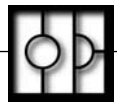

Research Article

Middle School Students' Weight Perceptions, Dieting Behaviors, and Life Satisfaction

Laura Esch and Keith J. Zullig

ABSTRACT

Background: *Previous research has posited that significant relationships exist between health status and psychological measures of health (e.g., self-esteem). Less is known about the relationship between perceived quality of life (e.g., life satisfaction), weight perceptions, and dieting behaviors, particularly among middle school adolescents.* ***Purpose:*** *This study investigated the association between weight perceptions and unhealthful dieting behaviors and overall life satisfaction among middle school students.* ***Methods:*** *Separate models were created for 245 7th and 8th grade males and females using the CDC's 2005 Youth Risk Behavior Survey (YRBS). ANOVA analyses and Tukey Honest Significant Difference (HSD) tests compared weight perceptions and dieting behaviors to overall life satisfaction.* ***Results:*** *Females were significantly more likely to report reduced life satisfaction if reporting being overweight, eating less, fasting, or taking diet pills to lose weight (effect sizes 0.96-5.80) ($p<.01$). Males were significantly more likely to report reduced life satisfaction if reporting being overweight or fasting to lose weight (effect sizes 4.58-4.75) ($p<.05$).* ***Discussion:*** *Unhealthful weight perceptions and dieting behaviors develop early in adolescence and impact life satisfaction.* ***Translation to Health Education Practice:*** *Comprehensive educational programs for prevention and intervention of weight misperceptions and unhealthful dieting are needed and must acknowledge gender differences.*

BACKGROUND

A struggle to comply with modern social, environmental, and psychological influences on weight perceptions and dieting behaviors has contributed to an increased prevalence of weight-related health issues.[1-4] Societal, peer, and parental pressures to achieve the thin cultural norm can lead to impaired feelings of well-being, unhealthful weight control and food consumption behaviors, and poor body weight perceptions.[5] Students in the 4th and 5th grade have been shown to be particularly vulnerable to parental influences on appearance and weight, especially female students. Through parental modeling of dieting behaviors, comments about their own appearance and their child's appearance, and enforcement of food choices and eating behaviors, parents may create an environment contributing to body dissatisfaction problems.[6-7] As young children age, peers and the media become more influential on appearance as these factors reinforce cultural weight ideals that attribute thinness with female attractiveness and success.[7-9]

Young adolescents risk developing disordered eating behaviors because this population is in a transitional period and are learning to adjust to increased independence while attempting to resolve peer, relationship, gender identity, body image, and weight conflicts.[5,10,11] During this phase of psychological maturation, stress and anxiety build and adolescents may turn to alcohol consumption, sexual intercourse, and violent behavior to cope with and adapt to changes.[11] An early onset of such risky behaviors and the experience of significant life

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events at a young age, like parental illness or disappointed educational expectations, are correlated with premature development of weight dissatisfaction and low self-esteem.[12] For example, weight dissatisfaction and low self-esteem impact females as they age and contribute to the misperceptions normal weight women may have regarding being overweight.[12] Despite attempts to make the transition to adolescence less complicated, a number of young people still experience an onset or continuation of unhealthful weight issues during adolescence.

Weight control practices, including weight gain and weight loss, are prevalent in young adolescents. For example, The National Health and Nutrition Examination Survey concluded the prevalence of overweight 16-19 year olds increased from 11% in 1988-1994 to 15% in 1999-2000, highlighting obesity as a primary health concern in young adolescents.[1] The survey also identified 31.2% of the 6-11 year olds sampled as being at risk for becoming overweight or obese and specified 15.8% of the sample as overweight.[1] On the other end of the weight spectrum, a recent study of 9-14 year olds found 25% of girls and 13.8% of boys sampled were infrequent dieters and 4.5% of girls and 2.2% of boys were frequent dieters.[8] Further, studies have also demonstrated body dissatisfaction in both girls[13] and boys.[14] However, it is difficult to obtain a complete report on the frequency of adolescent dieters exhibiting more serious eating disorder issues.

