Stigma and Status:

Adolescent Life Satisfaction and Obesity

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Abstract

This study contributes to the emergent research on adolescent life satisfaction by considering the effects of obesity and gender in the context of individual, family, peer, and school factors. With data from the Health Behaviors in School-Age Children Survey (2001-2002) we use OLS regression to examine the association between student, family, school, and peer domains and life satisfaction. We then model these relationships separately for obese and non-obese students. Family, school, and peer interactions with obesity are also considered. Lastly, we consider the association between family, school, and peer domains and life satisfaction by both obesity status and gender. Results indicate that family SES and number of same sex friends have a positive effect on life satisfaction for obese adolescents, while grades and peer acceptance affect life satisfaction for non-obese adolescents. The effect of family SES is stronger for obese girls than boys, while obese boys are more affected by perceptions of school safety. Implications of these findings and areas requiring further research are discussed.

1. Introduction

American youth are on track to become the most obese generation of adults in history (Caprio, 2006). The Center for Disease Control reports an approximately 12% increase in obesity prevalence for both children and teens between 1980 and 2006 (CDC, 2009). The negative effects of obesity are dramatic and extensive, especially for youth. In addition to apparent physical risks, such as diabetes and asthma (CDC, 2009), obesity among youth is associated with negative self-esteem, withdrawal from peer interaction, depression, anxiety, and the feeling of chronic rejection (Deckelbaum and Williams, 2001). All of these factors can negatively influence the overall well-being and life satisfaction of teens.

Subjective life satisfaction is an important aspect of well-being for adolescents. Because it is a complex psychological entity, examining adolescent life satisfaction requires a comprehensive understanding of the multiple factors that influence adolescents' perceptions of their own lives. The intersection of family, school, and peer contexts provide adolescents with multiple, and sometimes conflicting messages about themselves. The rejection or internalization of such messages can influence the way adolescents interpret their well-being. A wide body of interdisciplinary research indicates that individuals' self-perceptions are connected to how they believe they are perceived and evaluated by others (Crosnoe and Muller, 2004; Leary et. al, 2003; Schlenker and Wowra, 2003). For adolescents in particular, this internalization of perceived evaluation has an especially profound effect on self-appraisal and overall well-being.

Studies of children and adolescents find that life satisfaction is influenced by intrapersonal factors (internal control, self-efficacy), as well as by interpersonal factors such as family and peer relationships. In contrast, demographic factors such as age and gender are less influential (Park and Huebner, 2005; Huebner, 1991; Park, 2004). Feedback from family, peers, and

teachers influences the life satisfaction of adolescents thru self evaluation. We expect that such feedback is especially important to the life satisfaction of obese adolescents, in part because of the stigmatization of obesity and its effect on relationships (Carr and Friedman, 2006; Carmalt, et al., 2008).

In the following sections, we first highlight in section 2 the literature outlining the relationship between obesity and life satisfaction among teens. Second we present in greater detail in section 3 the influence of family, school, and peer domains on life satisfaction among adolescents. We describe our data and methods in section 4 and present our empirical results in section 5. The final section discusses our primary conclusions.

2. Obesity and life satisfaction

Life satisfaction has been defined as an "overall judgment that one's life is a good one" (Park, 2004; Diener, 1984). Positive or subjective well-being is central to healthy youth development. Park (2004) concludes that supportive parents, involvement in challenging activities and life events, as well as high-quality interactions with others, contribute to adolescent life satisfaction. As indicated previously, it is intrapersonal and interpersonal environmental factors that are strongly associated with life satisfaction among youth (Part, 2004; Huebner, 1991).

Ball et al. (2004), in a longitudinal study of Australian young women, found weight status to be associated with life satisfaction. Greater body mass (BMI) was associated with less satisfaction and aspirations (Ball, et al., 2004). Obese individuals experience not only physical health limitations and problems, but they also encounter stigmatization through interacting with others. Prejudice, bias, and discrimination are experienced daily by obese individuals. This negative stigma results in a social identity that is devalued in social contexts (Puhl and Brownell,

2003). This devaluation is demonstrated by indicators such as lower status attainment and smaller friendship circles (Merton et al., 2008; Crosnoe et al., 2008) Such feelings of denigration, particularly because weight is generally perceived as being under personal control, are likely to be associated with lower life satisfaction among teens (Puhl and Brownell, 2003).

Under the subjection of social stigma, youth are more likely to alter their behavior in order to improve their social standing. Gillison and colleagues (2006) found that overweight and obese youth were more likely to have extrinsic exercise goals, or goals based on changing appearances to meet others' standards. As opposed to inherently-rewarding, intrinsic goals, which stem from the individual, these extrinsic goals were associated with lower quality of life (Gillison et al., 2006).

Because external pressure to be thin is experienced to a greater extent by females (Dohnt and Tiggemann, 2006; Schwartz et al., 1999; Thompson et al., 1999), it is no surprise that obesity is associated with decreased life satisfaction among females, more so than among males. Females are more likely than males to internalize the pressure to be thin; Crosnoe (2007) found that girls were more likely to dislike themselves, and this internalization partially explained the lower college attendance rates among overweight females (Crosnoe, 2007). Other studies have emphasized the role of internalization; particularly for females, the extent to which they internalize the pressure to be thin is associated with negative body image and other indicators of dissatisfaction (Thompson et al., 1999; Thompson and Stice, 2001).

