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I, Brian T Olsen , hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Psychology.

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Factors Influencing Children's Attitudes Toward a Peer Who is Overweight

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Factors Influencing Children's Attitudes Toward a Peer Who is Overweight

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Abstract

Obesity among children in the United States is a growing epidemic that has received national attention (Puhl & Heuer, 2010). Research suggests that children who are overweight are at increased risk for various health conditions such as diabetes, sleep apnea, cancer, and hypertension (Jelalian & Mehlenbeck, 2003). In addition to risks to physical health, overweight children are also more likely to become the targets of stigmatization by their peers, resulting in increased risks of depression, poor academic performance, psychosocial difficulties, suicidal ideation, and exacerbation of their weight status (Adams & Bukowski, 2008; Janssen, Craig, Boyce, & Pickett, 2004). Having friends may be one of the few factors that provide protection from the aforementioned struggles. Overweight children who have friends experience less stigmatization and fewer negative outcomes (Reiter-Purtill, Ridel, Jordan, & Zeller, 2010), suggesting a critical need to improve peer relationships among children who are overweight.

Continued research aimed at uncovering the unique relations among child characteristics and attitudes toward overweight children is needed and may yield information for those designing interventions to counteract negative attitudes. The current study provided a needed contribution by using structural equation modeling to examine the relations among background factors, perceptions of responsibility, and children's attitudes toward an overweight peer. Consistent with previous research, overweight children were perceived more negatively than their normal weight peers (e.g., Adams & Bukowski, 2008; & Kraig & Keel, 2001). Results also indicated that participant age, gender, race, and perceived responsibility impacted children's attitudes toward an overweight child. However, results did not show that having previous experience as a victim or children's BMI influenced their perceptions of children who are overweight. The current model only accounted for 17% of variance in children's attitudes.

Hypotheses were also not consistently supported, suggesting that more research on the complex interrelationships among variables impacting attitudes about weight is needed. For instance, based on the Theory of Reasoned Action (Fishbein & Ajzen, 2010), children's judgments of how their peers perceive the overweight child might impact their attitudes toward that child. Previous experiences with people who are overweight or having an overweight member in the family might also affect children's attitudes. Despite study limitations, findings support the importance of understanding and addressing negative peer perceptions of overweight children in order to reduce the negative psychosocial impact on overweight children.

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Table of Contents

	<u>Page Number</u>
Abstract-----	ii
Acknowledgments-----	v
Table of Contents-----	vi
List of Tables and Figures-----	vii
Chapters	
I. Introduction-----	1
II. Method-----	18
III. Results-----	21
IV. Discussion-----	29
V. References-----	42
VI. Tables and Figures-----	51

List of Tables and Figures

	<u>Page Number</u>
VII. Subsets of questions used to measure selected concepts -----	51
VIII. Means and standard deviations for study variables -----	52
IX. Frequencies of study variables -----	53
X. Intercorrelations among all latent variables -----	54
XI. Causal effects of attitude toward an overweight child, perceived responsibility, previous experience as a victim, and BMI -----	55
XII. Hypothesized SEM model: Relationships of background and responsibility factors to child attitude -----	56
XIII. Loadings for combined structural equation measurement model -----	57
XIV. Final path model -----	58

Introduction

Children, who are perceived as being different, such as children who are overweight, are more likely to be victimized than their typically developing non-overweight peers (Adams & Bukowski, 2008). Obesity among children in the United States is a growing epidemic that has received national attention (Puhl & Heuer, 2010). Research suggests that children who are overweight are at an increased risk for various health conditions such as diabetes, sleep apnea, cancer, and hypertension (Reilly & Kelly, 2010). Additionally, these children are at an increased risk of becoming the targets of bullying or stigmatization from their peers (Adams & Bukowski). According to Goffman (1986), stigma is a negative characteristic that discredits an individual's worth. As a result of the negative characteristic, individuals who are stigmatized may be shamed and degraded by society (Puhl & Brownell, 2003). Additionally, because stigmatized individuals often feel the stigma at their core, they frequently degrade and shame themselves (Boivin & Hymel, 1997; Goffman). The stigma that overweight children experience often results in increased risk of depression, poor academic performance, psychosocial difficulties, suicidal ideation, and exacerbation of their weight status (Adams & Bukowski; Janssen, Craig, Boyce, & Pickett, 2004).

Research has identified some characteristics related to negative weight-related emotions in overweight children. For example, older children, girls, and Caucasian children are more likely to experience negative feelings because they are overweight (Margulies, Floyd, & Hojnoski, 2007; Neumark-Sztainer, Story, & Faibisch, 1998; Neumark-Sztainer et al., 2002). Having friends is one of the few factors that provides protection from negative feelings about oneself and struggles related to negative peer

attitudes. Indeed, overweight children who have friends experience less stigmatization, fewer negative outcomes, higher self-perception, and less loneliness than overweight peers without friends (Reiter-Purtill, Ridel, Jordan, & Zeller, 2010). Since positive relations with peers lead to friendships, more research is needed to assess children's perceptions of overweight peers. Research is also needed to gain a deeper understanding of factors that positively and negatively influence children's opinions of peers who are overweight.

According to many pediatric models (e.g., Children's Health Belief Model, Bush & Iannotti, 1990; Theory of Reasoned Action, Fishbein & Azjen, 2010; and Attribution Theory, Weiner, 1986), it appears that multiple factors uniquely influence children's judgments and behaviors. Based on these theories, it is reasonable to expect that multiple factors would have a distinct influence on children's judgments of their peers who are overweight. However, the literature related to children's perceptions of their overweight peers has generally only looked at the relationships between a few variables. Because several variables influence children's judgments, it is important to examine each variable's unique contributions by putting them into one model.

Integrating ideas from the Theory of Reasoned Action (TRA; Fishbein & Azjen, 2010) and Attribution Theory (Weiner, 1986), the current study used structural equation modeling to explain the interrelationships among various perceiver background characteristics, perceived responsibility for being overweight, and attitudes toward an obese peer (see Figure 1). Understanding the relations among all these aforementioned factors may assist in understanding the reasons that children hold negative views of overweight children and will provide information for those developing interventions to

improve children's attitudes toward overweight peers. In the current study, background characteristics included participant's age, race, gender, BMI, and their ratings about experiencing peer victimization themselves. Perceived responsibility refers to how much participants blame an overweight child for their weight problem. Lastly, negative attitude toward an obese peer indicates that the participant viewed an overweight figure as being the victim in a story. Figure 1 portrays the expected relationships among study variables and is followed by hypotheses for this study. Literature supporting the proposed model is then presented.

Insert Figure 1 about here

Hypothesis depicted in Figure 1

The expected relationships among study variables were as follows:

- 1. Hypotheses related to Responsibility for Weight Status:** Children's perceptions of responsibility for weight status would be related to attitudes toward an overweight child, with higher levels of perceived responsibility leading to less positive attitudes. Also, children's perceptions of weight-based responsibility were expected to mediate the relationship between previous experience as a victim and their attitude toward an overweight child. Furthermore, children's perceptions of weight-based responsibility were hypothesized to mediate the relationship between age, gender, race, and attitude toward an overweight child (see Figure 1).