The DSM-IV diagnostic criteria used to clinically diagnose eating disorders pertains to those at an advanced cognitive level, making it developmentally challenging for young adolescents to describe and report disordered eating behaviors.[15] In addition, adolescents may exhibit disordered eating behaviors without receiving a clinical diagnosis, thus contributing to an underreporting of adolescent eating disorders.[7] Researchers have suggested that disordered eating practices lie on a continuum from normal eating behaviors to clinical eating disorders.[16] Despite the number of adolescents practicing weight control behaviors, including fasting and taking diet pills, these behaviors are unhealthful weight loss strategies. Such behaviors actually determine a later onset of disordered eating practices, eating disorders, and weight gain while negatively impacting physical and mental development.[2,8,17]

Weight regulating practices and disordered eating behaviors have been shown to cause impairing physical and mental health consequences.[4] Excess body weight in overweight and obese adolescents can limit physical functioning and, if left unchecked, lead to disabling cardiovascular conditions, diabetes, or chronic pain.[4,5] Food binges, self-induced vomiting, and laxative abuse in those practicing certain weight control behaviors can damage the digestive and cardiac systems resulting in major physical limitations.[4,18] Mental health concerns, including feelings of depression, diminished self-esteem, and impaired school and social functioning, were more frequently reported in overweight and obese adolescents ages 12-14 than in their normal weight counterparts.[4,18] Underweight adolescents also reported mental health impairments from preoccupations with food and body shape and symptoms of anxiety, personality disorders, depression, co-morbidity disorders, and low self-esteem.[18]

More notably, reports of poor physical and mental health are significantly related to adolescent quality of life (QOL). QOL measurements assess general feelings of well-being and detail positivity in the physical, psychological, and social domains of well-being.[4,19] For instance, Zullig et al.[20] found that as adolescents reported more poor physical and mental health days, their odds of reporting life dissatisfaction increased linearly.

QOL measurements are categorized into objective and subjective areas for appropriate surveying. Objective QOL measurements assess standard, external socioeconomic and environmental conditions contributing to well-being, such as income and access to health care, making objective conditions easy to compare across populations.[21] Subjective QOL measurements refer to individual judgments and enable individuals with diverse values, experiences, and cultural ideas to rate their internal feelings of well-being based on personal perceptions of life satisfaction.[22] Desirable circumstances like positive feelings of purpose, mastery, or self-regard influence an individual's reported feelings of life satisfaction.[21,22] In adolescents specifically, constructive feelings about themselves, school experiences, friends, family, and living environment positively influence life satisfaction reports.[23-25] Alternatively, undesirable circumstances like poor weight perceptions and unhealthful dieting issues have been shown to be related to adolescent life dissatisfaction reports.[26]

Although more objective Body Mass Index (BMI) measurements of weight have been associated with reduced life satisfaction in both adolescents and adults,[5,27,28] Burns et al.[5] argue that subjective weight estimates have a greater impact on well-being than realistic weight assessments because, as observed by Csikszentmihalyi,[29] subjective experience is not just one of the dimensions of life, it is life itself. For example, two recent studies confirmed a significant relationship between negative self-perceived weight perceptions, poor dieting behaviors, and self-reported life dissatisfaction in South Carolina high school students and students from a Midwestern university, respectively.[26,30] In light of the elevated risk of negative weight perceptions and dieting behaviors in young adults, the present study aimed to investigate if such correlations were established prior to high school by sampling a population of 7th and 8th grade students. Although previous research has suggested a lower number of female dieters in the 6th and 8th grades compared to the 10th grade, this study's purpose was to explore the effects of weight perceptions and dieting behaviors on life satisfaction in younger adolescents.[10,12,31]

PURPOSE

This study hypothesized that 7th and 8th grade students reporting poor weight perceptions and dieting behaviors would report significantly reduced satisfaction with life.

METHODS

Sample

During the spring of 2005, a convenience sample of 245 7th and 8th grade students were selected from two public school districts to participate - as one part of a larger study investigating the test-retest reliability of the 2005 Middle School YRBS (MSYRBS) from the CDC.[32] Schools were selected to participate in the study based on previous work in curriculum deliberation and program evaluation. Each school was given $250 to assist with student recruitment. Classroom-level sampling was done with second period classes to maximize student eligibility. Table 1 presents the sample demographics of the students in this study. The sample contained 136 females and 109 males. Most students reported being in 7th grade and the majority of students were of white race or ethnicity. The demographics of this sample were similar to national distributions in gender and age, but not for race or ethnicity or grade per the 2000 U.S. Census Bureau. Specifically, 7th grade students reporting "white" race or ethnicity were overrepresented.