3. Family, school, and peer domains

Attachments to both parents and peers are predictive of life satisfaction among young teens (Nickerson and Nagle, 2004). In addition to the home, the school setting is another environment where teens associate with peers, as well as other adults. All three of these domains – family,

peers, and schools influence life satisfaction among adolescents (Park and Huebner, 2005). We consider each domain individually.

3.1 *The family and life satisfaction*

Of the three domains, the influence of family is particularly important to the life satisfaction of teens (Park and Huebner, 2005; Park, 2005). Suldo and Huebner (2004) examined dimensions of authoritative parenting styles and teen life satisfaction and found that the teen's perception of parental social support was the strongest correlate. Thus, positive, supportive parental relationships encourage life satisfaction among adolescents.

Research on the effects of family life events (such as divorce or parental job loss) on adolescent depression found the effects were mediated by perceived parental involvement, as well as parent-adolescent conflict (Dmitrieva et al. 2004). Important to note is that it is the adolescents' *perception* of parent involvement that influenced their level of depression, further supporting the argument that the internalization of attitudes believed to be held by parents impact self appraisal and life satisfaction.

In addition to parenting styles, other family patterns such as healthy eating and exercise are associated with life satisfaction among youth (Frisch, 2000). Neighborhood safety is another environmental factor associated with life satisfaction; high school students that reported feeling unsafe going to or from school also reported reduced life satisfaction (Valois et al., 2001). Family happiness has a consistent and positive correlation with global life satisfaction among children and adolescents, but satisfaction with friends becomes increasingly important as children mature (Park, 2005; Park and Huebner, 2005).

3.2 *The school and life satisfaction*

Schools provide a variety of developmental resources for youth. In addition to being a point of access for physical resources such as institutional money and programs, school is a place where unique norms and values are learned, and where youth culture is continually created and transmitted to new groups of young people (Crosnoe and Lopez-Gonzalez, 2005). This culture provides a social context for individual development that can have tremendous influence on life satisfaction, especially for adolescents.

One aspect of life satisfaction affected by the school social context is students' self-perceived academic achievement. How students perceive their own competence level is considered a critical issue, because this self-evaluation strongly influences how they perform in school (Eccles et al., 1993). Valeski and Stipek (2001) found that students' perception of their academic competence is heavily influenced by their academic performance and performance feedback, such as grades or verbal praise and criticism from teachers. The apparent internalization of performance feedback provides further support for the reflected self-appraisal. Children's assessment of themselves and their abilities in school differentiates as early as first grade, suggesting that the self-appraisals held by adolescents have long since been developed and internalized by the time they reach middle or high school (Eccles et al., 1993).

Self-perceptions of academic competency are complicated by the influence of race, class, and gender. For example, students from low-income families tend to have higher school dropout rates. A qualitative study found that students blamed themselves for this failure, suggesting that the internalization of negative perceptions has very real consequences for low-income adolescents (Stevenson and Ellsworth, 1991).Valois and colleagues (2001) also found, in a representative sample of public high school students, that feeling unsafe at school was associated with reduced life satisfaction.

Crosnoe and colleagues have focused on specific school-level characteristics and their effects on youth development as it relates to obesity. They found that the three most important school characteristics were levels of athletic participation, academic achievement, and romantic relationships (Crosnoe and Muller, 2004). Their findings indicate that students at risk of obesity do the best academically when they attend schools with high athletic participation, suggesting that academic achievement is the social equivalent of athletic achievement for these adolescents (Crosnoe and Muller, 2004).

Overweight and obese students also perform better at schools with a high average BMI, but they do worse at schools with high rates of romantic activity, suggesting that academic achievement is not the social equivalent of being in a romantic relationship (Crosnoe and Muller, 2004). These findings are explained by the social mechanism *homophily*, or the tendency for people to socialize with others who share similar characteristics. It follows that an overweight or obese student would have a more difficult time socializing at a school where their body size made them a minority (Crosnoe et al. 2008).

3.3 *Peers and life satisfaction*

It is difficult to determine where the influence of the school context ends and peer influence begins, because these two are so intertwined in the adolescent world. Bradford and colleagues (2008) identify the homogeneity in peer groups across schools, noting that peer groups common in schools tend to occupy a similar status position from school to school. Despite this overlap, peer groups are in some ways distinct from schools as an influence on life satisfaction.

Weber's explanation of status underscores the power of the peer group. In contrast to class, which depends only on economic position, status is obtained through feedback from others, through a general social consensus that some social positions deserve honor or prestige (Waters et al., 2010). Thus, adolescents can only obtain status if it is given to them through positive feedback from peers. Bradford acknowledges that some youth reject the labels that their peers give them, but those that accept their status have lower rates of depression than those who reject it (Bradford et al., 2008).

These data highlight some of the social consequences of obesity for teens, consequences often overlooked due to the health risks involved with the condition. Students with a high body size tend to engage in more socially harmful behaviors, such as withdrawal from peers, and as a result they often have smaller friendship circles (Crosnoe et al., 2008). In particular, Crosnoe and colleagues (2008) found that being overweight restricted the size of teen friendship circles in high school in large part because of the stigma of obesity.