- 2. Hypotheses associated with Experience as a Victim:** Experience as a victim was expected to have a direct positive relationship with attitude toward an overweight child. In addition, experience as a victim would indirectly affect attitudes toward an overweight child through causing a downward pressure on perceived weight-based responsibility. Previous victimization experience would mediate the relationship between all background factors (age, gender, race, and BMI) and attitude toward an overweight child (shown in Figure 1).
- 3. Hypotheses related to Body Mass Index (BMI):** BMI was expected to only exert indirect influences on attitude toward an overweight child. That is, BMI would have a direct influence on experience as a victim, which would in turn impact perceptions of weight-based responsibility, leading to an influence on attitudes. Those with more victimization experiences were anticipated to have higher BMIs. BMI was also hypothesized to mediate relationships between race and previous experience as a victim (as depicted in Figure 1).
- 4. Hypotheses associated with Age:** Perceiver's age would exert a direct positive pressure on attitude toward an overweight child resulting in older children having more positive views. Perceiver's age would indirectly influence attitude toward an overweight child and perceived responsibility through its influences on experience as a victim and responsibility. Perceiver's age would also indirectly influence responsibility through its impact on experience as a victim. Specifically, older children were expected to report more previous experiences as a victim, and report lower perceived responsibility (portrayed in Figure 1).

- 5. Hypotheses associated with Gender:** Gender was expected to have a direct effect on attitude toward an overweight child, with girls having more positive perceptions. Gender would also indirectly impact attitude toward an overweight child through direct effects on responsibility and experiences as victim. In addition, gender would have an indirect effect on responsibility through its influence on experience as a victim. Girls were hypothesized to report fewer previous experiences as a victim and report less perceived responsibility (shown in Figure 1).
- 6. Hypotheses associated with Race:** Nonwhite children were expected to have a positive direct effect on attitude toward an overweight child. Race would also indirectly affect attitude toward an overweight child through direct effects on responsibility and experiences as a victim. In addition, race would have an indirect effect on experience as a victim through its impact on BMI and an indirect effect on responsibility through its influence on experience as a victim.. Nonwhite children were expected to have a higher BMI, report more previous experiences as a victim, and report less perceived responsibility (illustrated in Figure 1).

Theory Guiding the Proposed Model

The Theory of Reasoned Action (TRA), originally proposed by Ajzen and Fishbein (1980) is a theoretical model that has been used to explain the process of predicting behaviors. According to this theory, one's intentions toward engaging in a behavior are the best predictors of their actual performance of that behavior (Fishbein & Azjen, 2010). This theory undergirds the importance of the proposed study, as

information from this study provides ideas for interventions that may eventually result in behavior change such as more positive verbal behaviors and interactions with children who are overweight. Additionally, Fishbein and Ajzen's current model (2010) contends that a perceiver's background characteristics impact attitudes, which is an idea that will be investigated in the current study.

Attribution Theory (Weiner, 1986), which posits that individuals make judgments according to perceived responsibility (internal, i.e., more within the individual's control, versus external, less within his or her control) for a condition has guided research investigating perceptions of overweight children. For example, studies have examined whether children perceive obesity as being primarily caused by external factors like genetics or biology versus internal factors like laziness or diet (Iobst et al., 2009; Puhl, Schwartz, & Brownell, 2005; Sigelman & Begley, 1987; Teachman, Gapinski, Brownell, Rawlins, & Jyaram, 2003). The current study contributed to this literature by using structural equation modeling to examine the complex relationships between responsibility, perceiver characteristics, and attitude toward an overweight child. Thus, in Figure 1, which presents the proposed model for the current study, there is an integration of ideas from the Theory of Reasoned Action (Fishbein & Azjen, 2010) and Attribution Theory (Weiner).

Literature Related to Theoretical Model

Children who are overweight are stereotyped and victimized. According to Juvonen (1991), children stigmatize their peers because they perceive that peer to exhibit a characteristic, such as being physically different, that is deviant from the norm. As previously mentioned, researchers also contend that an individual's worth is discredited

due to the deviant characteristic (Goffman, 1986; Puhl & Brownell, 2003; & Puhl & Heuer, 2010). Further, individuals who are stigmatized may internalize the views of the dominant culture and begin to view themselves as others see them, leading to feelings of shame (Boivin et al., 1997; Goffman).

A considerable amount of research has documented that children who are overweight are treated and perceived more negatively than their peers regardless of age, gender, or race (Cossrow, Jeffery, & McGuire, 2001; Martinez-Aguilar et al., 2010; Puhl, Schwartz, & Brownell, 2005; Neumark-Sztainer et al., 1998; Neumark-Sztainer et al., 2002). According to Latner, Simmonds, Rosewall, and Stunkard (2007), both stigmatization and prevalence of being overweight are increasing. Weight-related stigmatization may take on both physical and verbal forms; however, children who are overweight are more likely to experience verbal stigmatization in the form of name calling or teasing (Wang, Iannotti, & Luk, 2010) and are often considered lazy, stupid, or incompetent (Cossrow, Jeffery, & McGuire, 2001; Teachman et al., 2003). These negative perceptions seem to result in children who are overweight having fewer friends than their average weight peers (Strauss & Pollack, 2011).

Although it is clear that children who are overweight are at a greater risk of being stigmatized by their peers, previous research focusing on understanding the stigmatization of children who are overweight has been mixed. This may occur because multiple factors impact judgments of children who are overweight and it may not be possible to assess them all in a single study. Further, the complex relationships among variables need more explication. For example, an extensive literature search yielded a dearth of information regarding the mediational relationships between variables. One of

the advantages of the modeling approach for the current study is that it allowed for investigation of several factors and the interrelationships among these factors. The variables of interest in the current study included: perceived responsibility, previous victimization experience, and perceiver BMI, gender, race, and age. Literature on these factors is reviewed in the remaining sections of this introduction.

Attitudes Related to Perceived Responsibility. Children who are overweight are often seen as being responsible for their weight (Rukavina, & Li, 2011). Consistent with the attribution theory (Weiner, 1986) children who are perceived as being responsible for their weight are viewed more negatively than children who are not seen as responsible (Iobst et al., 2009; Puhl et al., 2005; Sigelman & Begley, 1987; Teachman et al., 2003). In one study, 96 children between 4th and 6th grade answered a series of questions asking them to make judgments that describe an average weight and overweight silhouette (Tiggemann & Anesbury, 2000). Participants also completed the same questions when presented with a short and tall figure. Questions assessed children's judgments about the target's personality, who they would prefer to play with, and to what extent the child had control over their weight or height. In order to reduce demand characteristics, children were provided the option of indicating 1) which child best fit their answer, 2) whether both children fit the answer equally, or 3) they did not know. Tiggemann and Anesbury found that children were perceived to have control over their weight but not their height. They also found that increased perceived control led to significantly poorer views of the target, when the target was overweight (Tiggemann & Anesbury). Other researchers report that individuals who are obese are held responsible for their condition in a similar way as individuals addicted to drugs and child abuse perpetrators (Puhl & Brownell,

2003). When information about the responsibility of the condition is unknown or vague, children who are overweight are more likely to be held responsible for their weight status than when information suggests that the child is not responsible (Ross, Shivy, & Mazzeo, 2009; Sigelman & Begley).