Table 1. Sample Demographics of Student in Grade 7-8 in the Sample and National Distribution

Characteristic	Sample Distribution (%)	National Distribution (%)
Gender		
Male	45.3	51.2
Female	54.7	48.8
Grade		
7	80.9	50.3
8	19.1	49.7
Race		
White	93.5	76.7
Non-white	6.5	23.3
Age		
<11	1.7	3.1
12 to 13	90.9	80.9
>14	7.4	16.0

Data Collection Procedures

All data collection procedures were approved by the referent university's Human Subjects Review Board. Following methods from previous test-retest reliability studies,[33-35] two questionnaire scantrons were coded with the same unique number ranging from 1 to 250. Each pair of identically numbered scantrons were then placed into a single large envelope along with the MSYRBS instrument and distributed to each student participant during Time 1. Each student then removed and used one scantron. The envelope containing only the second identically numbered scantron was then sealed and signed across the seal by the student. When survey administrators returned for Time 2 (14 days later), students received their signed and sealed envelope, removed the second scantron, and destroyed the envelope. Parent-notification forms were distributed at least seven days in advance of survey administration. Parents who wanted their children to participate were required to sign and return the form, designating active consent to participate. The survey was administered in each school's auditorium or cafeteria by trained data collectors who emphasized anonymity, privacy, and confidentiality. During Time 1, data collectors reminded students that they would be returning to the school in two weeks to ask students to complete a similar questionnaire.

Instrumentation

The MSYRBS is a self-reported instrument. Four items request demographic information; two items request student's height and weight; and the remaining items query students on health risk behaviors. For this study, seven questions composed the independent variables of weight perceptions and dieting behavior resulting in moderate to substantial reliability [Kappas 51.6-77.3][32] for middle school students. These seven weight perception and dietary behavior questions were exactly the same as the items used on the national high school YRBS.[36]

Table 2 contains each independent variable and accompanying frequency counts for this study. Data from the nationally implemented YRBS reveals a very similar frequency of youth in grades 9 to 12 engaged in the same surveyed risk variables as the 7th and 8th grade students in this study.[36] The only significant differences in reports between high school students and middle school students were that a substantial number of high school males and females reported being overweight, 25.1% of high school males and 38.1% of high school females, and more high school females (61%) reported attempting to lose weight compared to 47.79% of middle school females.[36]

Dependent Variable

The dependent variable in this study was measured using one question from the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) querying students about their overall life satisfaction and contained the following response options: (1) Terrible; (2) Unhappy; (3) Mostly dissatisfied; (4) Mixed-about equally satisfied and dissatis-

fied; (5) Mostly satisfied; (6) Pleased; and (7) Delighted.[24,25] According to Huebner et al.,[37] the psychometrically sound BMSLSS was developed to measure overall life satisfaction of adolescents across a wide range of ages (ages 8-18) and levels of ability, yet be sufficiently brief and cost effective in large scale research efforts. The BMSLSS contains one domain from the longer 40-item Multidimensional Students' Life Satisfaction Scale (MSLSS).[38] The domains are satisfaction with school, friends living environment, family, self, and the optional overall life satisfaction item used for this study.

Although the other BMSLSS domains were not available for the present study, previous research validating the scale has shown the overall life satisfaction item to correlate highly with the other five pooled BMSLSS domains where between 49-64% of the variance in overall adolescent life satisfaction reports was explained by the other domains.[24,25] In addition, the BMSLSS scale alpha coefficient has been reported as .75 among middle and high school students.[24] Inclusion of the overall life satisfaction item raised the alpha coefficient to .85,[39] suggesting the overall item is acceptable for research purposes. Table 3 contains the frequency counts for the overall life satisfaction variable.

Data Analysis

Time 1 survey administrations from each of the participating schools were combined for analysis. Of the 402 students selected to participate in this study, 249 (62%) completed the questionnaire during the first survey administration. Of these 249 students, 98% (n = 245) provided complete information on all items.

