THE ROLE OF PEER VICTIMIZATION IN THE RELATIONS BETWEEN OBESITY, NEGATIVE BODY COGNITIONS, AND NEGATIVE PSYCHOSOCIAL OUTCOMES

by

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ABSTRACT

The first aim of this study was to examine relations between obesity and negative psychosocial outcomes (depression symptoms, anxiety symptoms, withdrawal, somatization, school avoidance), negative body cognitions (negative body perception, overconcern with weight), and weight-related victimization. The second aim was to examine whether weight-related victimization plays a mediating role in the relations between obesity and these negative body cognitions and psychosocial outcomes. Participants (924 4th and 5th graders) completed self-report measures of weight-related victimization, negative body perception, and overconcern with weight, while teachers completed measures of depression symptoms, anxiety symptoms, somatization, withdrawal, and school avoidance. BMI was calculated from parent-reported height and weight. Obese children experienced more weight-related victimization and had higher levels of negative body cognitions than children of all other weight status groups. Obese children also demonstrated higher levels of depression symptoms, withdrawal, and school avoidance than children of at least one other weight status group. Weight-related victimization partially mediated the relation between obesity and the negative body cognitions. Weight-related victimization fully mediated the relation between obesity and withdrawal, as well as between obesity and anxiety symptoms.
Chapter 1
INTRODUCTION

Obesity is a common problem among American children and adolescents (hereafter referred to as “children”). Based on the 2011-2012 National Health and Nutrition Examination Survey, 32% of American children are considered overweight or obese, with overweight children having a body mass index (BMI) at or above the 85th percentile, and obese children having a BMI at or above the 95th percentile (Ogden, Carroll, Kit, & Flegal, 2014). Notably, 17% of American children are considered obese (Ogden et al., 2014).

1.1 Childhood Obesity and Psychosocial Outcomes

A range of negative psychosocial outcomes are associated with childhood obesity. In general, greater levels of psychological distress have been linked to higher BMI (Kubzansky, Gilthorpe, & Goodman, 2012). More specifically, some studies suggest that obese children experience more depression (e.g., Bell et al., 2011; Csabi, Tenyi, & Molnar, 2000) and anxiety (e.g., Buddeburg-Fisher, Klaghofer, & Reed, 1998) than their peers. Furthermore, among overweight and obese children, higher BMI is associated with greater levels of depression and anxiety (Thompson, Phillips, McCracken, Thomas, & Ward, 2013). One study examining internalizing symptoms over time found that children who were chronically overweight or obese displayed more somatic complaints and social withdrawal than children who were never/rarely overweight or obese or who became overweight/obese later in childhood (Xie, Ishibashi, Lin, Peterson, & Susman, 2013). In addition, obese children may avoid school more than their peers, in that
objective data indicates that they are absent from school on more days than their normal-weight peers (Datar & Sturm, 2006; Geier et al., 2007; Shore et al., 2008).

However, other studies have found no link between childhood obesity and depression (e.g., Goodman & Must, 2011), anxiety (Tanofsky-Kraff et al., 2004; Zeller, Saelens, Roehrig, Kirk, & Daniels, 2004), or somatization (Kislal, Kutluk, Cetin, Derman, & Kanbur, 2005). These equivocal findings suggest that more in-depth research is needed to more fully understand the associations between obesity and negative psychosocial outcomes in children.

1.2 Childhood Obesity and Negative Body Cognitions

A substantial literature suggests that obese children display negative body cognitions, including negative body perception (a discrepancy between perceived actual and ideal size) and overconcern about weight (preoccupation with thoughts about fatness and desire to be thinner). Although similar, these two cognitions have been shown to be distinct constructs, with negative body perception more associated with objective weight and overconcern with weight more associated with psychosocial variables (Allen, Byrne, McLean, & Davis, 2008). BMI has been consistently linked to negative body perception among children as early as ages 5 or 6 (Smolak, 2011; Williams et al., 2013).

In several studies, these two negative body cognitions have mediated the relation between weight status and psychosocial outcomes. For example, in one study, perceived overweight status mediated the relation between obesity and depression in children (Roberts & Duong, 2013). In other studies, negative body perception mediated the relations between obesity and psychosocial outcomes including depression, low self esteem, and quality of life in children (Mond, Van den Berg, Boutelle, Hannan, & Neumark-Sztainer, 2011; Shin, N.A., & Shin, M.S., 2008; Wallander et al., 2009).
The Role of Peer Victimization in the Psychosocial Outcomes and Negative Body Cognitions of Obese Children

The literature reviewed above suggests that obese children display negative body cognitions and experience negative psychosocial outcomes. However, it is important to consider the experiences or mechanisms that lead obese children to these cognitions and outcomes. One potential pathway from obesity to both negative cognitions and negative outcomes is through the experience of weight-related victimization, when peers tease or bully children specifically about their weight. Although there is a substantial literature on the negative mental health effects of peer victimization, the literature is more limited on weight-related victimization specifically, and few studies tie together the constructs of objective weight status, weight-related peer victimization, negative body cognitions, and negative psychosocial outcomes.

Peer victimization is a significant problem for youth of all weight statuses, affecting many children. Approximately 10% of elementary and middle school students report being bullied by peers (Nansel et al., 2001). Children who experience peer victimization are more likely than their peers to demonstrate a wide range of negative mental health outcomes. Victimized children show symptoms of depression, anxiety, and low self-esteem more than their peers, and they are more likely to commit suicide and school shootings than other children (Borowsky, Taliaferro, & McMorris, 2013; Card & Hodges, 2008; Espelage & Holt, 2013; Karch, Logan, McDaniel, Floyd, & Vagi, 2013; Kim & Leventhal, 2008; Kochenderfer & Ladd, 1996; Reuter-Rice, 2008). Victimized children are also more likely to avoid attending school than children who are not bullied (Kochenderfer & Ladd, 1996; Nakamoto & Schwartz, 2010).

Studies on the association between victimization and obesity consistently demonstrate that peers view obese children more negatively than normal-weight peers (Cramer & Steinwert, 1998; Kraig & Keel, 2001; Latner & Stunkard, 2003) and that obese children are victimized more than normal-weight peers (Hayden-Wade et al.,
This greater victimization of obese children has been shown to include physical victimization (Fox & Farrow, 2009; Janssen, Craig, Boyce, & Pickett, 2004), verbal victimization (Fox & Farrow, 2009), and relational victimization (Janssen et al., 2004; Pearce, Boergers, & Prinstein, 2002). In particular, obese children are likely to experience victimization specifically about their weight (Janssen et al., 2004; Neumark-Sztainer, Story, & Faibisch, 1998; Pearce et al., 2002).