Overall, literature associated with perceived responsibility overwhelmingly suggests that individuals who are held responsible for their condition are viewed more negatively than those individuals who are not held responsible for their weight condition (Iobst et al., 2009; Puhl & Brownell, 2003; Puhl et al., 2005; Sigelman & Begley, 1987; Teachman et al., 2003). Thus, it is important to continue to include perceived responsibility as one of the factors that likely impacts children's attitudes toward other children who are overweight. For this study, it was expected that children who perceived that their peers are responsible for being overweight would have more negative attitudes toward their overweight peers.

Associations between Victimization Status and Attitudes. Children who share the experience of having previously been a victim of stereotyping or stigma themselves may be more likely to have increased empathy for and thus have more positive attitudes toward a child who is overweight (Nabors et al., 2011; Teachman et al., 2003).

Approximately 30% of youth have been the victim of some type of bullying (Griffiths et al., 2006; Janssen et al., 2004). Among these victims, adolescents, boys, and those with higher BMI are more likely to be the targets of bullying (Janssen et al.; Nansel et al., 2001; Wang et al., 2010). In one study, 161 fourth and fifth grade students completed a standardized measure assessing their previous victimization experiences (Nabors et al., 2011). Participants also selected the victim in a story by choosing a line drawing of either

an average weight or overweight same-sex peer. Findings of this study supported the contention that children with more experiences as a victim were more likely to have more positive attitudes toward the child who was overweight than children with fewer or no experiences as a victim. Because bullying is so prevalent, determining whether one's victimization status influences children's judgments is essential. For the current study, it was expected that experience as a victim would have a direct impact on perceptions of an overweight child, with more victimization experiences leading to more positive views.

Research also supports the idea that having victimization experiences impacts one's self-perceptions and judgments of others. Children who have repeated experiences as a victim are more likely to exhibit depressive symptoms and to have lower self-perceptions of themselves (Barchia & Bussey, 2010; Grills & Ollendick, 2012; Turner, Finkelhor, & Ormrod, 2010). Research by Gibb and colleagues (2006) has expanded this knowledge reporting that depressive symptoms and experiences of verbal victimization lead to children being more likely to attribute negative events as stable and as having internal causes. Children with depressive symptoms and experiences of verbal victimization were also more likely to see positive events as unstable and as having been externally caused. Though, children in the study by Gibb et al. were only asked to attribute causes to hypothetical events that involved them as the protagonist in each event.

The current study added to existing knowledge by examining the relationship between victimization experiences and perceived cause of being overweight. It was expected that children with previous victimization experiences would be more likely to blame children for their weight. In addition, it was anticipated that experience as victim

would have an indirect effect on perceptions of overweight children through its direct influence on blame. While having previous experiences as a victim was expected to positively influence children's attitude toward an overweight peer, children with previous experiences as a victim were also expected to attribute more weight-based responsibility toward the overweight child. Thus, the direct relationship between previous victimization experience and perceived responsibility was posited to suppress the overall impact of previous victimization experience on attitude toward an overweight child.

Associations between BMI and Attitudes. Research in child development suggests that children have more positive attitudes toward and prefer friends who are similar to themselves (Weiner, 1986). These ideas have driven researchers to examine the influence of perceiver's body weight (BMI) on his or her judgments of individuals who are overweight or obese. Generally, results from studies have not consistently supported the similarity preference, indicating that regardless of their own BMI, individuals held negative perceptions of others who were overweight or obese (O'Brien et al., 2007; Schwartz et al., 2006). On the other hand, Latner and colleagues (2007) found that, among 10 – 13 year-olds children's own weight status, measured by their body mass index, did not impact rankings of drawings of children who were portrayed as overweight.

Research examining the effect of an individual's BMI on their attributions of weight responsibility is mixed. Ross et al. (2009) found that among 189 undergraduates, participants with higher BMIs were less likely to see an overweight participant as being responsible for their weight. However, three other studies reported alternative findings (Musher-Eizenman, Holub, Barnhart-Miller, Goldstein, & Edwards-Leeper, 2004; Puhl et

al., 2005, & Tiggemann & Anesbury, 2000). To illustrate, Musher-Eizenman et al. studied the role of causal attributions of obesity among 42 preschoolers. In their study, participant BMI was not related to a child's attributions of weight responsibility. Similarly, Tiggemann & et al. found that a participant's BMI was not related to perceptions of whether individuals were responsible for being overweight. Another study found that undergraduate students' BMI also did not affect how much responsibility they attributed to others' excess weight problem (Puhl et al.). Thus, while only one study suggests that a participant's BMI may impact one's judgments of controllability, other studies indicate no direct relationship between these two variables.

Nabors et al. (2011) reported that 8 – 12 year old children who were both overweight and victimized were more likely to endorse more positive attitudes of an overweight child. Thus, while literature largely contends that an individual's BMI does not impact their attributions of weight responsibility or their ratings of overweight peers (e.g., Schwartz et al., 2006); results from Nabors et al. suggested that an individual's BMI may impact attitudes through its influence on prior victimization experience. Hence, there is need for further research to determine if children's own weight status has an influence on their attitudes toward others who are overweight.

For the current study, it was hypothesized that BMI would not exhibit a direct effect on perceived responsibility or attitudes about overweight children. Instead, it was expected that BMI would have an indirect influence on attitudes of overweight children through its direct impact on experience as a victim as well as its indirect effect on perceived responsibility through its impact on experience as victim. In accordance with previous studies, it was anticipated that individual's with a higher BMI would be more

likely to be victimized (Giletta, Scholte, Engels, & Larsen, 2010; Janssen et al., 2004; Wang et al., 2010).

Associations between Demographic Factors and Attitudes. Research regarding attitudes toward children who are overweight indicates that demographic factors, such as one's gender, age, and race influence attitudes (e.g., Iobst et al., 2009; Nabors et al., 2010). In a previous study (Nabors et al.) that used the same dataset that was used in the current study, elementary school-aged children selected whether a line drawing of an average weight or overweight hypothetical peer was the victim in a story depicting teasing or name-calling (i.e., being called stupid by a peer). In order to reduce the effects of same-sex preference, each participant only viewed drawings of a same gender peer. After selecting which drawing was likely the victim in the study, participants were asked to select adjectives that described the drawings, explain why the drawing they selected was the victim, and provide suggestions that could resolve the problem. Overall, results showed that all children were more likely to select the overweight drawing as the victim. While all children selected more negative adjectives for the overweight drawing than the average weight drawing, boys provided more negative responses for both the average weight and overweight drawings than girls. The analyses for this study indicated that boys held more negative opinions about a same gender overweight peer than girls did. These researchers, however, did not examine mediating factors, and the current study extended knowledge by using structural equation modeling to examine these factors.

Although Nabors et al. (2010) found boys held more negative attitudes toward a same gender peer, other research has not supported these findings. For instance, Latner and Stunkard (2003) discovered that girls held more negative attitudes compared to boys.

Their sample included older children than the children in the study by Nabors et al. and this could have accounted for the different findings. When delving into the literature, other researchers reported no relationship between gender of the perceiver and attitude toward overweight peers. To illustrate, Iobst et al. (2009) discovered that a perceiver's gender did not influence young children's perceptions of a same-sex overweight peer. Due to equivocal research concerning gender and attitudes, this variable should be included in studies of children's attitudes toward an overweight child, such as the current study. In the current study gender was expected to have a direct effect on attitude toward an overweight child, with girls having more positive perceptions.