The seven questions on weight perceptions and dieting behaviors were examined through a series of one-way ANOVAs and Tukey Honest Significant Difference (HSD) tests using PCSAS. Overall life satisfaction served as the dependent variable. Effect size (ES) was also calculated from the post-hoc comparisons to determine the magnitude of specific comparisons by dividing the mean difference by the pooled standard deviation. Effect size values indicate the

Table 2. Risk Variables and Frequencies

Risk Variable	Males n (%)	Females n (%)
Self described weight		
About the right weight	26 (23.8)	39 (28.8)
Underweight	79 (72.5)	90 (66.1)
Overweight	4 (3.7)	7 (5.1)
Attempts to control weight		
Stay the same weight	29 (26.6)	38 (28.0)
Lose weight	32 (29.3)	65 (47.8)
Gain weight	20 (18.4)	4 (2.9)
Not trying to do anything	28 (25.7)	29 (21.3)
Exercised to lose weight		
Yes	61 (56.0)	97 (71.3)
No	48 (44.0)	39 (28.7)
Ate less to lose weight		
Yes	30 (27.5)	71 (52.2)
No	79 (72.5)	65 (47.8)
Fasted to lose weight		
Yes	8 (7.3)	23 (16.9)
No	101 (92.7)	113 (83.1)
Used diet pills, powders, or liquids to lose weight		
Yes	6 (5.5)	10 (7.3)
No	103 (94.5)	126 (92.7)
Vomited or used laxatives to lose weight		
Yes	2 (1.8)	13 (9.6)
No	107 (98.2)	123 (90.4)

Table 3. Life Satisfaction Self-Report Frequencies

Degree of Life Satisfaction	Males n (%)	Females n (%)
Terrible	4 (3.7)	1 (0.7)
Unhappy	2 (1.8)	2 (1.5)
Mostly Dissatisfied	5 (4.6)	3 (2.2)
Mixed	16 (14.7)	34 (25.0)
Mostly Satisfied	16 (14.7)	29 (21.3)
Pleased	26 (23.8)	33 (24.3)
Delighted	40 (36.7)	34 (25.0)

magnitude of observed differences and, in a practical sense, show the size of differences between means. Effect sizes of .20, .50, and .80 indicate small, medium, and large effects, respectively.[40] Small effect sizes are generally not conceived as being practically important, whereas medium and large effects are understood as being important.

Separate models were created for males and females owing to observed differences between males and females in previous weight perception, dieting behavior, and life satisfaction research among both high school students[26] and college students.[30]

RESULTS

Self-Described Weight

Significantly reduced life satisfaction was detected for females who reported their weight as overweight (F (2,133) = 6.61, p<.001) (M = 3.86, SD = 1.36) when compared to females who reported being underweight (M = 5.55, SD = 1.19) (ES = 3.31) and about the right weight (M = 5.15, SD = 1.37) (ES = 2.53). Significantly reduced life satisfaction was also detected for males who reported their weight as overweight (F (2,107) = 4.32, p<.05) (M = 3.33, SD = 1.91) when compared to males who reported being underweight only (M = 5.75, SD = 1.55) (ES = 4.75).

Attempts to Control Weight

Although a hypothesized trend in reduced life satisfaction was detected as students moved from reporting 'trying to stay the same' to 'lose weight' to 'gain weight' for both males and females, the relationship did not achieve statistical significance for both males and females (F (2,107) = 0.39, p=.69 and F (2,133) = 0.91, p=.40, respectively).

Exercised to Lose Weight

Again, although a hypothesized trend in reduced life satisfaction was detected as students reported 'yes' and 'no' to this question, the relationship did not achieve statistical significance for both males and females (F (1,109) = 0.00, p=.99 and F (1,134) = 3.18, p=.07, respectively).

Ate Less to Lose Weight

Significantly reduced life satisfaction was detected for females who reported eating less food or fewer calories to lose weight (F (1,134) = 6.34, p<.01) (M = 5.08, SD = 1.23) when compared to females who did not (M = 5.64, SD = 1.32) (ES = 1.14). No significant findings were detected for males.