Obesity, particularly among children and adolescents is highly stigmatized (Latner, et al., 2005). In particular, Strauss and Pollack (2003) found that overweight adolescents were more likely to be socially isolated and to be on the periphery of social networks compared to healthy weight adolescents. They found that overweight adolescents received fewer friendship nominations from their peers compared to healthy weight teens and were, thus, more socially marginalized.

Latner and Stunkard (2003) found that stigmatization of obesity among fifth and sixth graders has increased over time. Students ranked how well they liked various children identified as obese, having various disabilities, or as healthy. The gap between how well they liked obese children compared to healthy children was about 40 percent larger in 2001 compared to a similar

survey in 1961 (Latner and Stunkard, 2003). Stigmatization of children and teens leads to bullying and rejection from peers (Neumark-Sztainer, Story, and Faibisch, 1998; Puhl and Brownell, 2003) and increased psychological distress (Myers and Rosen, 1999). Such rejection is likely to result in poor self appraisals and lower life satisfaction.

Drawing from these past studies, we model the association between self-appraisal, family, school, and peer domains on life satisfaction as reported by a nationally representative sample of high school students. In particular, we examine how these associations differ among obese and non-obese students, as well as how they differ by the gender of obese and healthy weight students.

4. Data and methods

4.1 *Sample*

Data for this study come from the Health Behavior in School-Aged Children (HBSC), 2001-2002. This is a nationally representative sample of students in grades 6 thru 10 during the 2001-2002 school year in the US. Data collection was conducted by the United States Department of Health and Human Services in collaboration with the World Health Organization. Students were asked questions about nutrition, physical activity, violence, relationships with family and friends, perceptions of school, alcohol and tobacco use, and the community in which they lived. The total student sample is 14,817 children and adolescents in middle and high school. The data are weighted to adjust for the school selection sampling frame and non-response.

Height and weight measures are self-reported. Based on the formula: [weight (lbs) / height (inches) * height (inches)] * 703, the US Department of Health and Human Services computed

the body mass index (BMI) for each student with complete height/weight data. BMI percentiles were then calculated according to gender and age. Coding is based on percentiles from year 2000 from the Centers for Disease Control as follows: (1) underweight (< 5^{th} percentile); (2) healthy weight (between 5^{th} and 85^{th} percentile); (3) at risk of overweight (between 85^{th} and 95^{th} percentile); and (4) overweight (> 95^{th} percentile). Because our interest is in overweight or obesity, we excluded the underweight students (n=549) and those missing data on body mass index (n = 2088). Our analyses are based on 11,955 middle and high school students in the US aged 10 to 17. The mean age of students in the sample is 13.5 years of age. Thus, the sample is primarily of younger teens, aged 12 to 15 (78 percent of sample).

Data are weighted to adjust for non-response. The sampling weights were computed based on the probabilities of selection at each sampling stage and then adjusted for both school and student non-response. The individual student sampling weight utilizes the probability of having selected the respondent's school and classroom, adjusted for school non-response and student non-response within classrooms. Thus, the data are nationally representative of middle and high school students.

Multiple imputation was used to estimate values for missing data in Stata. The purpose of multiple imputation is to create multiple imputed data sets for a data set with missing values based on variables that contain complete data. The multiple analyses are then combined to yield a set of results. The Imputation by Chained Equations is based on each conditional density of a variable given all other variables (Royston, 2004). In general, multiple imputation techniques require that missing observations are missing at random. All of the variables missing data were missing less that 5 percent of cases with the exception of our measure of neighborhood safety which was missing 8 percent.

4.2 *Model Specifications*

To measure life satisfaction students were asked, "*Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?*" Thus, our dependent variable is a scale ranging from 0 to 10 indicating how satisfied students are about their life in general.

Other student factors include obesity, gender, and how students self appraise their physical appearance. Obesity is based on self-reported height and weight measures coded according to the Center for Disease Control categories. It is a dichotomous measure coded 1 if the student is obese or above the 95^{th} percentile for body mass index and coded 0 if they are normal to at risk of overweight. Gender is also dichotomous and coded 1 for boys and 0 for girls. Self appraisal of looks is based on responses to the question: "*Do you think you are . . . ?*" Responses were 1=very good looking, 2=quite good looking, 3=about average, 4=not very good looking, and 5=not at all good looking.

Measures of family domain include family socioeconomic status (SES), eating breakfast and exercise, relationships with parents, and neighborhood safety. Family socioeconomic status is based on responses to father and mother occupational status, parental education levels, and which parent lived in the home with the student. The original father and mother occupational socioeconomic variables were coded from 1=professional, high SES to 5=service/laborer, low SES. If two parents were in the home, the highest SES score was used for family SES. In cases where occupational information was missing for both parents, parental education levels were used to indicate family socioeconomic status. The original parent education variables were coded 1=did not finish high school to 4=graduated from college. Utilizing measures of family

structure, parent occupational status, or parent education, we coded family socioeconomic status based on the parent with the highest status in the home according to the following categories: 1=low SES (skilled worker/service/laborer or high education or less), 2=average SES (technical/office/sales or some education after high school, but no college degree), and 3=high SES (professional/business or graduated from college).