Weight-related victimization clearly impacts children’s negative body cognitions (Menzel et al., 2010). Obese children who are victimized have higher rates of negative body perception than those who are not bullied (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006; Menzel et al., 2010; Thompson et al., 2007). Furthermore, 5th-grade boys who reported difficulty getting along with peers experienced negative body perceptions more often than their more socially-adjusted peers (Michael et al., 2014). In fact, the link between weight-related victimization and negative body perception is stronger for children than it is for adults (Menzel et al., 2010), suggesting this may be a particular area of concern in earlier developmental years.

Weight-related victimization has also been associated with negative psychosocial outcomes in children. Obese children who have been victimized about their weight report higher rates of depression (Gray, Janicke, Ingerski, & Silverstein, 2008; Hayden-Wade et al., 2005; Puhl & Luedicke, 2012; Storch et al., 2007), including higher rates of suicidal ideation and suicide attempts (Eisenberg, Neumark-Sztainer, & Story, 2003), as well as higher levels of loneliness symptoms (Hayden-Wade et al., 2005; Storch et al., 2007). Weight-based victimization also increases the odds of a child skipping school (Puhl & Luedicke, 2012). Furthermore, Eisenberg et al. (2003) found that weight-based victimization in children was associated with negative outcomes even after for controlling for actual body weight, suggesting that victimization rather than objective weight status itself may be the primary factor in predicting negative psychosocial
outcomes. The negative impact of weight-related victimization can be seen in children beginning in early elementary school (Datar & Sturm, 2006); however, more studies have been conducted on weight-related victimization in later childhood and adolescence.

Studies have also indicated that negative body cognitions mediate the relation between peer victimization and psychosocial outcomes. For example, Adams and Bukowski (2008) found that self-concept for physical appearance mediated the relation between victimization and depressive symptoms in girls. In addition, Benas and Gibb (2007) found that negative body perception mediated the relation between retrospectively reported childhood weight-related teasing and depression symptoms in young adulthood.

The evidence reviewed above indicates that obese children and adolescents are disproportionately bullied, that this victimization is often about their weight, and that it is associated with both negative body cognitions and negative psychosocial outcomes. The purpose of the current study is to examine the role of weight-related victimization in the negative cognitions and negative psychosocial outcomes of obese children.

1.4 The Current Study

The current study had two primary aims. The first aim was to replicate previous work by examining relations between obesity and negative psychosocial outcomes (depression symptoms, anxiety symptoms, withdrawal, somatization, school avoidance), negative body cognitions (negative body perception, overconcern with weight), and weight-related victimization. We examined these relations in two ways. First, we categorically grouped children by weight status, and examined differences between obese children and children who fall into the other three weight status groups: underweight, normal-weight, and overweight. We expected to find increased reports of all psychosocial outcomes, both negative body cognitions, and weight-related victimization in children who are obese as compared to children who are underweight,
normal-weight, and overweight. Second, we examined the relations between continuous BMI percentile and these same constructs. We predicted that increased BMI percentile would be associated with increased rates of all psychosocial outcomes, both negative body cognitions, and weight-related victimization. Using both categorical and continuous measures of childhood obesity in our analyses helped us better understand whether increased BMI percentile across the full range of percentiles is associated with higher risk for all of these outcomes, as well as whether there is a particular risk for children at the most elevated levels of obesity. Although most of these comparisons have been made in previous studies, the current study was noteworthy for its use of a large school-based middle-childhood sample, when much of the previous literature has focused on adolescent samples and/or clinical treatment-seeking samples. In addition, because a school-based sample was used, we were able to assess psychosocial outcomes through teacher-report, when most literature in this area has relied on either self- or parent-report. In addition, this study examined a wider range of psychosocial outcomes than previous studies, providing broad-based information on mental health outcomes and childhood obesity.

The second aim of the current study was to investigate whether weight-related peer victimization mediates the relations between BMI and the two negative body cognitions, as well as the relations between BMI and the five psychosocial outcomes. We predicted that weight-related victimization will mediate all of these associations. Although previous investigations have explored the phenomenon of weight-related victimization, to our knowledge, this is the first study to examine whether weight-related victimization plays a mediating role between BMI and either negative body cognitions or psychosocial outcomes.
Chapter 2

METHOD

2.1 Overview

Participants included 924 fourth- and fifth-grade students and their teachers from 74 classrooms in 9 elementary schools in one school district in a mid-Atlantic state. Children completed self-report measures of weight-related victimization, negative body perception, and overconcern about weight, while teachers completed measures of depression symptoms, anxiety symptoms, withdrawal, somatization, and school avoidance for each participating child. Children’s BMI and weight status were obtained by parent report of the child’s height and weight.

2.2 Participants

Parental consent forms were distributed to 1910 children, and 1448 forms were returned with consent (75.8% consent rate). Parent-reported height and weight data were collected from the parental consent forms. During data collection, a child assent form was administered, and 101 children refused assent (7% refusal rate). In addition, 18 children were absent on the day of data collection as well as a make-up day. Of the resulting 1,329 children who completed self-report measures, 405 children were excluded from analyses because their parents did not provide height and/or weight data in order to compute a BMI score. Thus, the final sample consisted of 924 children (475 female, 449 male).

Parents reported the following race/ethnicity for their children: European American (58.1%), African American (13.0%), Latino American (12.5%), Asian American (9.7%), Mixed race (5.9%), American Indian or Alaska Native (0.3%), and Native Hawaiian or Pacific Islander (0.1%), with race/ethnicity data missing for 0.4%. Participants ranged in age from 8 to 12 (mean = 10.07 years). Based on parent-reported BMI, 62 children were classified as underweight (6.7%), 574 children were classified as
normal weight (62.1%), 148 children were classified as overweight (16.0%), and 140 children were classified as obese (15.2%).

2.3 Data Collection Procedures

Classroom visits were conducted to collect self-report data during late September and early October. For each classroom visit, the author, the principal investigator, or a graduate-level assistant (accompanied by at least two undergraduate assistants) group-administered measures to children in each classroom. Undergraduate assistants circulated throughout the room to ensure that children stayed on track, to answer children’s questions, and to maintain privacy. In addition, they worked individually and privately with any children who needed help to complete the measures validly (because of a learning disability, attention difficulties, or physical handicap), as determined beforehand through consultation with the teacher. The measures took approximately one hour to complete.