Fasted to Lose Weight

Significantly reduced life satisfaction was detected for females who reported fasting for 24 hours or more to lose weight (F (1,134) = 10.86, p<.001) (M = 4.55, SD = 1.30) when compared to females who did not (M = 5.51, SD = 1.24) (ES = 0.96). Significantly reduced life satisfaction was also detected for males who reported fasting for 24 hours or more to lose weight (F (1,108) = 4.14, p<.05) (M = 4.50, SD = 1.20) when compared to males who did not (M = 5.65, SD = 1.56) (ES = 4.58).

Used Diet Pills, Powders, or Liquids to Lose Weight

Significantly reduced life satisfaction was detected for females who reported using diet pills, powders, or liquids to lose weight (F (1,134) = 11.23, p<.001) (M = 4.00, SD = 1.22) when compared to females who did not (M = 5.45, SD = 1.25) (ES = 5.80). No significant findings were detected for males.

Vomited or Used Laxatives to Lose Weight

Finally, although a hypothesized trend in reduced life satisfaction was detected as students reported 'yes' and 'no' to vomiting or using laxatives to lose weight, the relationship did not achieve statistical significance for both males and females (F (1,109) = 0.27, p=.61 and F (1,134) = 3.50, p=.06, respectively).

DISCUSSION

This was a cross-sectional study exploring the association between self-reported overall life satisfaction and weight perceptions and dieting behaviors among a sample of 7th and 8th grade middle school students. Results indicated a portion of students in this sample reported poor weight perceptions, a substantial number practiced risky dieting behavior, and that these students were more likely to report dissatisfaction with life. In addition, observed effect sizes confirm that the observed differences are all large and carry practical significance.

This was the first study to both examine and demonstrate a relationship between middle school students' self-reported life satisfaction and unhealthful weight perceptions and dieting behaviors. The study supplements prior research supporting a significant relationship between life satisfaction, weight perceptions, and dieting behaviors in both high school students[26] and college students.[30] Examining the common variables of these three studies confirms an association between life dissatisfaction and unhealthful weight perceptions and poor dieting behaviors, which starts at a young age and continues at least through the college years. The relationship appears to become more expansive, encompassing a greater range of weight perceptions and dieting behaviors over time. For example, with increasing age female reports of additional behaviors, like attempting to lose weight, vomiting to lose weight, and describing oneself as underweight, become related to life dissatisfaction[26,30] and as males age, perceptions of being underweight, vomiting/using laxatives, and taking diet pills to lose weight become related to reports of life dissatisfaction.[26,30]

Related to the above, this study maintains that females are more likely to report poor dieting behaviors and further supports the influence of gender on variation in reported weight perceptions and dieting behaviors[26,30] while suggesting that these findings may not be limited to American youth. For instance, in a study of 11-16 year olds in Portugal, Portuguese girls reported more dieting than Portuguese boys.[27] In the present study, self perceptions of being overweight (males and females), eating less to lose weight (females), fasting for 24 hours or more to lose weight (males and females), and taking diet pills (females) were associated with reported life dissatisfaction. In a study conducted by Neumark-Sztainer,[2] the most overweight adolescent females were at the highest risk of practicing extremely unhealthful weight

control behaviors and were more likely to report decreased life satisfaction. The most underweight and most overweight males reported the highest number of extreme weight control behaviors. In addition, Swallen et al.[5] determined an onset of weight controlling behaviors in 12-14 year olds correlated with life dissatisfaction as overweight and obese adolescents were significantly more likely to be depressed, have low self-esteem, and function poorly in school and social environments when compared to 12-14 year olds with a normal BMI. These findings further emphasize a need to acknowledge gender when aiming to deter the development of unhealthful weight perceptions and poor dieting behaviors in adolescents, which can contribute to more serious disordered eating behaviors and life satisfaction issues later in life.[17,26,30]

The combined findings suggest efforts to curtail poor weight perceptions and unhealthful dieting behaviors should concentrate on early, concrete life events and influences. A study of 6th, 8th, 9th, and 10th grade females identified 9th grade as the fundamental year when influences on disordered eating shift from concrete events like menarche and dating status to more psychological and abstract issues.[31] This may explain why QOL evaluations actually decline with age as 15-17 year old overweight and obese adolescents were more likely to be depressed or have low self-esteem when compared to younger adolescents.[4] Menarche and dating status predicted simple dieting in 6th and 8th graders, but current body shape predicted dieting participation in 10th graders.[31] Primary caregivers and parents may also contribute to or protect a young adolescent from developing negative weight perceptions and dieting behaviors with the sort of home environment they create.[2] Teaching parents how to implement and practice healthy eating behaviors and abstain from openly dieting, encouraging dieting, or focusing on weight can help prevent disordered eating in adolescents.[17]