Eating habits measures how many days during the week the student reported usually eating breakfast (more than just a glass of milk or fruit juice). Responses are from 0 to 7 days a week. Usual physical activity is measured by the question: "*Over a typical or usual week, on how many days are you physically active for a total of at least 60 minutes per day?"* Physical activity is defined as any activity that makes one get out of breath some of the time. Responses indicate the number of days of physical activity during a typical week.

Adolescent relationships with their mother and father are based on student responses about ease of talking to parents and parental willingness to help with homework. Ease of talking to parents is measured by the question: "*How easy it is to talk to the following persons about things that really bother you?"* Questions are asked separately for mother, father, step mother, and step father. If students indicated they did not have or see their mother or father, but indicated having a step parent, the step parent response was used for the relationship with mother or father. The response categories are: 1=very easy, 2=easy, 3=difficult, 4=very difficult. Students also indicated agreement with the statement: "*My parents are willing to help me with my homework.*" Agreement is scaled 1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree.

Feeling safe in their neighborhood is based on agreement with five statements. Agreement to each statement was indicated on a scale from 1=strongly agree to 5=strongly disagree.

Responses were averaged across the five statements to form a composite measure of neighborhood safety. The statements were: (1) *People say "hello" and often stop to talk to each other on the street,* (2) *It is safe for younger children to play outside during the day,* (3) *You can trust people around here,* (4) *There are good places to spend your free time (e.g., leisure centers, parks, shops),* and (5) *I could ask for help or a favor from neighbors.*

The school domain includes measures of grades, attitudes towards school, school safety, homework pressure, and average socioeconomic status level of all students in the school. Grades are measured by the following question: "*In your opinion, what does your class teacher(s) think about your school performance compared to your classmates?"* Responses are scaled: (1) very good, (2) good, (3) average, (4) below average. Attitudes towards school are based on the question: "*How do you feel about school at present?"* The response scale is: (1) I like it a lot, (2) I like it a bit, (3) I don't like it very much, and (4) I don't like it at all. Students were also asked to indicate agreement to the following statement which was used to indicate school safety: "*I feel safe at this school."* The agreement scale is from (1) strongly agree to (5) strongly disagree. School pressure is measured by responses to the question: "*How pressured do you feel by the schoolwork you have to do?"* Responses were scaled: (1) not at all, (2) a little, (3) some, and (4) a lot. Finally, as an indicator of the school socioeconomic level, family socioeconomic scores, described previously and ranging from 1=low SES to 3=high SES, were averaged across students attending the same school to measure the mean family SES of students enrolled in the same school. Average BMI in the school was also considered, but was not associated with life satisfaction in preliminary analyses.

Finally, the peer domain is measured by peer acceptance, bullying, and the number of same sex friends students reported. Peer acceptance is measured by agreement to four statements

according to the scale 1=strongly agree to 5=strongly disagree. A composite measure was created by averaging agreement across the following four statements: (1) *when a student in my class(es) is feeling down, someone else in the class tries to help,* (2) *the students in my class(es) enjoy being together,* (3) *most of the students in my class(es) are kind and helpful,* and (4) *other students accept me as I am.*

Bullying is also a composite measure based on questions regarding how often they were bullied in the last couple of months. Questions asked how often (1) they were bullied in general in the past couple of months, (2) they were called mean names, made fun of, or teased in a hurtful way, (3) they were left out of things on purpose by other students, excluded by their group of friends, or completely ignored, or (4) they had lies told about them or false rumors spread about them by students trying to make others dislike them. Reponses to these questions were based on the following scale: 1= I have not been bullied in this way in the past couple of months, 2=only once or twice, 3=2 or 3 times a month, 4=about once a week, and 5=several times a week. Responses were averaged across the four questions to create a composite measure of being bullied. Finally, the number of same sex friends was based on questions asking students to report at present the number of close male friends (0, 1, 2, 3 or more) and the number of close female friends (0, 1, 2, 3 or more). Based on the sex of the students, responses to these questions indicate the number of same sex or opposite sex friends. In preliminary analyses, the number of opposite sex friends was not predictive of life satisfaction and was removed from the analyses.

The relationship between student characteristics, family, school, and peer domain measures and life satisfaction are modeled using ordinary least squares regression. Coefficients represent the change in life satisfaction for every unit increase in the independent variables. Following multiple imputation for missing data, our first model examines the association between student,

family, school, and peer measures and life satisfaction. We next model these relationships separately for obese and non-obese students. Family, school, and peer interactions with obesity are also considered. Lastly, we consider the association between family, school, and peer domains and life satisfaction not only by obesity status, but also by the gender of the student. Prior to reporting our regression results, we present descriptive statistics for the student, family, school, and peer measures for all students, as well as by obesity status.

5. Results and Discussion

Prior to presenting our multivariate results, we present descriptive statistics in Table 1. The first column includes all students in the sample. The second column is of students identified as obese based on self-reported height and weight. The last column includes students that are of a healthy weight or at risk of being overweight. Asterisks indicate significant mean differences between obese and non-obese students based on t-tests.

5.1 *Descriptive statistics*

Overall, mean levels of life satisfaction are relatively high, about 7.5 on a 10 point scale. However, average life satisfaction is lower for obese students compared to healthier weight students. Approximately 12 percent of the students were identified as being obese, that is above the 95^{th} percentile for the body mass index for their age. A higher percentage of obese students are boys (62 percent), relative to healthier weight students (46 percent boys). On average students rated their attractiveness as average (2.5 on a 5 point scale), however obese students rated themselves as less good looking compared to their healthier weight counterparts.