Some researchers have discovered that participant gender directly influences experience as a victim and perceived responsibility. For instance, Rukavina and Li (2011) indicated that girls and boys exhibited different causal attributions for being overweight. In this study, girls were less likely to hold children responsible for their weight problems, whereas boys were more likely to attribute being overweight because of lack of effort to lose weight. Research relating gender and peer victimization suggests that boys are not only more likely to be perpetrators of victimization but are also more likely to be the targets of peer victimization, especially overt victimization (Griffiths et al., 2006; Nansel et al., 2011). Because a participant's gender is reportedly directly related to perceived responsibility and experience as a victim, it is important to explore the possible indirect influences of participant gender on perceptions of an overweight peer through each of these variables.

Perceiver's age is another demographic factor that may influence children's attitude of a peer who is overweight. Iobst et al. (2009) found that older children, between

the ages of seven and eight years, held more positive attitudes of an overweight child than younger children, between five and six years of age. Two other studies, whose sample consisted of 10 – 13 year-olds and 8 – 12 year-olds, found no differences attributable to age, which may have been a result of the limited age range tested (Latner et al., , 2007; Tiggemann & Anesbury, 2000). For this study, it was expected that perceiver's age would have a direct influence on attitude toward an overweight child, with older children having more positive views.

An extensive literature search yielded only one study that examined the mediational relationships between participant age and other study variables. In that study, Lobst et al. (2009) found that blame mediated the relationship between age and children's attitude of an overweight peer, with 5-6 year old children being more likely to blame a child for their weight than older children. While other studies have not examined the mediational relationships between age and study variables, they have reported that age directly influences a participant's perceived responsibility and their previous experiences as a victim, but not their BMI. More specifically, Sigelman and Begley (1987) found that older children were more likely to understand and accept external causes of obesity than younger children. Overall, literature likewise suggests that pre-adolescent and early adolescent children are more likely to be victimized than other children. For instance, two studies found that among 6-10th graders, older children are less likely to be victimized than their younger counterparts (Nansel et al., 2001; Wang et al., 2010). However, among 7-8 year olds, Griffiths et al. (2006) reported that older children were more likely to be victimized than younger children. Age appears to be directly related to perceived

responsibility and previous experience as a victim, warranting further investigation to determine whether a mediational model would be supported.

Research has shown that children's race impacts their perceptions of others (Geyelin Margie, Killen, Sinno, & McGlothlin, 2005; Holmes, 1997; Leman & Lam, 2008; Zárate, 2009). Killen and Stangor (2001) contended that Black children were more likely than Caucasian children to be sensitive about excluding others because they likely have been unfairly excluded themselves. However, literature examining the impact of racial differences on children's attitudes of others who are overweight has not shown the same results. Specifically, in one study, Caucasian and Black children between fourth and fifth grades viewed their overweight peers similarly (Nabors et al., 2011). In another study, Black preschool children between the ages of 3 and 5 negatively judged hypothetical peers based on their overweight body size (Maguilies et al., 2008). Differences in findings between the two previously mentioned studies could be due to age and the current study makes a contribution by considering the influence of age and race toward several attitudinal variables in a complex analytical model.

One idea guiding the analyses of this study is that Black children may have more positive attitudes toward overweight children because they are more likely to have experienced victimization themselves and be overweight, though information regarding these mediational effects is not available. Nonetheless, studies have reported direct relationships between race and some study variables. For example, in a national public health survey race influenced a child's BMI for Hispanic boys and Non-Hispanic Black girls, where both groups were more likely to have a higher BMI than boys and girls of other races (Ogden et al., 2010). These BMI differences due to race were also supported

by findings of other studies (Barroso, Peters, Johnson, Kelder, & Jefferson, 2010; Neumark-Sztainer, Croll, Story, Hannan, French, & Perry, 2002).

Results from studies examining the direct influence between race and previous experience as a victim, however, have been somewhat inconsistent. To illustrate, Carlyle and Steinman (2007) found that African American and Native American boys were victims of bullying more than Caucasian children. Alternatively, others have shown that African American children are victimized less than Caucasian and Hispanic children (Spriggs, Iannotti, Nansel, & Haynie, 2007). Still, another study suggests that children are victimized equally across races (Neumark-Sztainer et al., 1998). Due to mixed results and limited information, it is important to examine the potential impact of intervening variables on the relationship between race and a child's attitude toward an overweight peer.

Remaining Gaps in the Literature

Although research suggests that multiple factors influence children's judgments of their peers who are overweight, information about the complex relationships among child characteristics and attitude is needed. Assessing the relationships among multiple factors using structural equation modeling reveals the unique effects and relations among different perceiver or background characteristics, perceptions of responsibility for weight status, and attitudes toward an overweight child. Results also add to the literature associated with the attribution theory as it provides information regarding which background factors influence one's causal attributions. Thus, results using these analyses provide more insight into the reasons behind negative perceptions of overweight peers and suggest areas for intervention.

Methods

Participants

Initial Sample. The participants in the proposed study were selected from 268 students who were between 8- and 13-years old (Mean Age = 10.35) and who participated in a previous research study conducted by Nabors and colleagues (2010, 2011). The sample included 149 girls and 119 boys. Participants described themselves as Black ($n = 127$), White ($n = 97$), Biracial ($n = 15$), Hispanic ($n = 14$), Indian ($n = 8$), and “other” ($n = 7$).

Final Sample. Nine participants did not answer 10% or more of the selected items, resulting in 259 participants in the final sample. Statistical analyses revealed no significant differences by demographics or other factors between participants in the final sample and those removed from the sample. The final sample included 145 girls and 114 boys. Twenty one percent of participants identified themselves as Black ($n = 122$), followed by White ($n = 93$), Biracial ($n = 15$), Hispanic ($n = 14$), Indian ($n = 8$), and “other” ($n = 5$).

Participants provided their assent and the parents of participants provided passive consent. The Institutional Review Board –Social and Behavioral Sciences approved data analyses from an existing research study conducted by Dr. Nabors and colleagues (2010, 2011).

Procedures

Data Collection. Participants were individually taken into a private room, where their height and weight were measured by two research assistants. Participants completed a questionnaire that assessed demographics, including their date of birth, gender, and

race. This measure also included The Schwartz Peer Victimization Scale (SPVS; Storch et al, 2007). Next, children in this study viewed same-gender line drawings of an overweight child and a non-overweight child. The drawings were presented simultaneously. Below the drawings, children were given a vignette portraying verbal victimization. The following vignette was used: "Jim/Jane was walking by him/herself at school. Just as he/she was walking by, one of his/her classmates yells at Jim/Jane and calls him/her stupid. Jim/Jane keeps walking so that he/she gets to class on time." After viewing the line drawings and the vignette, participants selected which child they thought was the victim in the vignette. In order to control for presentation order, the drawings were counter-balanced across children, meaning that the non-overweight and overweight child was each presented first 50% of the time. Participants selected their victim for the name-calling.

After selecting a victim, participants also provided responses to questions that asked them their opinions about the victim they chose and about each figure separately. These questions assessed attitudes about liking and attitudes about different characteristics of the victim (e.g., cuteness). Participants provided responses on Likert scales for each question.