Limitations

The MSYRBS relies on self-reports to obtain measurements of weight perceptions, dieting behaviors, and life satisfaction. In this study, the use of self-reports is supported by previous research authenticating self-reports for objective data collection and MSYRBS Kappas values showing moderate reliability and validity.[32,41] However, factors like recollection of events, social desirability, and questionnaire administration in a peer group setting have the potential to influence the validity of self-reported data.[42] For example, social desirability may sway younger students to overestimate traits that are deemed desirable while underestimating undesirable health-related traits in self-reports.[43]

A second limitation of this study is related to the convenience sample used. However, the validity of this sample's self reports is supported by national high school data collected by Eaton et al.[36] and additional studies consistent with this study's independent variable results. Neumark-Sztainer[2] determined 56.9% of adolescent females sampled engaged in unhealthful weight control behaviors, such as fasting and skipping meals, while another 12.4% of females sampled displayed disordered eating behaviors, including taking diet pills, using laxatives, and vomiting in attempt to control weight. Weight control behaviors differed across gender with 32.7% of adolescent males sampled practicing unhealthful weight control behaviors and 4.6% reporting disordered eating behaviors.[2] Neumark-Sztainer's[2] frequencies compare to the data from the present study in that 69.12% of adolescent females practiced unhealthful weight control behaviors, including eating less or fasting to lose weight, and 16.92% of females displayed disordered eating behaviors of using diet pills or vomiting. Of the 7th and 8th grade males sampled in this study, 35.64% reported practicing unhealthful weight control behaviors and 7.33% reported disordered eating behaviors. Still, this sample may not be considered representative of the national geographic population, particularly with ethnicity and age characteristics.

Finally, a cross-sectional study design does not imply causality. Nevertheless, this study, in combination with other discussed literature, is beginning to unfold the nature and development of disordered eating and its relationship to life satisfaction levels. This relationship has now been confirmed in middle school students and is shown to continue in high school and through college, but available evidence suggests intervention efforts may be conducted in the middle school years or earlier for the greatest impact.

TRANSLATION TO HEALTH EDUCATION PRACTICE

In addition to the apparent need for comprehensive disordered eating prevention programs acknowledging gender differences and parental influences, weight-related misperceptions and health problems are also attributed to underlying cultural, social, and medical factors. For example, one explanation for the increase in such weight and dieting issues may be correlated with adolescent weight management education.[44] The 2000 School Health Policies and Program Study (SHPPS) assessed the health education policies applied in kindergarten through grade 12. A nationally representative sample provided information on the number of schools that offered at least one required course covering topics and skills related to nutrition and dietary behaviors.[44]

Nationally, 86.9% of all schools covered the topic "accepting body size differences" with 88.5% of elementary schools, 82.9% of middle/junior high schools, and 87.7% of senior high schools discussing body size. However, the topic of "eating disorders" was only covered by 51.2% of all schools, including 30.1% of elementary schools, 74.2% of middle/junior high schools, and 90.7% of senior high schools. The topic of "risks of unhealthy weight control" was taught by 69.2% of all schools, including 57.1% of elementary schools, 81.1% of middle/junior high schools, and 94.2% of senior high schools.[44] It may be suggested that additional attention also be given to advancing the 57.4% of all schools currently teaching the skill "resisting peer pressure related to unhealthy dietary behavior."

Not all schools implement health edu-

cation practices that produce the desired health outcomes of increasing health-related knowledge and skill development.[44] Thus, health educators should consider health-promoting school-based frameworks[45] that encompass a variety of internal (e.g., curricula and policies) and external (e.g., partnerships with nutrition and dietetic services) influences on dieting and weight management practices.[46] If structured settings can be designed with fidelity, research suggests students engaged in unhealthful dietary practices may be more amenable to disclosing their symptoms.[47]

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