(Table 1 about here)

Obese students reported eating breakfast on average less often and engaging in physical activity less often during the week relative to healthier weight students. Parental relationship measures indicate that on average, students reported greater difficulty in talking to their dad compared to their mother. Obese students reported greater difficulty talking to both mothers and fathers compared to healthier students. Obese students were slightly more likely on average to report not feeling safe in their neighborhood compared to healthier weight students.

Students reported having good grades generally, with obese students reporting somewhat lower grades compared to healthier weight students. Healthier weight students reported greater peer acceptance on average and less bullying relative to obese students. They also indicated that they had more friends of the same sex generally compared to obese teens. Thus, based on means reported in Table 1, obese students indicated poorer eating and exercise habits, less maternal and peer support, lower socioeconomic status and academic success, as well as lower self appraisals and life satisfaction compared to healthier weight students. To further explore these relationships, we now turn to our multivariate models and examine the relationship between student characteristics, family, school, and peer domains on life satisfaction by obesity status.

5.2 *Life satisfaction by obesity status*

Model estimates are presented in Table 2. The first column provides the coefficients for all students. The association between obesity and life satisfaction did not reach statistical significance ($p < .07$) in the first model. Boys reported higher satisfaction compared to girls, and the higher students rated their looks, the higher their life satisfaction. All of the family, school, and peer domain measures were predictive of life satisfaction and in the expected direction. Columns two and three examine these relationships by obesity status. As indicated in column

four, the only interactions with obesity that were significant were family socioeconomic status and grades. Higher socioeconomic status was associated with life satisfaction among obese students, where as academic achievement was associated with satisfaction among healthier weight students.

(Table 2 about here)

Our results support some of the general literature on adolescent life satisfaction. Consistent with Park (2004) and Nickerson and Nagle (2004), we found that good parent relationships contribute generally to life satisfaction among both obese and non-obese adolescents, although father relationships were not significant for obese youth. Peer relationships in the context of bullying also matter; bullying displayed a negative relationship with life satisfaction for both obese and non-obese adolescents, an association which supports previous studies (Park, 2004; Huebner, 1991). Additionally, as in Dmitrieva et al. (2004) we find evidence that parent involvement with homework affects life satisfaction, although the association is weaker for obese teens. Liking school also appears to be relevant for both obese and healthier weight adolescents (as discussed by Eccles et al., 1993). Other features of the school environment not discussed in the literature appear important to all adolescents' life satisfaction as well, such as feeling safe at school and not being pressured by schoolwork.

Though there appear to be similarities among the majority of teens, we also find evidence that some of the generalizations made about adolescents' life satisfaction may actually differ for obese youth. First, family SES is significantly related to life satisfaction among obese youth while it appears to have no effect for healthier weight teens. It may be that having a high socioeconomic background has a compensatory effect for obese teens, giving them social status and satisfaction that other adolescents gain through their appearance. Another notable difference

concerns the effect of grades on life satisfaction. While having lower grades has a significant negative impact on non-obese teens, the effect for obese youth is smaller and not significant. Additionally, the interaction between obesity and grades actually yields a positive effect, indicating that poor grades may even increase life satisfaction among obese youth.

These findings conflict somewhat with Crosnoe and Muller (2004) who suggest that good grades are the social equivalent of athletic performance, and that they allow obese adolescents to gain status that they cannot achieve through sports. While strong academic performance may improve the social status of obese youth, our findings suggest that they do not contribute to individual life satisfaction. Other factors, particularly socioeconomic status, appear to have greater relevance. Further research is needed to better understand the complex relationship between obesity and academic performance.

Though research posits the importance of peer relationships for all adolescents (Waters et al., 2010), our findings suggest some differences between obese and non-obese adolescents regarding the effect of peer relationships on life satisfaction. As theorized by Puhl and Brownell (2003), we find that the number of same sex friends has a stronger positive effect on life satisfaction for obese adolescents than for healthier weight teens. Interestingly, while low levels of peer acceptance have negative effects on life satisfaction for both obese and non-obese youth, that effect is actually smaller and non-significant for obese youth.

The importance of peer feedback for self-evaluation has been established (Crosnoe and Muller, 2004; Leary et. al, 2003; Schlenker and Wowra, 2003), but it seems that the mere number of friends may be sufficient feedback for obese youth, an indicator in itself that their life is or is not satisfactory. Conversely, our results indicate that just the number of friends is not sufficient feedback for non-obese youth, whose life satisfaction is more strongly associated with

the level of acceptance from their peers. Perhaps because of the strong social stigma against obese teens, they initially anticipate low peer acceptance and draw satisfaction from the direct presence of friends rather than general social approval. Once again, further research is needed to examine this process.