Teacher-report measures were completed online using Qualtrics. Instructions for accessing the teacher-report measures were distributed at the classroom visit, with a completion deadline of approximately two weeks later. Teachers were compensated with $100 for completing the measures for children with permission in their classroom.

2.4 Measures

2.4.1 Weight status

Weight status was assessed using parent-report of children’s weight and height, obtained when parental consent forms were sent home with the child. These items were entered into a formula to calculate children’s BMI. BMI, a measure of weight that is adjusted for height, is commonly used to estimate excess body fat in comparison to overall weight because objective measures of body fatness are more difficult to obtain (Barlow, 2007; Flegal et al., 2006). BMI changes with age and varies by gender in
children; therefore, BMI percentile scores based on age and gender are used to
determine obesity status in children (Barlow, 2007). Although BMI has been criticized
for not accounting for possible excess muscle mass, BMI percentile ratings have been
shown to be a good index of excess body fatness in overweight and obese children, with
a specificity of 95% (Freedman & Sherry, 2009). Children’s age and gender were
obtained either via parent report or from classroom rosters. BMI percentile was assessed
using weight-by-height charts specific to gender and age from the Centers for Disease
Control and Prevention (CDC, 2000). Children were classified as follows: Underweight
= less than 5th percentile; Normal-Weight = 5th-84th percentile; Overweight = 85th-94th
percentile; Obese = greater than 95th percentile (Barlow, 2007).

2.4.2 Weight-related victimization

Weight-related victimization was assessed using the 6-item General Weight
Teasing subscale from the Perception of Teasing Scale. The measure asked children to
report ways in which they had been teased about their weight on a scale ranging from 1
= never to 5 = several times a week (Thompson, Cattarin, Fowler, & Fisher, 1995). A
sample item was “People made fun of you because you were heavy”). In preadolescent
samples, the scale has demonstrated strong psychometric properties for both males and
females across a diverse racial/ethnic sample (Jensen & Steele, 2010). Internal
consistency was strong for this study at 0.92.

2.4.3 Negative body cognitions

Negative body perception was assessed using the 2-item Body Figure Perception
Scale. Children were presented with seven sketches of a same-gender child ranging from
very underweight to very overweight. Children were asked to circle both which image
they thought best resembled themselves, as well as which image they most wanted to
look like (Collins, 1991). This scale has demonstrated both strong reliability and
criterion-related validity in a sample of elementary school children (Collins, 1991). Negative body perception scores were calculated by subtracting the desired body image score from the perceived self body image score.

Overconcern with weight was assessed using 3 items from the Overconcern with Weight and Shape subscale of the McKnight Risk Factor Survey. This measure asked children to report about frequency of feelings and thoughts related to thinness, fatness, and weight loss in the past year on a scale from 1 = not at all to 5 = a whole lot (McKnight Investigators, 2003). A sample item was “In the past year, how often have you thought about wanting to be thinner?” An earlier version of this scale demonstrated strong test-retest reliability as well as convergent validity with other scales of weight concern in girls from 8-18 (Shisslak et al., 1999), and the current version has been shown to have strong internal consistency scores in males and females of several racial and ethnic groups in 5th-10th grade (Lynch, Heil, Wagner, & Havens, 2007). Two items that overlapped conceptually with the three retained items were cut from the original scale due to time restraints. Internal consistency was 0.83 for this modified subscale in the current study.

2.4.4 Psychosocial outcomes

Psychosocial symptoms including depression, anxiety, somatization, and withdrawal were assessed by teacher report, using subscales of the Behavior Assessment System for children 2 (BASC-2; Reynolds & Kamphaus, 2004). For all subscales, the response format ranged from 1 = never to 4 = almost always. Teachers completed the 10-item Depression subscale, the 7-item Anxiety subscale, the 9-item Somatization subscale, and the 8-item Withdrawal subscale. These subscales have all demonstrated strong psychometric properties in diverse samples (Reynolds & Kamphaus, 2004); they also correlate strongly with similar subscales from the Achenbach System of Empirically Based Assessment Teacher’s Report Form for Ages 6-18 (ASEBA;
Achenbach & Rescorla, 2001). Internal consistency in this study was 0.85, .88, .78, and .86 for the Depression, Anxiety, Withdrawal, and Somatization subscales, respectively.

School avoidance was assessed by teacher report using the 6-item School Avoidance Subscale of the Teacher Rating Scale of School Adjustment (Birch & Ladd, 1997; Ladd, Kochenderfer, & Coleman, 1996). This scale is designed to capture the teacher’s perception of a child’s effort to avoid being in the classroom, for example, by asking teachers how often a child “asks to leave the classroom” or “feigns illness at school.” Although not extensively evaluated, previous studies using this subscale have found internal consistencies that range from .74 and .92 (Birch & Ladd, 1997). Teachers rated how true each item was for the child on a scale ranging from 1 = does not apply to 3 = certainly applies. Internal consistency in this study was 0.78.
Chapter 3

RESULTS

3.1 Preliminary Analyses and Missing Data

Descriptive statistics for all final variables are presented in Table 1. The final column of Table 1 shows the percentage of data that were missing for each final variable. For all analyses, missing data was estimated using multiple imputation procedures in SPSS 22 (IBM Corp, 2013). Simple bivariate correlations amongst all final variables are shown in Table 2. Due to the fact that children were nested within classrooms, all remaining analyses were conducted in HLM 7 (Raudenbush, Bryk, Cheong, Congdon, and duToit, 2011).

3.2 Differences between Weight Status Groups in Weight-Related Victimization, Negative Body Cognitions, and Negative Psychosocial Outcomes

A series of eight hierarchical linear models were run to examine weight status (Underweight, Normal-Weight, Overweight, Obese) as a predictor of weight-related victimization, negative body cognitions (negative body perception, overconcern with weight) and negative psychosocial outcomes (depression symptoms, anxiety symptoms, somatization, withdrawal, school avoidance). The models included two levels: 924 children (level 1) within 74 classrooms (level 2), and HLM was used to account for potential classroom effects in these relations. For all models, dummy-coded variables using children classified as obese as a reference group were input into the model as uncentered predictor variables with a random slope. Therefore, all beta values represent the change from the obese group to each other weight status group. The results are presented in Table 3.

3.2.1 Weight-related victimization

Obese children reported significantly more weight-related victimization than underweight, normal-weight, and overweight children.
3.2.2 Negative body perception

Obese children reported higher levels of negative body perception than underweight, normal-weight, and overweight children.

3.2.3 Overconcern with weight

Obese children reported greater overconcern with weight than underweight, normal-weight, and overweight children.