Items Selected for the Current Study. The items that were used in this study were the subset of the complete questionnaire that was thought to represent variables of interest. Items chosen to reflect demographic factors were the child's age, gender, race, and BMI. Participants' age was calculated using children's reported birthdate. Participants' gender was dummy coded (girls were coded as 1 and boys were coded as 0). All Non-White children were combined into one category in order to determine whether

Non-Hispanic White children differed in their relationship among study variables from other children. Consistent with other research conducted in schools (Nihiser et al., 2009), participants' height and weight were used to calculate the participants' BMI using the body mass calculator from the Centers for Disease Control and Prevention (CDC; Department of Health and Human Services, 2000).

The SPVS was used to assess participants' previous experiences as a victim of overt or relational victimization (Storch et al, 2007). This scale consisted of five questions and asked participants to indicate their experiences during the past two weeks (see Table 1 for specific items and potential responses). When using this measure with similar aged children, studies have reported high internal reliability (α s > .75) and adequate associations with peer-reports of victimization (Nabors et al., 2011; Storch et al.).

Table 1 illustrates the item selected to represent perceived responsibility. On this item, children used a Likert scale to rate their attitudes about whether the child depicted in an overweight figure was responsible for their weight. Lastly, the child that was chosen as the victim in the vignette was used to reflect overall attitude about an overweight child (see Table 1). Selecting an average weight child on this task was considered to reflect more positive attitudes and selecting an overweight child indicated poorer attitudes. Thus, selecting an overweight figure as the victim was coded as a 0 and selecting an average weight figure as the victim was coded as a 1.

Data Analysis

Intercorrelations among variables were generated and correlations were used in subsequent analysis. Polychoric correlations were used for intercorrelations between

dichotomous variables and all other variables. For intercorrelations among continuous or categorical variables, the Pearson product correlation coefficient was used.

Next, in order to determine whether the items from SPVS represented the hypothesized latent variables, confirmatory factor analysis (CFA) was performed. The same procedure that was discussed by Ritchey et al. (2002) as good method of conducting CFA was followed. Specifically, because the χ^2 , which is the primary fit statistic for CFA, can be unduly influenced by sample size, a sample size of 200 should be used to test the fit of the model. In addition to evaluating the χ^2 , the p value of the model and standardized residuals should be examined. According to Ritchey et al., a good fitting CFA model will have a χ^2 approaching zero, a p value greater than .01, less than 5% of the standardized residuals exceeding an absolute value of 2, and a *Critical N* exceeding 200. Once an acceptable fit using a sample size of 200 has been established, the final model should be run using the actual sample size. After conducting the CFA, all items were put into one model to assess the overall fit of the hypothesized model. The results of the CFA will be discussed at the beginning of the following section. The CFA and Path analyses were examined using Lisrel 8.3.

All items and cases were analyzed to determine missing values. Cases that had 10% ($n > 1$) or more values missing for the selected items were removed from subsequent analyses. In addition to assessing missing values by each case, missing values in each item were examined. Analysis indicated that the item reflecting perceived responsibility had the most number of values missing (4%, $n = 12$). All other items had fewer than 2% ($n \leq 4$) of their values missing. Based on these analyses, missing values were treated as

missing at random and mean imputation was used to impute values for all remaining missing values.

Results

The results section begins with a discussion of the sample statistics, which will be followed by fit of the overall measurement model including the fit of latent variables. Lastly, the fit of the structural equation model will be illustrated.

Sample Statistics

Seventy two percent of participants selected the overweight figure as the victim in the vignette. Please refer to Table 2 for descriptive statistics and Table 3 for frequencies of all variables.

Confirmatory Factor Analyses

In order to test the fit of the items reflecting Experience as a Victim, these items were modeled separately at first and then added to the overall measurement model. The confirmatory factor analysis (CFA) of all initially selected variables yielded a poor fit to the data, $\chi^2 (df = 5, N \text{ set to } 200) = 33.6, p < .0001$, RMSEA = .173; *Critical N* = 90.37 and 40% of the standardized residuals > [2]. The best fitting model comprising previous experience as a victim included 4 of the 5 initially selected items, $\chi^2 (df = 2, N \text{ set to } 200) = 3.1, p = .21$, RMSEA = .053; *Critical N* = 586.34 and 0% of the standardized residuals > [2]. These items were: how often do other kids tease or make fun of you, how often do other kids hit or push you, how often do other kids gossip or say mean things about you, and how often do other kids hurt your feelings by excluding you.

Following an acceptable fit of the items representing previous experience as a victim, a confirmatory factor analysis was conducted using all variables in the overall

model. The initial overall model yielded a poor fit to the data $\chi^2 (df = 20, N \text{ set to } 200) = 50.45, p < .001$, RMSEA = .08; *Critical N* = 149.19 and 13% of the standardized residuals > [2]. Further consideration of the results suggested a final measurement model with 3 items (shown in Figure 2). It yielded $\chi^2 (df = 12, N \text{ set to } 200) = 20.97, p = .05$, RMSEA = .06; *Critical N* = 249.77 and 9% of the standardized residuals > [2]. While more than 5% of the standardized residuals in this model were greater than an absolute value of 2, both of these standardized residuals were only slightly greater than two (-2.33, -2.12) and all other statistics measuring the model fit were adequate. Therefore, the model appeared to provide an acceptable fit to the data. The final model also represents a stronger measurement model because the statistics in the final model reflect fitting the measurement model to 45 correlations, whereas, statistics in the initial CFA model represent fitting the measurement model to only 10 correlations. Further examination of the five items thought to assess Experience as a Victim provided additional support for the final measurement model. That is, the items that were removed seemed to be measuring aspects related to physical victimization and the items that were retained in the final model appeared to reflect aspects associated with relational victimization, which is more consistent with the dependent variable.

Path Model

The sample size of 259 provided sufficient power to test hypotheses among all paths in the SEM. In particular, A priori power analysis indicated that a sample size of 259 would have sufficient power to detect a difference for any relationship with an effect size of at least .06. Results of power analyses for each nonsignificant path will be discussed below. In addition, Figure 3 shows the finalized path model that shows the

relationships among variables using the standardized path coefficients. Table 4 shows the direct, indirect, and total effects for each path in the model.

Effects of Study Variables on Children's Attitudes

Perceived responsibility, previous experience as a victim, BMI, race, gender, and age were expected to impact children's attitudes. However, only four of the six predictors exhibited a statistically significant effect on child attitude. These effects accounted for 17% of the variance in child attitude.

Children with greater perceived responsibility were expected to hold more negative attitudes toward the overweight child. Although perceived responsibility significantly impacted children's attitude, the predicted relationship was in the unexpected direction. Study results indicated that participants who blamed children for their weight problem were more likely to hold more positive attitudes toward the overweight child ($\beta = .205$).

Participants with previous experience as a victim were posited to have more positive attitudes of overweight children. Additionally, previous experience as a victim was hypothesized to affect child attitude through its direct effect and through its influence on perceived responsibility. However, neither of these hypotheses were corroborated. Posthoc power analyses yielded a high degree of possible Type II error for the previous victimization-child attitude path (Sample Size = 259, Type II error = .59, Actual Power Achieved = .41, effect size $f^2 = .01$). Further examination indicated low correlations between these two variables (see Table 4) resulting in a small effect size that would require a sample size of 1, 121 in order to detect a significant difference. Though the

correlation between these two variables was small, there is still a possibility of having a Type II error; thus this relationship can only be considered not significant.