5.4 *Life satisfaction by obesity and gender*

Last we consider gender differences among obese and healthier weight students. These coefficients are reported in Table 3. Self appraisal of physical appearance was predictive of happiness among all girls, and obese boys, but was less so among healthy weight boys – as indicated by the slopes across the four groups. Overall, there were more significant differences between obese and healthier weight girls than between obese and non-obese boys. Obese and healthy weight girls differed significantly in terms of the importance of grades to life satisfaction. – grades appear to be more influential for non-obese girls. In contrast, feeling homework pressure was more negatively associated with happiness among obese girls than among healthier weight girls. Overall, based on the coefficients of determination, student characteristics, family, school, and peer domain accounted for more of the variation in life satisfaction among obese girls (42 percent), compared to the other groups, and particularly to healthy weight boys (26 percent).

(Table 3 about here)

Our findings qualify some of the generalizations made about adolescent life satisfaction first by showing differences between obese and non-obese teens; these findings also complicate the picture by uncovering gender differences *among* the obese. First, while family SES has a positive effect for both obese boys and girls, eating breakfast has a stronger effect for obese girls

that is statistically significant. Eating breakfast can be an indication of both family health habits as well as family SES; it seems that while the family's economic status matters more for obese adolescents as compared to the non-obese, the effect is even stronger for adolescent females. Second, the number of same sex friends has a stronger positive effect on life satisfaction for girls than for boys. Parental relationships also seem to have a stronger effect for girls. Taken together, these findings support previous research indicating that social support from peers and family is important to life satisfaction (Park and Huebner, 2005), especially among obese teen girls, who likely face greater pressure to be thin (Dohnt and Tiggemann, 2006; Schwartz et al., 1999; Thompson et al., 1999).

Our findings underscore the importance of family, school, and peers to life satisfaction among younger adolescents. In addition, we identify important differences by gender and obesity. We are limited by cross-sectional and self-reported data, but overall our findings add to the dearth of literature on adolescent life satisfaction. In particular, our models were most predictive of happiness or satisfaction among obese teen girls. Adolescence is a critical time in which self-perception influences satisfaction and over all well-being. Interactions with family, peers, and teachers influence teen self-appraisal and happiness. How these interactions differ for obese teens, and especially for obese girls, is important given that obesity is such a strong stigmatizing factor in the lives of adolescents.

It may be that because of the social stigma of obesity, obese teens alter their behavior in order to improve their social standing; being able to draw on family socioeconomic resources may be one way to do this. As noted by Gillison and colleagues (2006), obese youth are more likely to have extrinsic goals, based on changing appearances to meet others' standards, rather than inherently-rewarding, intrinsic goals (such as grades), which stem from the individual.

These extrinsic goals are associated with lower life satisfaction (Gillison et al., 2006). Our findings highlight these differences and the importance of considering life satisfaction and obesity in early adolescence.

References

Ball, K., Crawford, D., Kenardy, J., 2004. Longitudinal relationships among overweight, life satisfaction, and aspirations in young women. Obesity Research, 12, 1019-1030.

Bradford Brown, B., Von Bank, H., Steinberg, L. 2008. Smoke in the looking glass: Effects of discordance between self- and peer rated crowd affiliation on adolescent anxiety, depression and self-feelings. Journal of Youth and Adolescence 37, 1163-1177.

Caprio, S. 2006. Treating child obesity and associated medical conditions. The Future of Children 16, 209-224.

Carmalt, J., Cawley, J., Joyner, K., Sobal, J., 2008. Body weight and matching with a physically attractive romantic partner. Journal of Marriage and Family, 70,1287-1296.

Carr, D., Friedman, M., 2005. Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. Journal of Health and Social Behavior, 46, 244-259.

Childhood overweight and obesity. Center for Disease Control and Prevention. Accessed on 28 January 2009. Available at http://www.cdc.gov/obesity/childhood/index.html. Updated 17 November 2009.

Crosnoe, R. 2007. Gender, obesity, and education. Sociology of Education, 80, 241-260.

Crosnoe, R., Lopez-Gonzalez, L. 2005. Immigration from Mexico, school composition, and adolescent functioning. Sociological Perspectives, 48, 1-24.

Crosnoe, R., Muller, C. 2004. Body mass index, academic achievement, and school context: Examining the educational experiences of adolescents at risk of obesity. Journal of Health and Social Behavior, 45, 393-407.

Crosnoe, R., Frank, K., Mueller, A., 2008. Gender, body size, and social relations in American high schools. Social Forces, 86, 1189-1217

Deckelbaum, R.J, Williams, C.L. 2001. Childhood obesity: the health issue. Obesity Research, 9, 239S-243S.

Diener, E. 1984. Subjective well-being. Psychological Bulletin, 95, 542-575.

Dmitrieva, J., Chen, C., Greenberger, E., Gil-Rivas, V. 2004. Family relationships and adolescent psychosocial outcomes: converging findings from Eastern and Western cultures. Journal of Research on Adolescence, 14, 425-47.

Dohnt, H. K., Tiggemann, M. 2006. Body image concerns in young girls: The role of peers and media prior to adolescence. Journal of Youth and Adolescence, 35, 141-151.

Eccles, J.,Wigfield, A., Harold, R.D., Blumenfeld, P. 1993. Age and gender differences in children's self- and task perceptions during elementary school. Child Development, 64, 830-847.

Frisch, M. 2000. Improving mental and physical health care through quality of life therapy and assessment. In Advances in quality of life: Theory and research (pp. 207-41), edited by E. Diener and D. Rahtz. London: Kluwer.