3.2.4 Depression symptoms

Teachers reported that obese children have significantly higher levels of depression symptoms than underweight or normal-weight children. There was no significant difference in levels of depression symptoms between obese and overweight children.

3.2.5 Anxiety symptoms

There were no significant differences in teacher-reported anxiety symptoms between obese children and underweight, normal-weight, or overweight children.

3.2.6 Somatization

There were no significant differences in teacher reports of somatization between obese children and underweight, normal-weight, and overweight children. However, teachers reported marginally higher levels of somatization for obese children compared to underweight and normal-weight children.

3.2.7 Withdrawal

Teachers reported significantly higher withdrawal in obese children than in normal-weight and overweight children. However, there was no significant difference between obese children and underweight children in withdrawal symptoms.
3.2.8 School avoidance

Teachers reported significantly higher school avoidance in obese children than in normal-weight children. There were no significance differences in levels of school avoidance between obese children and underweight or overweight children.

3.3 BMI Percentile as a Predictor of Weight-Related Victimization, Negative Body Cognitions, and Negative Psychosocial Outcomes

To better understand how BMI percentile is related to weight-related victimization, the negative body cognitions, and the negative psychosocial outcomes across the full range of BMI percentiles, eight additional hierarchical linear models were run. Each model used one of the same outcome variables as described in the previous section. However, in these models, the continuous variable of BMI percentile was substituted as the predictor in place of the dummy-coded weight status variables. For all models, BMI percentile was entered as an uncentered variable with a random slope. The results are presented in Table 4. Of note, this table also includes HLM coefficients between all remaining pairs of final variables; these analyses mirror the bivariate correlations presented in Table 2 but control for the nesting of children within classrooms.

3.3.1 Weight-related victimization

BMI percentile significantly predicted weight-related victimization, such that children with a higher BMI percentile score reported higher levels of weight-related victimization.

3.3.2 Negative body perception

Increased BMI percentile also predicted increases in negative body perception scores.
3.3.3 Overconcern with weight

BMI percentile also significantly positively predicted overconcern with weight.

3.3.4 Depression symptoms

Increased BMI percentile did not significantly predict increased teacher-reported depression symptoms, although results were marginally significant.

3.3.5 Anxiety symptoms

There was no linear relation between BMI percentile and teacher-reported anxiety symptoms.

3.3.6 Somatization

Increased BMI percentile did not significantly predict increased teacher-reported somatization, although there was marginal significance for this effect.

3.3.7 Withdrawal

There was no linear relation between BMI percentile and teacher-reported withdrawal.

3.3.8 School avoidance

There was no linear relation between BMI percentile and teacher-reported school avoidance.

3.4 Mediation Models

3.4.1 Model structure

A series of HLM models were run to examine weight-related victimization as a mediator between BMI percentile and both body cognitions and psychosocial outcomes. The continuous variable of BMI percentile was selected as the predictor variable for the mediation models rather than the categorical variable of weight status due to limited
consensus on methods for using categorical predictors in mediation analyses, especially within HLM (Iacobucci, 2012). Mediation models were analyzed using the mediation approach outlined by Kenny, Kashy, and Bolger (1998), testing only the models that demonstrated significant relations between the predictor variable (X) and the mediating variable (M), as well as between the mediating variable (M) and the outcome variable (Y). This approach diverges from traditional mediation, which also requires a significant relation between the predictor (X) and the outcome variable (Y) (Baron & Kenny, 1986). However, Kenny et al. argued that there is an implied relation between the initial and outcome variables if the relation between the initial and mediating variables, as well as the relation between the mediating and outcome variables, are significant. The requirement that a total effect for $X \rightarrow Y$ be present prior to assessing mediation has since been repeatedly challenged, because problems with confounding or interactive effects could attenuate overall effects for $X \rightarrow Y$ (e.g., MacKinnon, 2008; Rucker, Preacher, Tormala, & Petty, 2011; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010). There is some argument that in the absence of a significant direct $X \rightarrow Y$ path, it is more appropriate to term the effect of $X$ on $Y$ through $M$ an indirect effect as opposed to a mediation effect (e.g., Hayes, 2009), with the argument that a mediator explains the nature of a relation that pre-exists between two variables, while an indirect effect explains the chain of events between three variables in conjunction with the extent that the variance of $Y$ can be attributed to the indirect effect (Mathieu & Taylor, 2006). However, others equate indirect effects and mediator variables (e.g., MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). For the purposes of this paper, we equate indirect effects and mediator variables, and will heretofore discuss these relations in terms of mediation.

For all mediation models in this study, the $a$ path between the predictor variable (BMI percentile) and the mediator (weight-related victimization) was significant. Mediation analyses were then conducted for the negative body cognitions and
psychosocial variables for which there was a significant $b$ path from the mediator to the outcome variable. Outcomes included both body cognitions (negative body perception and overconcern with weight) as well as four psychosocial outcomes (depression symptoms, anxiety symptoms, withdrawal, and school avoidance).

Mediation models were analyzed in HLM 7 (Raudenbush et al., 2011), with all mediator variables entered at Level 1 (lower level mediation). To account for classroom nesting, mediation models were analyzed using procedures outlined in Bauer, Preacher, and Gil (2006) to allow for random causal effects on all paths. For each model, significance was analyzed for path $a$ between the predictor variable (X) and the mediator (M), path $b$ between M and the outcome (Y), and path $c'$ as the direct path between X and Y, as well as for the full indirect effect of X on Y through M (the products of $a$ and $b$, or $ab$) and the total effect of X on Y ($ab + c'$). All results are presented in Table 5. In Table 5, $d_{Yj}$ refers to the intercept of Y and $d_{Mj}$ refers to the intercept of M. Full mediation is indicated by significant $a$ and $b$ paths, with a non-significant $c'$ path. Partial mediation is indicated by significant $a$ and $b$ paths, with a $c'$ path that also remains significant. No mediation is indicated when the $b$ path for a model was not significant.

3.4.2 Negative body perception

Weight-related victimization partially mediated the relation between BMI percentile and negative body perception. The estimate of the average indirect effect for this model was .0015 (95% CI = .0001, .0029). The estimate of the average random total effect of this model was .0125 (95% CI = .0102, .0147).

3.4.3 Overconcern with weight

Weight-related victimization partially mediated the relation between BMI percentile and overconcern with weight. The average indirect effect was estimated to be
.0037 (95% CI = .0009, .0064), and the average total effect to be .0102 (95% CI = .0071, .0134).