BMI was not predicted to hold a direct relationship on child attitude. Study results supported this hypothesis. Although BMI was not expected to have a direct relationship with child attitude, BMI was hypothesized to have an overall positive indirect effect on child attitude through its influence on previous experience as a victim and perceived responsibility. This prediction was not supported as BMI did not have any statistically significant impact on child attitude. Posthoc power analyses indicated adequate power for BMI-child attitude path (Sample Size = 259, Type II error = .06, Actual Power Achieved = .94, effect size $f^2 = .05$). Due to good achieved power, BMI and child attitude can be considered to be unrelated.

It was anticipated that gender would have a direct impact on child attitude, with girls being more likely to have more positive attitudes. Indeed results showed that gender impacted child attitude (beta = -.174). However, results suggested that girls were more likely than boys to have a negative attitude toward children who are overweight, which was the opposite of what was expected. Gender was expected to affect child attitude through its influence on BMI, previous experience as a victim, and perceived responsibility. These relationships were not supported.

Older participants were hypothesized to exhibit a direct positive effect on child attitude. Results showed partial support for this hypothesis. That is, age directly affected child attitude but study findings indicated that older children were more likely to have negative attitudes toward children who are overweight (beta = -.165). Child age was also anticipated to impact child attitude through its influence on BMI, previous experience as

a victim, and perceived responsibility. Study results did not support any indirect effects of age on child attitude.

As posited, results indicated that Nonwhite children were more likely to have more positive attitudes toward an overweight child than White children ($\beta = .229$). Race was also expected to indirectly affect child attitude through its impact on BMI, previous experience as a victim, and perceived responsibility. Only one of these indirect relationships was supported. That is, race impacted child attitude through its effect on perceived responsibility. Race directly impacted perceived responsibility by $-.137$ and perceived responsibility led to an increase in child attitude by $.205$. Thus, the total indirect effect of race on child attitude was $.028$ (i.e., the product of each path $-.137 \times .205 = -.028$). Although race exhibited a positive direct influence on child attitude ($.229$), its indirect effect ($-.028$) reduced the total impact of race on child attitude which was $.201$. Moreover, race was the strongest direct predictor of child attitude compared to other variables in the model. However, due to the downward pressure from perceived responsibility, race's indirect influence through perceived responsibility indicated it was the second strongest predictor of child attitude.

Effects on Perceived Responsibility

While it was initially hypothesized that four variables (i.e., age, gender, race, and previous experience as a victim) would directly influence perceived responsibility, study results indicated that only one variable exerted a statistically significant effect on perceived responsibility. Perceiver race was directly related to perceived responsibility, with Nonwhite children being less likely to hold a child responsible for their weight

status than White children ($\beta = -.137$). This relationship was in the hypothesized direction. Perceiver race accounted for 4% of the variance in perceived responsibility.

BMI was anticipated to indirectly influence perceived responsibility through its influence on previous experience as a victim. Age, gender, and race were also expected to indirectly impact perceived responsibility through their effect on BMI and previous experience as a victim. However, none of these indirect relationships were corroborated.

Follow-up analyses indicated achieved power for the following paths: previous experience as a victim-perceived responsibility path (Sample Size = 259, Type II error = .85, Actual Power Achieved = .15, effect size $f^2 = .003$), BMI-perceived responsibility path (Sample Size = 259, Type II error = .30, Actual Power Achieved = .70, effect size $f^2 = .02$), gender-perceived responsibility path (Sample Size = 259, Type II error = 0, Actual Power Achieved = 1, effect size $f^2 = .32$), and age-perceived responsibility path (Sample Size = 259, Type II error = 0, Actual Power Achieved = 1, effect size $f^2 = .28$). Achieved power analyses for all pathways appeared to be acceptable except for the previous experience as a victim-perceived responsibility path, which warranted further investigation. Additional examination showed small intercorrelations between these two variables (see Table 4). In addition, a posthoc power analysis indicated that a sample size of 3,813 would be needed to detect an effect size of .003. Given adequate power, the influence of BMI, gender, and age on perceived responsibility is considered to be nonexistent. However, the relationship between previous experience as a victim and perceived responsibility is only considered not statistically significant due to the potential Type II error.

Effects on Previous Experience as a Victim

Only two of the four hypothesized predictors of previous experience as a victim were statistically significant and accounted for 13% of the variance. Perceiver gender was the strongest predictor of previous experiences as a victim and indicated that girls were less likely than boys to have recent experiences as a victim ($\beta = .193$). Perceiver age was also significantly related to previous experience as a victim, suggesting that older children were less likely to have recent experiences as a victim ($\beta = -.191$). Surprisingly, both of these variables affected experiences as a victim in the unpredicted direction.

Posthoc power analyses for nonsignificant paths yielded the following: BMI-previous experience as a victim path (Sample Size = 259, Type II error = .78, Actual Power Achieved = .22, effect size $f^2 = .001$) and race-previous experience as a victim path (Sample Size = 259, Type II error = .91, Actual Power Achieved = .09, effect size $f^2 = .01$). Correlations among these variables were also quite small (as shown in Table 4). Additional analyses showed that an effect size of .01 would require a sample size of 2,362 and an effect size of .001 would require a sample size of 9,480 in order to detect a significant difference. Overall, Type II error may be present between these variables.

Effects on BMI

Although participants' race was expected to significantly influence participants' BMI, study results yielded no significant relationship. However, results indicated that participant gender ($\beta = .142$) and age ($\beta = .298$) were significantly related to perceiver BMI and this was not hypothesized. These variables predicted 9% of the variance in perceiver BMI. Additional consideration showed that current model achieved

(Sample Size = 259, Type II error = .50, Actual Power Achieved = .50, effect size f^2 = .02) for the race-BMI path. These results suggested possible Type II error for this path.

Discussion

Previous research suggests that several variables impact children's perceptions of their peers who are overweight. However, previous studies investigated children's perceptions using a few variables in isolation, yielding only discrete relationships between factors. Thus, the unique impact of these factors in relation to other variables has been unknown. The current study sought to combine ideas from the TRA (Fishbein & Ajzen, 2010) and the Attribution Theory (Weiner, 1986) in order to understand the unique influences of several variables on children's judgments of their peers who are overweight. The results of this study added to information related to factors influencing children's perceptions of their overweight peers. Study findings partially supported the current model, indicating that predictors accounted for 17% of the variance in attitudes toward an overweight peer. Not surprisingly, findings corroborated previous research that children who are overweight are more likely to be perceived negatively than their normal weight peers (e.g., Adams & Bukowski, 2008; Kraig & Keel, 2001; O'Brien et al., 2007; Schwartz et al., 2006). Results also showed that background factors, taken from the TRA (Fishbein & Ajzen, 2010), and perceived responsibility, included in the Attribution Theory (Weiner, 1986), impact children's attitudes toward an overweight child. A discussion of the relationships among variables follows.

