BMI z-scores ($t = -2.79$, $p < .01$) and were significantly more likely to be overweight or obese than males ($\chi^2 = 8.94$, $p = 0.01$) (Table I).

Primary Analyses

The two-factor multivariate ANOVA yielded significant main effects for weight status: Wilks' $\Lambda = 0.85$, F (8, 342) = 3.61, $p < .001$, multivariate $\eta^2 = 0.078$ and gender: Wilks' $\Lambda = 0.94$, F (4, 171) = 2.87, $p = .03$, multivariate $\eta^2 = 0.06$. The interaction between weight status and gender was not significant, Wilks' $\Lambda = 0.96$, F (8, 342) = 0.85, $p = $ .NS, multivariate $\eta^2 = 0.02$.

Weight Status and Psychosocial Functioning

Results from the ANOVAs indicated a significant effect of weight status in all domains of psychosocial functioning except depression (Table II). Planned comparisons indicated no significant differences between the normal weight and overweight groups in any psychosocial domain. However, there were significant differences between the normal weight and obese groups in all psychosocial domains: Depression [mean difference = 0.31 (CI = 0.12, 0.61) $p = .04$]; self-esteem [mean difference = 0.40 (CI = 0.09, 0.70) $p = .01$]; body-esteem (mean difference = 0.77 [CI = 0.48, 1.05) $p = .001$]; and eating attitudes [mean difference = 0.45 (CI = 0.16, 0.74) $p = .001$], with lower scores in the obese group. Differences between overweight and obese groups were significant for body-esteem [mean difference = 0.56 (CI = 0.13, 0.99) $p = .01$] and self-esteem [mean difference = 0.47 (CI = 0.01, 0.94) $p = .05$], with lower scores in the obese group (Figure 1 and Table II).

Psychosocial Functioning and Gender

Significant gender differences were found for depressed mood, body esteem, and eating attitudes, all favoring males (Table III). Scores in self-esteem did not differ by gender.

Discussion

This study had three major findings. First, the rates of overweight and obesity exceeded the recent national findings from National Health and Nutrition Examination Survey but were consistent with findings

Table II. *Mean (SD) z-scores on Psychosocial Variables by Weight Status*

Psychosocial variables	Mean z-scores			ANOVA		
	Normal[a]	Overweight	Obese	(df)	F	p-value
Depression	0.09 (.95)	0.14 (1.06)	−0.28 (1.05)*	(2, 231)	2.44	.09
Eating attitudes	0.15 (.89)	0.07 (1.13)	−0.38 (1.10)**	(2, 230)	4.72	.01
Self-esteem	0.10 (.93)	0.17 (.97)	−0.30 (1.11)**·***	(2, 217)	3.71	.03
Body-esteem	0.24 (.82)	0.00 (.85)	−0.58 (1.21)**·****	(2, 229)	14.18	<.01

[a]normal = BMI <85%; overweight = 85% ≤BMI <95%; obese = BMI ≥95%

*Significant differences between normal and obese groups, $p \leq .05$

**Significant differences between normal and obese groups, $p \leq .01$

***Significant difference between overweight and obese groups, $p = .05$

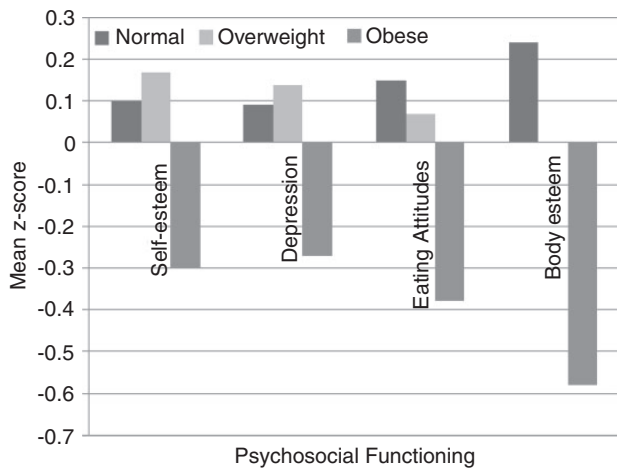****Significant differences between overweight and obese groups, $p \leq .01$

Figure 1. Differences in psychosocial z-scores by weight status. Negative z-score indicates worse psychosocial functioning.

Table III. *Mean (SD) z-scores of Psychosocial Variables by Gender*

Psychosocial variables	Male	Female	(df)	t	p-value
Depression	0.15 (.84)	−0.16 (1.12)	(1, 231)	4.05	.05
Eating Attitudes	0.22 (.69)	−0.22 (1.20)	(1, 230)	7.99	<.01
Self-esteem	0.05 (.95)	−0.05 (1.05)	(1, 217)	0.10	ns
Body-esteem	0.19 (.88)	−0.20 (1.07)	(1, 229)	4.69	.03

among African-American youths (Ogden et al., 2012). Thus, this sample of low income, predominantly African-American adolescents was at elevated risk for physical and mental health consequences associated with childhood obesity. Over half of the caregivers were obese, consistent with national norms (Flegal, Carroll, Kit, & Ogden, 2012 & Ogden et al., 2012).