3.4.4 Depression symptoms

Weight-related victimization did not significantly mediate the relation between BMI percentile and depression symptoms, although the mediation was of marginal significance. The estimate of the average random indirect effect for this model was .0005 (95% CI = .0002, .0008). The estimate of the random total effect of this model was .0004 (95% CI = -.0003, .0011).

3.4.5 Anxiety symptoms

Weight-related victimization mediated the relation between BMI percentile and anxiety symptoms. The estimate for the average random indirect effect for this model was .0003 (95% CI = .00005, .0005). The estimate for the random total effect of this model was -.0002 (95% CI = -.0010, .0006).

3.4.6 Withdrawal

Weight-related victimization mediated the relation between BMI percentile and withdrawal. The average random indirect effect of X on Y through M was .0006 (95% CI = .0003, .0009) and the random total effect was .0004 (95% CI = -.0006, .0013).

3.4.7 School avoidance

Weight-related victimization did not mediate the relation between BMI percentile and school avoidance. The average random indirect effect was .0003 (95% CI = .0001, .0005) and the average random total effect was .0005 (95% CI = -.0001, .0012).
Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>SD</th>
<th>% missing data</th>
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<td>.43</td>
<td>.93</td>
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<td>1.17</td>
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Table 2. Bivariate Correlations

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<td>3. Negative body perception</td>
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<td>.30**</td>
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<td>.55**</td>
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<td>.21**</td>
<td>.00</td>
<td>.09**</td>
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<td>.28**</td>
<td>.70**</td>
<td>.25**</td>
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Note. *p < .05. **p < .01.
Table 3. Hierarchical Linear Models with Obese Children as a Reference Group

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<th>Weight-related victimization</th>
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<th>SE</th>
<th>$T$-ratio</th>
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<tr>
<td>Intercept</td>
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<td>Underweight</td>
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<td>-0.529**</td>
<td>.151</td>
<td>-3.508</td>
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<tr>
<td>Normal weight</td>
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<td>-0.654***</td>
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<td>-5.494</td>
</tr>
<tr>
<td>Overweight</td>
<td>73</td>
<td>-0.491***</td>
<td>.124</td>
<td>-3.948</td>
</tr>
</tbody>
</table>

| Cognitions                  |
|------------------------------|------|-----------------|-----|-----------|
| Negative body perception     | $df$ | Coefficient     | SE  | $T$-ratio |
| Intercept                    | 73   | 1.191***        | .091| 13.095    |
| Underweight                  | 73   | -1.266***       | .139| -9.079    |
| Normal weight                | 73   | -0.973***       | .101| -9.642    |
| Overweight                   | 73   | -0.413***       | .118| -3.503    |

<table>
<thead>
<tr>
<th>Overconcern with weight</th>
<th>$df$</th>
<th>Coefficient</th>
<th>SE</th>
<th>$T$-ratio</th>
</tr>
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<tbody>
<tr>
<td>Intercept</td>
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<td>2.398***</td>
<td>.095</td>
<td>25.334</td>
</tr>
<tr>
<td>Underweight</td>
<td>73</td>
<td>-1.016***</td>
<td>.143</td>
<td>-7.086</td>
</tr>
<tr>
<td>Normal weight</td>
<td>73</td>
<td>-1.001***</td>
<td>.099</td>
<td>-10.155</td>
</tr>
<tr>
<td>Overweight</td>
<td>73</td>
<td>-0.496***</td>
<td>.117</td>
<td>-4.235</td>
</tr>
</tbody>
</table>

| Psychosocial Outcomes        |
|------------------------------|------|-----------------|-----|-----------|
| Depression symptoms          | $df$ | Coefficient     | SE  | $T$-ratio |
| Intercept                    | 73   | 1.231***        | .036| 34.292    |
| Underweight                  | 73   | -0.096*         | .047| -2.021    |
| Normal weight                | 73   | -0.111***       | .035| -3.187    |
| Overweight                   | 73   | -0.069          | .046| -1.491    |

<table>
<thead>
<tr>
<th>Anxiety symptoms</th>
<th>$df$</th>
<th>Coefficient</th>
<th>SE</th>
<th>$T$-ratio</th>
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</thead>
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<td>.049</td>
<td>-0.922</td>
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<table>
<thead>
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<th>SE</th>
<th>$T$-ratio</th>
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</thead>
<tbody>
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<td>58.019</td>
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<tr>
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<td>.034</td>
<td>0.114</td>
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<table>
<thead>
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<th>SE</th>
<th>$T$-ratio</th>
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<td>.055</td>
<td>-2.779</td>
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</table>

<table>
<thead>
<tr>
<th>School avoidance</th>
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<th>$T$-ratio</th>
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<td>-0.775</td>
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*Note.* † *p < .10.*  * *p < .05.*  ** *p < .01.*  *** *p < .001.*
Table 4. HLM Coefficients Table

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<tr>
<th>Variable</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
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<td></td>
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<tr>
<td>2. Weight-related victimization</td>
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<td>0.0006</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. Negative body perception</td>
<td>0.012***</td>
<td>0.75***</td>
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<td></td>
</tr>
<tr>
<td>4. Overconcern with weight</td>
<td>0.0101***</td>
<td>1.63***</td>
<td>0.54**</td>
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<td></td>
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</tr>
<tr>
<td>5. Depression symptoms</td>
<td>0.0006†</td>
<td>0.13***</td>
<td>0.01</td>
<td>0.03*</td>
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<tr>
<td>6. Anxiety symptoms</td>
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<td>0.082**</td>
<td>-0.01</td>
<td>0.004</td>
<td>0.54***</td>
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<tr>
<td>7. Somatization</td>
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<td>0.035</td>
<td>0.005</td>
<td>0.001</td>
<td>0.68***</td>
<td>0.47***</td>
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<tr>
<td>8. Social withdrawal</td>
<td>0.0004</td>
<td>0.17***</td>
<td>0.02</td>
<td>0.03*</td>
<td>0.36***</td>
<td>0.22***</td>
<td>0.06*</td>
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</tr>
<tr>
<td>9. School avoidance</td>
<td>0.0005</td>
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<td>0.01</td>
<td>0.77***</td>
<td>0.46***</td>
<td>0.61***</td>
<td>0.52**</td>
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</tbody>
</table>