Attitude toward Children Who are Overweight

While the preponderance of research shows that children with more perceived responsibility hold more negative attitudes toward children who are overweight (e.g.,

Iobst et al., 2009; Puhl et al., 2005; Sigelman & Begley, 1987; Teachman et al., 2003), this study showed that children exhibiting increased perceived responsibility held more positive attitudes toward children who were overweight. It is also possible that other factors influence perceived responsibility or mediate the relationship between perceived responsibility and attitudes toward overweight children. For example, according to the social-cognitive theory, children take into account their peers' attitudes when making judgments about their attitudes related to their peers (Killen, Rutland, & Simon, 2009). Thus, children may take into account their peers' perspective when determining the degree of responsibility and their acceptance of children who are overweight (Geyelin Margie et al., 2005). Alternatively, children in this study may have felt pity or empathy for the overweight child and therefore reported more positive attitudes. Juvonen (1991) also posited that the relationship between perceived responsibility and attitude may be bidirectional rather than unidirectional. Yet another study by Zeller, Reiter-Purtill, and Ramey (2008) contended that other social attributes mediated the relationship between being overweight and being liked. In their study, social attractiveness and athletic ability affected children's judgments of their overweight peers. Despite inconsistencies of the present study and other research, this study supports the contention that perceived responsibility is a significant factor in predicting children's attitudes of children who are overweight. Moreover, results of this study argue that perceived responsibility is the strongest predictor of children's attitudes of overweight children. Thus, it is important to include aspects of perceived responsibility when examining children's attitudes toward overweight children.

Based on results from Nabors et al. (2011), which used the same data set as the current study, children with more experiences of victimization were expected to be more likely to have a positive attitude toward an overweight child. Results of the current study did not support this link and indicated that previous experience as a victim was not related to children's attitude of an overweight child. It is important to note that in the study conducted by Nabors et al., researchers computed a mean index victimization score that included both victimization experiences related to physical and verbal victimization. In contrast, experiences related to victimization in the current study were evaluated using a composite (i.e., latent variable), which provides a more stringent test than an index score because it increases the amount of correlations that must fit the proposed model. Moreover, analyses from the current study indicated that items reflecting physical victimization did not meet the aforementioned stringent criteria and yielded a poor fit to the data. As a result, only items reflecting verbal victimization were used in subsequent analyses.

Consistent with previous studies, the results of this study showed that BMI was not related to children's attitude toward a child who was overweight or perceived responsibility (Musher-Eizenman et al., 2004; Goldstein et al., 2004; Puhl et al., 2005; & Teachmann et al., 2000). This study adds to the wealth of knowledge suggesting that children hold similar attributions and attitudes toward children who are overweight despite their BMI. BMI was expected to exhibit an indirect impact on children's perceptions of an overweight peer. However, study outcomes indicated that BMI did not indirectly influence child attitude. Some researchers contend that self-perceptions of weight status may impact judgments and behaviors rather than one's actual BMI

(Cromley et al., 2012; Kuchler & Variyam, 2003). For example, Cromley et al. found that overweight or obese adolescents who were satisfied with their body weight displayed more positive behavioral and psychosocial outcomes than their peers who had a lower body satisfaction. Given findings from Cromley et al., future studies should determine whether self-perceptions of weight status may influence children's attitudes toward their overweight peers.

As predicted, gender directly impacted attitude toward an overweight child. However, contrary to expectations, girls held more negative attitudes compared to boys. On the other hand, research in this area has yielded mixed results. For example, Nabors et al. (2010) reported that girls might hold more positive attitudes. Latner and Stunkard (2003) showed that girls had more negative attitudes toward overweight peers than boys. Still other studies have contended that boys and girls showed no difference in attitudes (Iobst et al., 2009). Differences in findings among studies are likely due to varying methodology and measurement of child attitude. Consequently, this relationship should continue to be examined in order to determine the exact influence that gender has on child attitude.

Participants' age significantly influenced child attitude. However, older children were expected to have more positive attitudes toward their overweight peers, and this link was not supported. Instead, results showed that older children were more likely to have negative attitudes toward children who are overweight. These findings were consistent with some previous research (e.g., Iobst et al., 2009). On the other hand, literature about the relations among age and attitudes has been mixed. Latner et al. (2007) assessed 10-13 year-olds finding that children held statistically similar views across ages. Tiggemann et

al. (2000) also found no age differences associated with attitudes toward an overweight child among 4-6 grade children. It may be that as children enter into preadolescence, they judge overweight children similarly. Perhaps this is due to physical image being more salient than when children are younger because social interactions are geared more toward relationships outside of school (Fabes, Martin, & Hanish, 2009). In addition, as children age, they are more likely to make comparisons about attractiveness using group ideals (Mueller, Pearson, Muller, Frank, & Turner, 2010). While this idea is speculative, it does have some support in developmental literature.

As predicted, the results of this study indicated that children in the minority group were more accepting of children who were overweight. Children who were in the minority group were also less likely to perceive the overweight child to be responsible for their weight problem (Killen & Stangor, 2001). According to Killen and Stangor, children who are in the minority group provide everyone with a fair chance. Because of their increased understanding related to their own negative experiences, they may be more likely to have positive attitudes and less likely to attribute blame toward children who are different, such as children who are overweight. There was also an indirect path of race through perceived responsibility on attitude. Although Nonwhite children tend to have more positive attitudes toward children who are overweight, they were also more likely to withhold blame for these children, which reduced the overall impact that perceiver's race has on child attitude. However, to our knowledge, this is the first study to test perceived responsibility as a mediator between race and child attitude. Future studies will need to continue to examine variables mediating the relations among race and acceptance of overweight children.

Perceived Responsibility

Children with more previous experiences as a victim were expected to report lower levels of perceived responsibility for weight than other children. However, results of this study did not support this link and showed that previous victimization was not related to children's attributions. Although previous studies indicated that children who are victimized tend to experience lower self-perceptions (Barchia & Bussey, 2010; Grills & Ollendick, 2012; Turner et al., 2010) and blame themselves for negative events involving them (Gibb et al., 2006), this study shows that these traits do not translate to how they perceive causation of events involving their peers.

BMI was not indirectly related to perceived responsibility. These results support other research demonstrating that children make attributions about responsibility regardless of their own BMI. However, as aforementioned, due to inaccurate self-perception of one's own BMI (Cromley et al., 2012; Kuchler & Variyam, 2003), using BMI as a predictor may not accurately reflect how one's body type might influence perceived responsibility. Instead, participants' ratings about their own body satisfaction may provide a more accurate representation of how a participant's body type influences attributions of causality. Alternatively, it may be that children use other variables beyond their body type (e.g., judgments of peer group norms) to determine whether a child is responsible for their weight status (Barroso et al., 2010; Hu, Chan, & McAlonan, 2010; Mueller et al., 2010).

Gender was expected to directly and indirectly influence perceived responsibility. Study results did not corroborate these hypotheses and showed that gender was not related to perceived responsibility. Contrary to results from Rukavina and Li (2011),

these results suggest that boys and girls attributed weight-based responsibility in similar ways. Previous research suggests that younger children are more likely than older children to blame other children for being overweight (Iobst et al., 2009; Sigelman & Begley, 1987). Accordingly, in this study, younger children were expected to perceive more weight related responsibility than older children. In addition, age was predicted to impact perceived responsibility through other mediating variables. However, age did not have any significant impact on perceived responsibility, suggesting that children between 8 and 13 perceive similar causes of being overweight. An extensive literature review yielded little information regarding the relationship between perceived responsibility and age as well as perceived responsibility and gender. Given the limited research in this area, additional research is needed to replicate this study's findings and to determine whether other factors mediate the relationship between age, gender, and perceived responsibility.