Second, psychosocial functioning differed by weight status in this sample of predominantly African-American adolescents. Across three diverse measures of psychosocial functioning, obese youths reported more psychosocial problems and worse functioning than normal weight youths. This finding extended to differences between obese and overweight youths, with significantly better psychosocial functioning on two measures (body-esteem and self-esteem) among overweight youth, compared with obese youths.

Our finding that overweight youths did not differ from normal weight on the four measures of psychosocial functioning challenges the assumption that overweight youths experience psychosocial problems, and it may suggest

cultural interpretations of body size and shape. For example, many African-Americans tend to accept and endorse a larger body size as ''normal'' weight status (Bisaga et al., 2005; Franko & Striegel-Moore, 2002) even to the point where cultural interpretations of ideal body size may serve as a protective factor for psychosocial functioning (Abrams, Allen & Gray, 1993). Some studies have suggested that cultural standards in the African-American community may focus children's attention on attributes other than size when judging their self-worth, thus protecting their self-esteem (Young-Hyman, Schlundt, Herman-Wenderoth, & Bozylinski, 2003).

A major contribution of our results is the suggestion that previous studies may have come to misleading conclusions by collapsing overweight and obese children into a single group. This practice may cloud the relationship between weight and psychosocial functioning, particularly as the number of obese youth increase, relative to overweight youth, as shown in our sample.

Our third finding is that female adolescents have worse psychosocial functioning than males in the domains of depressed mood, body-esteem, and eating attitudes. This finding is consistent with other studies of adolescent psychosocial health, illustrating the perceived psychosocial vulnerability among adolescent females (Merten, Wickrama, & Williams, 2008; Rofey, et al., 2009; Strauss, 2000).

Of note, most of the elevated scores were sub-clinical and therefore unlikely to come to the attention of behavioral or mental health providers. However, elevated scores

could put youths at risk for subsequent behavioral or mental health problems and therefore should be the target of prevention.

Methodological Considerations

There are several methodological issues to consider. First, the relatively small sample size limited power to examine gender differences related to weight status and body size. However, the gender finding on psychosocial functioning illustrates the vulnerability of females, regardless of weight status. Second, this study was conducted among low-income, urban, predominantly African-American adolescents and may not generalize to other populations. Third, BMI z-scores adjust for age and gender; thus, there may be over-adjustment in the comparisons of body size across genders. Finally, the cross-sectional design does not enable us to determine the sequence of psychosocial problems and obesity. Strengths of this research include comparisons between the overweight and obese youths in a community-based sample of adolescents.

Conclusions

In a community sample of low-income, urban, predominantly African-American adolescents, females and obese adolescents had significantly poorer psychosocial health than males and normal/overweight adolescents. Studies that combine overweight and obese African-American adolescents together and/or combine genders may lead to inaccurate conclusions regarding the relation between weight status and psychosocial functioning. Although overweight African-American adolescents did not report negative psychosocial functioning (i.e., depression, low-self-esteem), their elevated BMI increases their risk for negative physical health consequences including adult obesity and therefore warrants a health promotion intervention. For example, Challenge!, a home- and community-based intervention that enrolled adolescents, regardless of BMI, and targeted healthy diet and physical activity by providing with college-age mentors was effective in preventing the increase in rates of overweight that occurred in the control group (Black et al., 2010). Focusing on weight reduction may not be an effective way to motivate overweight African-American adolescents to adopt health promoting behavior. If adolescents (and their parents) feel that being overweight is healthy and the "new norm," there may be little motivation to participate in a weight loss or weight management intervention (Mitola, Papas, Le, Fusillo, & Black, 2007; Young-Hyman, Schlundt, Herman-Wenderoth, & Bozylinski, 2003).

The findings lead to at least five recommendations for clinical practice involving low-income African-American adolescents. First, weight-related messages may not be motivating for overweight youths. Innovative strategies are needed to promote healthy diet and physical activity, such as the "adventure therapy" strategy shown to be effective (Lloyd-Richardson et al., 2012). Second, clinicians may develop more effective health promotion interventions if they are aware of adolescents' body size perception and weight-management motivation. Third, interventions that aim to include motivation enhancing components (motivational interviewing) that extend beyond weight-related concerns may benefit overweight youths. Fourth, psychosocial functioning should be assessed when addressing weight-related issues, and weight status and body size perceptions should be assessed when addressing psychosocial issues, thereby enabling clinicians to consider introducing integrated interventions that promote both weight management and psychosocial functioning. Finally, obese children in community samples may be experiencing psychosocial problems, possibly associated with weight-related stigma or bullying, and may benefit from therapeutic intervention.

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