Note. †p < .10. * p < .05. **p < .01. *** p < .001.
Table 5. Mediation Models

### Negative body perception

<table>
<thead>
<tr>
<th>Fixed Effect</th>
<th>Coefficient</th>
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<th>T-ratio</th>
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<tbody>
<tr>
<td>( d_{Mj} )</td>
<td>-.8334***</td>
<td>.117</td>
<td>-7.126</td>
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<tr>
<td>( d_{Yj} )</td>
<td>.9531***</td>
<td>.038</td>
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<td>( a_{j, X \rightarrow M} )</td>
<td>.0034***</td>
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<td>( c'_{j, X \rightarrow Y} )</td>
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<table>
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<tr>
<th>Effect</th>
<th>Average value</th>
<th>SE</th>
<th>95% Confidence Interval</th>
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<tbody>
<tr>
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<tr>
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<td>.0102</td>
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### Overconcern with weight

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<thead>
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<th>Coefficient</th>
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<th>T-ratio</th>
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<tbody>
<tr>
<td>( d_{Mj} )</td>
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<td>.195</td>
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<td>( d_{Yj} )</td>
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<td>( a_{j, X \rightarrow M} )</td>
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<table>
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<th>95% Confidence Interval</th>
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### Depression symptoms

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<th>T-ratio</th>
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<td>.001</td>
<td>0.200</td>
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</table>

<table>
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<th>Lower Level</th>
<th>Upper Level</th>
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<td>.0011</td>
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### Anxiety symptoms

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<th>T-ratio</th>
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<table>
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<th>Upper Level</th>
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</tr>
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<td>Withdrawal</td>
<td>Fixed Effect</td>
<td>Coefficient</td>
<td>SE</td>
<td>T-ratio</td>
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<td>-------</td>
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</tr>
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Chapter 4

DISCUSSION

The current study was designed to further our understanding of the relations between children’s weight status, weight-related victimization, and the negative body cognitions and psychosocial outcomes linked to obesity. A major strength of the study was the use of a large school-based middle-childhood sample, when most work in this area has used adolescent and/or treatment-seeking samples. The use of a school-based sample allowed us to assess psychosocial outcomes with teacher-report measures, reducing the shared method variance common in many studies in this field and increasing the range of psychosocial outcomes assessed beyond those included in most previous work. Perhaps most importantly, the study provided one of the most comprehensive examinations to date of the role of weight-related peer victimization in children’s struggles with obesity and accompanying negative body cognitions and poor psychosocial outcomes.

4.1 Weight-Related Victimization of Obese Children

A continuous measure of BMI percentile and weight-related victimization were positively associated, suggesting that across the full sample of participants, heavier children were more likely to be victimized for their weight. In addition, categorical analyses suggested that obese children reported significantly more weight-related victimization than children in all other weight status groups, including overweight children. This finding aligns with several other studies that demonstrate higher rates of weight-related victimization (e.g., Janssen et al., 2004; Neumark-Sztainer et al., 1998; Pearce et al., 2002) as well as victimization more generally (Hayden-Wade et al., 2005;
Janssen et al., 2004; Neumark-Sztainer et al. 1998; Pearce et al., 2002) in obese children than in children of other weight status groups. In combination, these results suggest that weight-related victimization is a particular concern for children who struggle the most with obesity. This is especially alarming given that, despite increasing obesity rates, weight-related stigmatization of children has gotten worse over time (Latner & Stunkard, 2003). Furthermore, weight-related victimization has been identified as the last largely accepted form of discrimination (Puhl & Brownell, 2001). It is possible that this tacit acceptance makes it less likely for adults and children to challenge weight-related bullying of obese children, which may play an important role in children’s internalization of the victimization and development of negative body cognitions and psychosocial outcomes. Although the phenomenon has not been studied in children, internalization of weight stigma in adults has been linked to increased negative outcomes (Carels et al., 2013); future work should examine whether the same pattern holds in childhood. For all of these reasons, understanding the impact of weight-related victimization on negative outcomes will provide a clearer picture of the role peers play in the relation between obesity and both negative body cognitions and psychosocial outcomes.

4.2 Negative Body Cognitions of Obese Children

In the current study, both continuous and categorical measures of obesity were associated with both negative body cognitions. More specifically, across all children, as BMI percentile increased, so did their self-report of negative body perception and overconcern with weight. Furthermore, obese children reported significantly higher levels of both negative body cognitions than children in all other weight status groups, including overweight children, suggesting that children with the highest levels of excess body fat differ in their experience of negative body cognitions compared to children who are also classified as overweight, but less extremely so. This finding supports previous
work suggesting that the degree of children’s obesity is linearly related to outcomes (Thompson et al., 2013). In combination, these results suggest that it may be important to distinguish between children who are overweight versus obese when investigating their social experience and related body cognitions.

Additionally, weight-related victimization partially mediated the relation between BMI percentile and each of the negative body cognitions, indicating that the links between obesity and negative body cognitions can be in part attributed to the negative treatment obese children experience from peers about their weight. Although this is the first study to examine these specific mediational pathways, our findings align with other studies examining similar constructs. For example, in one study of overweight children, weight-related criticism uniquely predicted negative body perception when controlling for BMI percentile and non-weight-related criticism (Nelson, Jensen, & Steele, 2011). Given the importance that peer relations play during middle childhood, when children are bullied by their peers about their weight, it may take on special significance and make children more unhappy with or worried about their shape and size than they would be otherwise. However, the fact that weight-related victimization only partially mediated the relations between BMI percentile and negative body cognitions in the current study suggests that other factors play a role in these relations as well. Examples of additional factors that have been linked to the development of body image concerns include media influences, parental influences, self-esteem, and peer modeling (Smolak, 2009). Multiple interconnected risk factors likely contribute to the development of body image concerns, with peer victimization about weight serving as only one important contributing factor.

Both negative body perception and overconcern with weight have been linked to serious negative outcomes for children. Beyond the psychosocial outcomes investigated in this study, these cognitions are associated with the development of eating disorders and with lowered self-esteem (Wertheim, Paxton, & Blaney, 2009). In fact, overconcern with weight in early adolescence is one of the most robust predictors of later disordered
eating in late adolescence (Smolak, 2009). Interestingly, and contrary to what might be expected, negative body cognitions do not predict decreases in BMI over time; rather, in a longitudinal study of children aged 5-9, increased self-esteem for appearance and decreased desire to be thin predicted declines in BMI across time (Incledon, Gerner, Hay, Brennan, & Wake, 2013). These findings suggest a complicated and perhaps bidirectional relation between negative body cognitions and BMI; it is possible that increased levels of negative body cognitions lead to disordered eating behaviors, which could potentially lead to increases in BMI over time.

