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Does body satisfaction help or harm overweight teens? A ten-year longitudinal study of the relationship between body satisfaction and BMI

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Abstract

Purpose—This study examines the relationship between body satisfaction of overweight adolescents and 10-year changes in BMI.

Methods—Participants who were overweight as adolescents (n=496) were drawn from Project EAT, a 10-year longitudinal study.

Results—Among overweight girls, a significant difference in 10-year BMI change across baseline body satisfaction quartiles was observed. Overweight girls with the lowest body satisfaction at baseline had a nearly 3-unit greater increase in BMI at follow-up, compared to overweight girls in the high body satisfaction quartile; this difference has important clinical significance. Among overweight boys, significant associations between body satisfaction quartile and change in BMI were not observed.

Conclusion—Overall, findings indicate that among overweight adolescents a high level of body satisfaction during adolescence was not harmful, and in fact may be beneficial for girls, in terms

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of long-term weight management. These findings refute the commonly-held notion that overweight young people should be dissatisfied with their bodies in order to motivate positive change.

Introduction

Adolescent girls, and overweight adolescents of both genders, have been shown to have very low levels of body satisfaction.¹ Research has revealed associations between low body satisfaction during adolescence and a number of negative health outcomes, including low self-esteem, depression and the development of disordered eating.¹ However, it is sometimes argued that experiencing low levels of body satisfaction might be beneficial for overweight adolescents as this lack of body satisfaction might serve to motivate overweight adolescents to engage in weight-loss efforts.²

In a previous study by our research group we aimed to provide some clarity to this issue by asking the simple, yet important, question: How is body satisfaction longitudinally associated with body mass index (BMI) in overweight adolescent girls? Study findings, published in a 2007 issue of *The Journal of Adolescent Health*,³ demonstrated that overweight girls with higher body satisfaction gained less weight over the five year follow-up, as compared to overweight girls with lower levels of body satisfaction.³ The current study expands on this previous work by exploring the association between body satisfaction and weight gain at 10-year follow-up and by examining this association in boys.

Methods

Study design and data collection

Participants were drawn from Project EAT (Eating and Activity in Teens and Young Adults) a longitudinal study of 2516 adolescents. Participants were surveyed and height and weight were measured at baseline (1998–1999) and participants responded via online survey at follow-up (2009–2010). Details regarding the study methodology have been previously described.⁴

Sample

Project EAT participants who were at or above the 85th percentile for BMI at baseline and completed survey assessments at follow-up were included in the current analytic sample (n=496; 275 females, 221 males). At baseline, participants had an average age of 14.8 (SD=1.8); 34.4% were non-white; and 30.3% were from low or low-middle socioeconomic status (SES) backgrounds.

Measures

Body satisfaction was measured using a modified version of the Body Shape Satisfaction Scale⁵, in which participants rated their satisfaction with 10 different body parts (Cronbach's alpha = 0.93). BMI from measured height and weight at baseline was used to select participants into the study. BMI from self-reported height and weight was used as a covariate (baseline BMI) and as the outcome variable (follow-up BMI). Self-reported and

measured BMI at baseline were highly correlated at both baseline⁶ and follow-up.⁷ Age, ethnicity/race, and SES⁸ were based on self-report at baseline.

Statistical Analysis

Mean change in BMI from baseline to follow-up across quartiles of body satisfaction was estimated using linear regression. Body satisfaction quartiles were created for male and female participants separately using the entire EAT sample. Analyses were stratified by gender and adjusted for baseline BMI, race/ethnicity, age, age squared, and SES. Participants who were lost to follow-up were more likely to be female, white, and from a high SES category; therefore, all analyses were weighted to account for these differences.⁹

Results

Mean body satisfaction at baseline for this sample of overweight girls was 27.6 (SD=8.5), significantly lower ($p<0.01$) than the mean of 33.9 (SD = 8.8) for the non-overweight girls in Project EAT ($p<0.01$). Mean body satisfaction at baseline for this sample of overweight boys was 34.2 (SD=8.5), significantly lower ($p<0.01$) than the mean of 38.5 (SD=8.2) for the non-overweight boys in Project EAT.