Gillison, F.B., Standage, M., Skevington, S.M. 2006. Relationships among adolescents' weight perceptions, exercise goals, exercise motivation, quality of life and leisure-time exercise behavior: A self-determination theory approach. Health Education Research, 21, 836-847.

Huebner, E. 1991. Correlates of life satisfaction in children. School Psychology Quarterly, 6, 103-111.

Latner, J., Stunkard, A. Wilson, G., 2005. Stigmatized students: Age, sex, and ethnicity effects in the stigmatization of obesity. Obesity Research, 13, 1126-1231.

Latner J., Stunkard, A., 2003. Getting worse: The stigmatization of obese children. Obesity Research, 11, 452-456.

Leary, M.R., Gallagher, B., Fors, E., Buttermore, N., Baldwin, E., Kennedy, K., Mills, A. 2003. The invalidity of disclaimers about the effects of social feedback on self-esteem. Personality and Social Psychology Bulletin, 29, 623-636.

Merton, M.J., Wickrama, K.A.S., Williams, A.L. 2008. Adolescent obesity and young adult psychosocial outcomes: Gender and racial differences. Journal of Youth and Adolescence, 37, 1111-1122.

Myers, A., Rosen, J., 1999. Obesity stigmatization and coping: Relation to mental health symptoms, body image, and self-esteem. International Journal of Obesity, 23, 221-230.

Neumark-Sztainer, D., Story, M., Faibisch, L., 1998. Perceived stigmatization among overweight African-American and Caucasian adolescent girls. Journal of Adolescent Health, 23, 264-270.

Nickerson, A., Nagle, R., 2004. The influence of parent and peer attachments on life satisfaction in middle childhood and early adolescence. Social indicators Research, 66, 35-60.

Park, N., 2005. Life satisfaction among Korean children and youth: A developmental perspective. School Psychology International, 26, 209-223.

Park, N., Huebner, E., 2005. A cross-cultural study of the levels and correlates of life satisfaction among adolescents. Journal of Cross-Cultural psychology, 36, 444-456.

Park, N., 2004. The role of subjective well-being in positive youth development. The Annals of the American Academy. 591, 25-39.

Puhl, R., Brownell, K., 2003. Psychological origins of obesity stigma: Toward changing a powerful and pervasive bias. Obesity Reviews, 4, 213-227.

Royston, P. 2004. Multiple imputation of missing values. STATA Journal, 4, 227-241.

Schlenker, B.R., Wowra, S.A. 2003. Carryover effects of feeling socially transparent or impenetrable on strategic self-presentation. Journal of Personality and Social Psychology, 85, 871-880.

Schwartz, D.J., Phares, V., Tantless-Dunn, S., Thompson, J.K. 1999. Body image, psychological functioning, and parental feedback regarding physical appearance. International Journal of Eating Disorders, 25, 339-343.

Stevenson, R.B., Ellsworth, J. 1991. Dropping out in a working class high school: Adolescent voices on the decision to leave. British Journal of Sociology of Education, 12, 277-291.

Strauss, R., Pollack, H., 2003. Social marginalization of overweight children. Archives of Pediatrics and Adolescent medicine, 157, 746-752.

Suldo, S., Huebner, E., 2004. The role of life satisfaction in the relationship between authoritative parenting dimensions and adolescent problem behavior. Social Indicators Research, 66, 165-195.

Thompson, J.K., Heinberg, L.J., Altabe, M., Tantless-Dunn, S. 1999. Exacting Beauty: Theory, Assessment, and Treatment of Body-Image Disturbance. Washington, DC: American

Psychological Association.

Thompson, J.K., Stice, E. 2001. Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. Current Directions in Psychological Science, 10, 181-183.

Valeski, T.N., Stipek, D.J. 2001. Young children's feelings about school. Child Development,72, 1198-1213.

Valois, R., Zullig, K., Huebner, E., Drane, J., 2001. Relationship between life satisfaction and violent behaviors among adolescents. American Journal of Health Behavior, 25, 353-366.

Waters, D., Waters, T., Hahnke, E., Lippke, M., Ludwig-Gluck, E., Mai, D., Ritzi-Messner, N., Veldhoen, C., Fassnacht, L. 2010. The distribution of power within the community: Classes, stande, parties by Max Weber. The Journal of Classical Sociology, 10, 137-154.

Table 1

Means and standard deviations for student, family, school and peer factors.