4.3 Negative Psychosocial Outcomes of Obese Children

In contrast to the strong support for our hypotheses about negative body cognitions, findings for negative psychosocial outcomes were more mixed. Below, we will describe the support for hypotheses about each of the psychosocial outcomes investigated and the implications of these findings.

Teachers rated obese children as more socially withdrawn than normal-weight and overweight children, although they did not differ from underweight children. This pattern of findings may explain why a linear relation between BMI percentile and withdrawal for the full sample did not emerge when accounting for the nesting of children within classrooms. This finding corresponds with previous research; for example, Hayden-Wade et al. (2005) found a correlation between teasing experiences in overweight children and preference for isolative sedentary activities, suggesting that obese children who are teased prefer to be alone rather than engage with other children. However, the current study extends this work by suggesting that weight-related victimization fully mediates the relation between obesity and withdrawal, indicating that the withdrawal exhibited by obese children can be explained by their experience of victimization about weight. Although the $c'$ pathway in this model was not significant after including weight-related victimization as a mediator, the overall total random effect
of the model was also small. While there is not strong consensus on how to measure effect sizes in mediation models, full mediation is more likely to occur with small total effects than large total effects (Preacher & Kelley, 2011). Several previous studies have demonstrated that peers reject obese children, including work suggesting that they receive fewer friendship nominations, are rated as less popular, are preferred less as playmates, and are on the periphery of social networks (Cramer & Steinwert, 1998; Straus & Pollack, 2003; Valente, Fujimoto, Chou, & Spruijt-Metz, 2009; Wang, Houshyar & Prinstein, 2006; Zeller, Reiter-Purtill, & Ramey, 2008). The current findings suggest that not only are obese children rejected by their peers, they may actively contribute to their social isolation by withdrawing from social situations, perhaps because of the weight-related bullying they experience. This isolation may increase the negative psychosocial outcomes of obese children by reducing opportunities to form relationships and gain social support; in fact, peer social support has been shown to moderate the role between victimization and depression in obese girls (Lim et al., 2011).

Turning to depression symptoms, BMI percentile measured continuously was only marginally associated with this psychosocial outcome. In addition, although teachers reported that obese children displayed more depression symptoms than their underweight and normal-weight peers, they did not differ from overweight children on levels of these symptoms. Although many former studies have established a link between depression and childhood obesity (Bell et al., 2011; Csabi et al., 2000), other studies have not found a significant relation (Latzer & Stein, 2013). More research on the strength of this association is clearly needed, because a review of previous work does not reveal a clear pattern in which significance varies by approach to the assessment of obesity, whether the sample is school- versus clinic-based, or other factors. Furthermore, in the current study, weight-related victimization did not significantly mediate the relation between BMI percentile and depression symptoms,
although the mediation effect was marginal. Other factors may better account for the link between BMI and depression symptoms, including negative body cognitions, media influences, and parental criticism. Furthermore, mediation effects may emerge more strongly in later developmental periods than the one studied here. Depression rates increase as children enter adolescence (Birmahar, Ryan, & Williamson, 1996), and several studies of adolescents have demonstrated an association between weight-related teasing and increased depression symptoms over time (Eisenberg et al., 2003; Puhl & Luedicke, 2012). In addition, when comparing developmental levels, Masuccio et al. (2009) found a direct association between BMI and depression symptoms in an adolescent group, but not in a pre-pubertal group, supporting the notion that this relation may be weaker in younger children. Future research should explore the developmental trajectory of the relations between weight status, victimization, and depression symptoms to more thoroughly understand how these associations may evolve as children mature.

Anxiety symptoms were not significantly related to BMI percentile when controlling for classroom nesting, and obese children did not differ from children in other weight status groups on anxiety symptoms. However, when examining the indirect effect, weight-related victimization emerged as a significant mediator of the relation between BMI percentile and anxiety symptoms. This finding supports the notion that peer experiences may be a major link between obesity and anxiety symptoms. Previous studies on the link between obesity and anxiety in children have been limited, and the studies that have been conducted demonstrate mixed results (Buddeburg-Fisher et al., 1999; Tanofsky-Kraff et al., 2004; Zeller et al., 2004). Moreover, some studies have indicated that obesity may be linked more specifically to social anxiety or fear of negative evaluation by peers than to general anxiety (Rancourt, Barker, Sato, Richardson, & Hart, 2014; Thompson et al., 2013). The current finding advances our understanding of the link between obesity and anxiety by suggesting that obese children
may experience more generalized anxiety as a result of the social experience of being bullied by their peers about their weight. Future research is needed to further untangle the connections between obesity and anxiety in children, the nature of the anxiety that they experience, and the role that social interactions with peers play in this link.

Little support emerged for hypotheses about school avoidance and somatization. Although school avoidance was positively linked to weight-related victimization, somatization was not, and neither construct was significantly related to BMI percentile when controlling for classroom nesting. Moreover, although teachers reported that obese children avoided school more than normal-weight children, none of the other comparisons between obese children and children in other weight-status groups for either of these psychosocial outcomes were significant. Finally, weight-related victimization did not mediate the relations between BMI percentile and school avoidance.

The lack of findings for school avoidance stand in contrast to previous work suggesting that obese children are absent from school more than their peers (e.g., Geier et al., 2007) and that weight-related victimization predicts skipping school, even after controlling for weight status (Puhl & Luedicke, 2012). Findings may emerge more clearly with these objective measures of absenteeism than with the school avoidance questionnaire used in the current study, which assessed the teacher’s perception of ways that children try to escape the classroom, including asking to see the school nurse and feigning illness. Although increased absenteeism among obese children may be related to peer relations concerns, it is also possible that obese children miss school because they have more health-related conditions than normal-weight children. Pediatric obesity has been shown to negatively impact several bodily systems, such as the cardiovascular, gastrointestinal, metabolic, pulmonary, and skeletal systems (Daniels, 2006).

Specifically, pediatric obesity has been linked to diseases such as Type 2 diabetes, high
blood pressure, asthma, obstructive sleep apnea, and nonalcoholic fatty liver disease (Daniels, 2006; Freedman, Dietz, Srinivasan, & Berenson, 1999).

Our null findings for somatization parallel previous work which found that obesity and somatization were not related in a sample of Turkish adolescents (Kislal et al., 2005). In contrast, another previous study demonstrated elevated somatic complaints in children who were chronically obese between ages 9 and 16 (Xie et al., 2013). It may be that somatic symptoms only develop as children experience obesity for prolonged periods, and the concurrent nature of our study precluded an examination of the effects of chronic obesity on somatization.