Examination of the mean change in BMI over the 10-year follow-up across baseline body satisfaction quartiles indicated that overweight girls with the lowest level of body satisfaction had a significantly greater increase in BMI (6.4 BMI units), compared to girls in the high body satisfaction quartile (3.5 BMI units; mean difference = 2.9 BMI units; $P<0.01$) (Figure 1), after controlling for baseline BMI, race/ethnicity, age, age squared, and SES. Among overweight boys, no statistically significant associations were observed between body satisfaction quartile and change in BMI (Figure 2).

Discussion

This study examined the association between body satisfaction during adolescence and change in BMI over a 10-year follow-up among overweight adolescents. Among girls, a statistically significant difference in 10-year BMI change across baseline body satisfaction quartiles was observed; overweight girls with very low body satisfaction at baseline had a significantly greater increase in BMI 10-years later compared to overweight girls in the high body satisfaction quartile at baseline. Although a very high body satisfaction did not confer additional benefits, the difference between the very low satisfaction and the high satisfaction quartiles in mean BMI change over 10 years – a difference of nearly 3 BMI units - has important clinical significance for these young women. Overall, findings indicate that among overweight girls, a high level of body satisfaction during adolescence was not harmful, and in fact may be beneficial, in terms of weight control over 10 years. For the most part, these findings align with our previous study,³ which demonstrated that overweight girls with high body satisfaction gained less weight (2 BMI units) over the five year follow-up, as compared to overweight girls with very low body satisfaction. Taken together, these two studies suggest that, among overweight adolescent girls, a high level of body satisfaction continues to be beneficial with regard to mean BMI change well into young adulthood.

Among overweight boys no significant associations were observed between baseline body satisfaction quartile and change in BMI from baseline to follow-up. These non-significant findings indicate that boys' weight status is not related as strongly to their body satisfaction in adolescence as it is among girls, who generally experience greater levels of societal pressure regarding weight and appearance.¹ It might be that girls with low body satisfaction reduce participation in regular physical activity, whereas boy's engagement in physical activity is consistent across levels of body satisfaction. Further, boys' body satisfaction is known to be influenced by both a desire to have less body fat and a desire to be more muscular¹, which may have different consequences for weight gain over time than females' primary focus on body fat. The difference in mean BMI change across body satisfaction quartiles was not explored for boys in our 2007 study, thus no comparisons can be made.

Contrary to the suggestion that low body satisfaction may lead to better weight control over time, our findings suggest that high body satisfaction among overweight girls is associated with less weight gain over time compared to girls with very low satisfaction. Our findings, along with other studies, suggest that it may be fruitful for future research to examine the effectiveness of body image interventions to prevent unhealthful weight gain among overweight adolescent girls. Eating disorder prevention programs for adolescent girls have been found to increase body satisfaction,¹⁰ and some recent studies have had promising results in terms preventing weight gain.¹⁰ In addition, clinicians working with overweight adolescent girls should stress the importance of a positive body image.

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Implications and Contribution Statement

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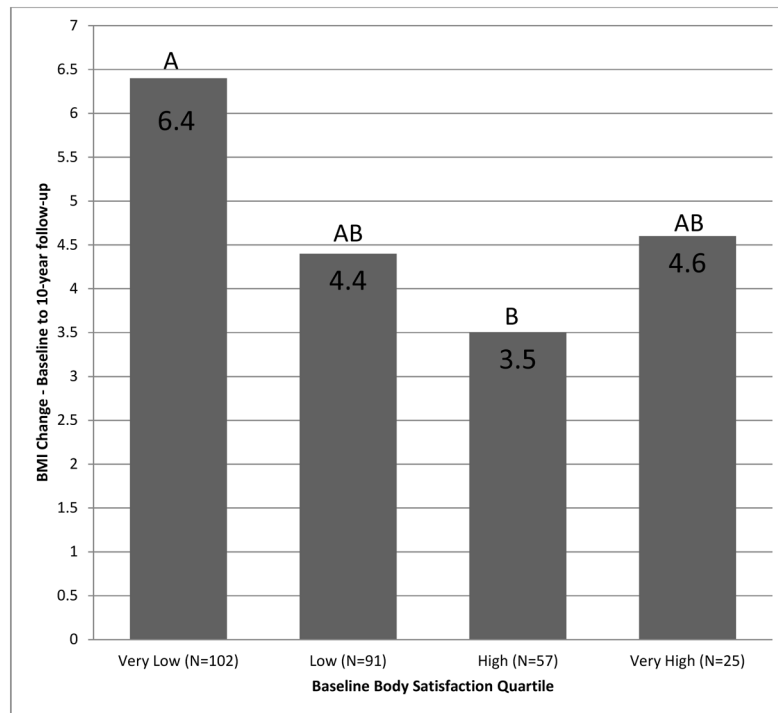