	All Students (n=11,955)	Obese (n=1,506)	Non-Obese (n=10,449)
Student Factors			
Life satisfaction *0=worst possible life to 10=best possible life*	7.45 (1.98)	7.12 (2.13)	7.50*** (1.96)
Obese *0=no, 1=yes*	0.12 (0.32)	-----	-----
Boy *0=girl, 1=boy*	0.48 (0.50)	0.62 (0.48)	0.46*** (0.50)
Rating looks *1=very good looking to 5=not at all good looking*	2.48 (0.97)	2.80 (1.00)	2.44*** (0.96)
Family Domain			
Family SES *1=low, 2=average, 3=high SES*	2.06 (0.84)	1.92 (0.83)	2.08*** (0.84)
Eat breakfast *0 to 7 days a week*	4.48 (2.38)	4.21 (2.43)	4.52*** (2.37)
Physical activity *0 to 7 days a week*	4.38 (2.23)	3.98 (2.29)	4.43*** (2.22)
Relationship with mom *1=very easy to 4=very difficult*	2.07 (1.02)	2.14 (1.06)	2.06** (1.01)
Relationship with dad *1=very easy to 4=very difficult*	2.59 (1.07)	2.62 (1.12)	2.58 (1.06)
Parents help with homework *1=strongly agree to 5=strongly disagree*	1.74 (1.00)	1.79 (1.08)	1.74 (0.98)
Feel safe in neighborhood *1=strongly agree to 5=strongly disagree*	2.13 (0.83)	2.18 (0.87)	2.13* (0.83)
School Domain			
Grades *1=very good to 4=below average*	2.16 (0.86)	2.23 (0.89)	2.15*** (0.86)
Like school *1=I like it a lot to 4=I don't like it at all*	2.20 (0.90)	2.23 (0.92)	2.20 (0.90)
Feel safe at school *1=strongly agree to 5=strongly disagree*	2.27 (1.16)	2.37 (1.25)	2.26** (1.14)
Pressure from schoolwork *1=not at all to 4=a lot*	2.44 (1.00)	2.46 (1.01)	2.44 (0.99)
Mean SES of school *1=low, 2=average, 3=high SES*	2.06 (0.25)	2.00 (0.23)	2.06*** (0.25)
Peer Domain			
Accepted by peers *1=strongly agree to 5=strongly disagree*	2.38 (0.83)	2.50 (0.91)	2.36*** (0.82)
Bullied by peers *1=not bullied past couple months to 5=bullied several times a week*	1.57 (0.87)	1.74 (1.01)	1.54*** (0.85)
Number of same sex friends *0 to 3 or more*	2.76 (0.61)	2.70 (0.69)	2.77*** (0.60)

Notes: Standard deviations reported in parentheses.

*** Significance level for $p < 0.001$

** Significance level for $0.001 < p < 0.01$

* Significance level for $0.01 < p < 0.05$

Table 2
Student, family, school and peer factors associated with life satisfaction by obesity.

	Full Model (n=11,955)	Obese (n=1,506)	Non-Obese (n=10,449)	Interactions (n=11,955)
Student factors				
Obese	-.106			-.862***
Boy	.252***	.365**	.242***	.252***
Rating looks	-.374***	-.468***	-.358***	-.373***
Family Domain				
Family SES	.048*	.246***	.022	.027
Eat breakfast	.066***	.092***	.061***	.065***
Physical Activity	.030***	.014	.032***	.030***
Relationship with mom	-.221***	-.298***	-.212***	-.222***
Relationship with dad	-.141***	-.108	-.147***	-.142***
Parents help homework	-.170***	-.133*	-.176***	-.169***
Feel safe in neighborhood	-.200***	-.078	-.219***	-.200***
School Domain				
Grades	-.232***	-.046	-.260***	-.257***
Like school	-.187***	-.228**	-.181***	-.186***
Feel safe at school	-.114***	-.130*	-.110***	-.113***
Pressure from schoolwork	-.106***	-.126*	-.104***	-.106***
Mean SES of school	-.166*	-.739**	-.105	-.168*
Peer Domain				
Accepted by peers	-.061*	-.002	-.067*	-.062*
Bullied by peers	-.243***	-.290***	-.234***	-.244***
Number of same sex friends	.088**	.237**	.064	.089**
Interactions				
Family SES * obese				.173*
Grades * obese				.189*
R^2	.299	.322	.298	.301

*** Significance level for $p < 0.001$

** Significance level for $0.001 < p < 0.01$

* Significance level for $0.01 < p < 0.05$

Table 3
Regression coefficients for student, family, school, and peer factors predicting life satisfaction by adolescent gender and obesity.

	Obese Girls (n=603)	Non-Obese Girls (n=5,561)	Obese Boys (n=903)	Non-Obese Boys (n=4,798)
Student factors				
Obese				
Boy				
Rating looks	-.417***	-.419***	-.478***b	-.292***b
Family domain				
Family SES	.253*	.009	.221**	.033
Eat breakfast	.146***c	.073***	.060*c	.046***
Physical Activity	.021	.021	.007	.050***
Relationship with mom	-.439***c	-.294***	-.216**c	-.118***
Relationship with dad	-.226*c	-.164***	-.056c	-.148***
Parents help homework	-.041	-.140***	-.204*	-.199***
Feel safe in neighborhood	-.110	-.260***	-.078	-.176***
School domain				
Grades	.056a	-.258***a	-.126	-.250***
Like school	-.361**	-.233***	-.148	-.126***
Feel safe at school	-.053c	-.076*	-.169*c	-.147***
Pressure from schoolwork	-.290**a	-.090**a	-.030	-.115***
Mean SES of school	-.432	-.075	-.921**	-.134
Peer domain				
Accepted by peers	-.100	-.090*	.048	-.045
Bullied by peers	-.267*	-.278***	-.293***	-.193***
Number of same sex friends	.421*	.045	.180	.081
R^2	.418	.332	.287	.256

Note: Significant interactions ($p < .05$) are indicated as follows: [a] obese girls differ from non-obese girls, [b] obese boys differ from non-obese boys, [c] obese girls differ from obese boys

*** Significance level for $p < 0.001$

** Significance level for $0.001 < p < 0.01$

* Significance level for $0.01 < p < 0.05$