4.4 Implication for Prevention and Intervention Efforts

Overall, these findings highlight the negative impact of obesity on children’s peer experiences, negative body cognitions, and psychosocial outcomes, and they suggest that peer victimization about weight may play an important role in the cognitions and psychosocial outcomes of obese children. These findings underscore the importance of intervention and prevention programming to reduce bullying about weight in children’s classrooms. Large-scale school-based programs aimed at reducing all types of bullying may help to reduce weight-related victimization specifically, although this question has not been answered empirically. In fact, our research team is in the midst of analyzing whether the implementation of a yearlong general bullying prevention program without a specific weight-related component reduced rates of weight-related victimization. It is likely, though, that obese children would benefit from bullying prevention programs that included components targeted directly at the reduction of weight-related victimization. Future research efforts should be directed toward the development of prevention modules about the bullying of obese children and evaluation of whether these modules help to decrease rates of weight-related bullying beyond more general prevention programming.
In addition, past findings suggest that obese children who enter weight management programs evidence decreased levels of negative body cognitions and psychosocial outcomes. Several intervention studies have demonstrated that reductions in weight across children, adolescents, and adults are associated with decreased negative psychosocial symptoms, including depression (Fabricatore et al., 2011; Fonseca, Palmeira, Martins, & Dias Ferreria, 2014), although these studies have not addressed the mechanisms through which such change occurs. However, recent research on adolescents suggests that reducing overweight status through behavioral weight control interventions leads to reductions in weight-related teasing (Rancourt et al., 2014). Future evaluations of children’s weight-reduction programs should assess the benefits of weight loss for children’s peer relations, and whether reductions in weight-related victimization mediate intervention effects on psychosocial outcomes.

4.5 Limitations and Future Directions

The current study had several limitations which suggest directions for future research. First, assessment of BMI and weight status relied on parent report of children’s height and weight, which may have been inaccurate or outdated. Objective measures of height and weight are clearly preferable, and this approach is used in most clinic-based studies. However, measuring each child’s height and weight in a large school-based sample is not feasible due to the strict time constraints that schools place on data collection visits; it is also not realistic to collect this information from children’s school health records, given the confidentiality of this information in public school settings. Furthermore, in the current study, height and weight data were collected from parents during the parental consent process, the only point of contact with parents in this large school-based investigation. Thus, it was not possible to follow up when parents failed to complete this information, resulting in considerably fewer children being included in the study than had parental permission to participate. These issues highlight
the trade-offs between the greater precision of BMI measurement in clinic-based studies and the access to more robust measures of peer victimization and psychosocial outcomes in school-based studies of obese children.

In addition, one criticism of using BMI to assess weight status is that children may be classified into a higher weight status category because of significant muscle mass, rather than high levels of adiposity. However, BMI percentile has been shown to be a good indicator of body fatness for overweight and obese children, whereas it may be less accurate in normal-weight children (Freedman & Sherry, 2009). In fact, BMI percentile has also been shown to have high (95%) specificity and have moderately high (70-80%) sensitivity (Freedman & Sherry, 2009). This high level of specificity suggests that children classified as overweight or obese very likely have high levels of body fatness, while the comparatively lower sensitivity suggests the possibility that some children with high levels of body fatness may not have been identified. This decreased sensitivity may have reduced the magnitude of comparisons between obese children and children in other weight-status groups, and it may have made it more difficult to uncover significant associations between the continuous measure of BMI percentile and psychosocial outcomes.

Second, the data used in the present study were concurrent, and so while findings may suggest associations between variables, no inferences can be made about the temporal ordering of the constructs assessed. One possible temporal sequence would progress from the development of obesity to the experience of weight-related victimization to the emergence of negative body cognitions and finally to the appearance of negative psychosocial outcomes. However, other temporal orders and bidirectional influences between constructs are also possible. For example, depression symptoms including overeating may precede obesity and lead to weight gain (Goodman & Whitaker, 2002). Future longitudinal studies are sorely needed to untangle the directions of causality amongst the constructs assessed in the current study.
Third, our sample was limited to fourth- and fifth-grade students, and the results cannot be generalized beyond this developmental period. Although numerous studies have demonstrated the negative impacts of weight-related victimization on children of all ages, the connections between weight-related bullying, negative body cognitions, and psychosocial outcomes may vary across development. Future studies with a developmental focus may help to determine whether the negative effects of weight-related victimization vary as children mature.

Finally, the simple HLM mediation models based on the Bauer et al. (2006) procedure used in the current study do not permit multiple mediators within a single model. In future work, we plan to use different analytic procedures to explore a broader model in which weight-related victimization and negative body cognitions jointly mediate the link between childhood obesity and psychosocial outcomes.

The current findings fill some gaps in understanding the relations between childhood obesity, peer victimization, negative body cognitions, and psychosocial outcomes. These findings suggest that increased attention to weight-related victimization may be warranted, especially given that both the percentage of children who are obese and stigmatization about obesity are increasing simultaneously (Latner & Stunkard, 2003; Puhl & Latner, 2007). The negative outcomes associated with childhood obesity continue into adulthood, with obese children developing into adults with higher levels of negative body cognitions and psychopathology (Grilo, Wilfley, Brownell, & Rodin, 1994; Mills & Adrianopoulous, 1993). These long-term consequences suggest that researchers should continue to invest in the study of the role that peer victimization plays in the negative outcomes associated with childhood obesity.
REFERENCES


Appendix

IRB DOCUMENTS
DATE: July 2, 2012

TO: Julie Hubbard, Ph.D.
FROM: University of Delaware IRB

STUDY TITLE: [338571-1] Evaluating the KiVa Bullying Prevention Program in Delaware Schools

SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: July 2, 2012
EXPIRATION DATE: June 19, 2013
REVIEW TYPE: Full Committee Review

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Full Committee Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.
If you have any questions, please contact Jody-Lynn Berg at (302) 831-1119 or jilberg@udel.edu. Please include your study title and reference number in all correspondence with this office.
DATE: May 22, 2014

TO: Julie Hubbard, Ph.D.
FROM: University of Delaware IRB

STUDY TITLE: [338571-6] Evaluating the KiVa Bullying Prevention Program in Delaware Schools

SUBMISSION TYPE: Continuing Review/Progress Report

ACTION: Approved for Data Analysis Only

APPROVAL DATE: May 22, 2014

EXPIRATION DATE: June 18, 2015

REVIEW TYPE: Full Committee Review

Thank you for your submission of Continuing Review/Progress Report materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Full Committee Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.
If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.