Figure 1.

Adjusted mean BMI change between baseline and 10-year follow-up, by baseline body satisfaction quartile, in overweight adolescent girls

Notes: 1) Models adjusted for continuous BMI at baseline, age, age squared, SES, and Race/Ethnicity, 2) All models are weighted for non-response, 3) Different letters above each bar indicate statistically significant differences observed between bars. 4) Statistically significant difference set at $p < 0.05$ level.

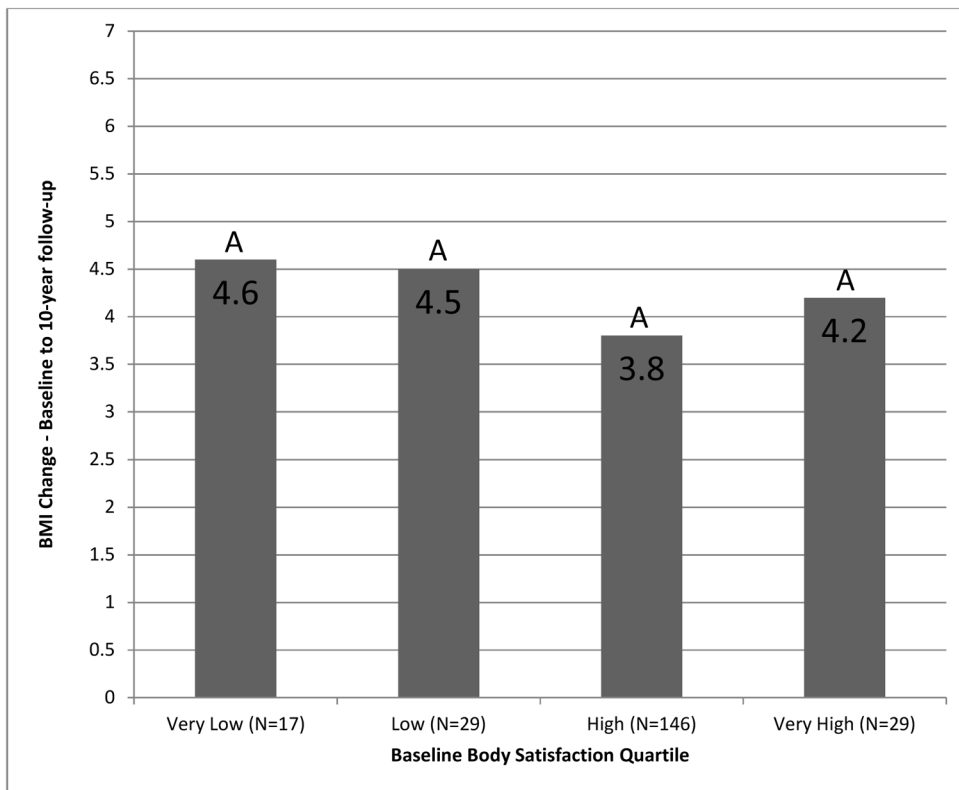


Figure 2.

Adjusted mean BMI change between baseline and 10-year follow-up, by baseline body satisfaction quartiles in overweight adolescent boys

Notes: 1) Models adjusted for continuous BMI at baseline, age, age squared, SES, and Race/Ethnicity, 2) All models are weighted for differential non-response, 3) Different letters above each bar indicate statistically significant differences observed between bars. Statistically significant difference set at $p < 0.05$ level.