Race was expected to have an indirect and direct effect on perceived responsibility. Study results showed that race only exhibited a direct effect on perceived responsibility. As previously noted, children who were in the minority group were less likely to blame the overweight child for their weight problem. These ideas add to results from Killen and Stangor (2001) and suggest that children who are in the minority group are not only more accepting of differences but also tend to recognize that children are not always responsible for their differences, such as being overweight.

Victimization and Study Variables

It was hypothesized that children with higher BMIs would be more likely to be victimized than children with lower BMI's (Gileta et al., 2010; Janssen et al., 2004; & Wang et al., 2010). Study results did not support this contention. Participants in previous

research (i.e., Gileta et al.; Janssen et al.; & Wang et al.) were older than children in the current study. It may be that victimization of overweight children is more salient and increases for older children (in middle school) than for younger ones.

Although previous research (i.e., Griffiths et al., 2006; Nansel et al., 2011) suggested that girls would be less likely to experience peer victimization than boys, girls were more likely to have previous experiences as a victim in this study. It is important to note that this study measured previous victimization using items reflecting relational victimization. For example, children were asked the following questions: “How often do other kids tease or make fun of you?” “How often do other kids gossip or say mean things about you?” and “How often do other kids hurt your feelings by excluding you?” Though previous studies (e.g., Griffiths et al., 2006; Nansel et al., 2011) have shown that boys are more likely to report peer victimization, these studies measured victimization using a score which combined physical and verbal victimization. Moreover, Cossrow (2001) supported the current study's results noting that girls may report more relational victimization than boys. Overall, results from the current study and examination of previous studies suggests that girls are more likely than boys to experiences verbal or relational victimization but boys seem to be more likely to have more total experiences of victimization. This is an important distinction as different forms of victimization impact psychosocial functioning in different ways (Anderson & Hunter, 2012).

It was expected that age differences would be related to children's victimization experiences with older children experiencing more victimization. Although age was related to previous experience as a victim, the direction of the hypothesized relationship was not supported. That is, study results showed that older children were less likely to

report previous experiences as a victim, and this notion has support in previous literature (Nansel et al., 2001; Wang et al., 2010). According to Fabes et al. (2009), children's social interactions revolve around groups that are driven by complex rules and games during grade school. As children age into adolescence, social interaction still involves groups that have shared interests, but the variety of groups becomes more varied and involve more interactions outside of school (Fabes et al.). Adolescents' social interactions also tend to focus more on relationships (Fabes et al.). Results from the current study support ideas from Fabes et al., suggesting that as the focus of peer interactions shifts more from group games to relationships outside of school, children experience less peer victimization. This may be because as children distance themselves from children who do not share similar interests, they experience fewer undesired peer interactions and fewer opportunities to receive victimization from their peers.

Nonwhite participants were hypothesized to have more experiences of being a victim than their White counterparts. However, study findings did not support this notion. Previous research examining the effect of race on likelihood of being victimized is mixed. While Carlyle and Steinman (2007) showed that Nonwhite boys were more likely to be the victims of bullying than White children, another study contended that White children were victimized more than African American children (Spriggs et al., 2007). Consistent with the current study's results, Neumark-Sztainer et al. (1998) found that children experienced statistically similar levels of victimization across races.

BMI and Study Variables

Contrary to study hypotheses, none of the predicted relationships between demographic factors and BMI were supported. More specifically, gender and age were not expected to

be related to BMI but both had a positive influence on BMI. Older children were more likely to have a higher BMI than younger children. Similar to Cossrow (2001), girls were also more likely than boys to have higher BMIs. In addition to these findings, Nonwhite participants were expected to have higher BMIs but study results indicated that children of all races exhibited statistically similar BMIs. The current study's results regarding the relationship between demographic factors and BMI contradict findings from national surveys (Ogden et al., 2010). Given these inconsistent findings, it would be important to determine whether other factors provide a more consistent outcome than examining demographic factors alone. For example, it may be that national surveys such as the survey conducted by Ogden et al. (2010), show BMI differences in race but not gender or age because the survey does not account for differences across geographical and sociodemographic variables (e.g. park access, access to fast food restaurants, family income). These sociodemographic variables seem to influence the prevalence of being overweight (Crawford et al., 2010; Moore et al., 2010; Oreskovic et al., 2010; Simen-Kapeau, Kuhle, & Veugelers, 2010) and may provide a more consistent prediction of children's likelihood of being overweight. Understanding the impact of sociodemographic differences would also provide important information for intervention.

Limitations

Although this study adds to knowledge related to children's attitudes toward their overweight peers, the generalizability of these findings are limited. For instance this study was conducted in a middle sized urban city in the Midwestern United States and may not reflect attitudes of children in other geographical regions. Participants in this study included children in late childhood and early adolescents; results of this study may

not represent attitudes of younger children or older adolescents. The majority of participants in the Nonwhite group were African American and thus, results may most directly represent the opinions of those in this group. In future analyses of this data set, and in future research, it will be important to review the opinions of children in each different minority group. Other research supports the notion of investigating differences by each distinct ethnic group. For example, Spriggs et al. (2007), found that African American children are victimized less than Caucasian and Hispanic children and other research has shown BMI differences across nonwhite groups (Neumark-Sztainer et al., 2002; Ogden et al., 2010). Though previous experience as a victim was examined using several questions, all other variables included only one question. Using multiple questions to reflect a similar construct is a stronger test of that construct. Therefore, the findings of this study may not accurately reflect perceived responsibility or children's attitude. For example, the question in this study that was used to reflect children's attitude was whether the child identified the overweight or the non-overweight child as the victim in the story. It was expected that children who did not exhibit a bias toward children who are overweight would be as likely to choose either figure as the victim. However, it may be that children in this study used previous experience of seeing an overweight child being teased to judge an overweight child as being the victim in the vignette and selecting the overweight victim based on others' behaviors may not have reflected their personal attitudes toward the overweight child. Overall, using more variables to represent children's attitudes likely would have improved the study's ability to reflect children's attitudes.

Conclusions

Similar to the preponderance of research, study results confirmed that children may hold negative attitudes toward peers who are overweight (Martinez-Aguilar et al., 2010; O'Brien et al., 2007; Puhl et al., 2005). The results of this study added to the literature by providing information regarding the complex relationship between children's race, gender, age, and perceptions of responsibility for weight status and their impact on attitudes toward overweight peers. Hence, consistent with other theories in health psychology, these findings show that multiple factors influence children's attitudes (e.g. Ajzen & Fishbein, 1980; Bush & Iannotti, 1990). Perceptions of responsibility for weight status were related to positive attitudes. This was unexpected, but could have occurred because if perceptions of responsibility were high, then perhaps children believed the boy or girl could change his or her weight status. However, this idea is speculative and further research will be needed to examine this notion.

Study results suggest that peers often hold negative perceptions toward their overweight peers, which may lead to poorer psychosocial functioning among overweight children. Therefore, understanding and addressing negative peer perceptions of overweight children may be important in improving the psychosocial functioning of overweight children. In particular, this study shows that many factors influence children's attitudes and suggest that interventions designed to target several influential variables may have the greatest impact on improving attitudes toward overweight children.

Study findings yielded interesting information about perceived characteristics. For example, children in the minority group had more positive perceptions, perhaps because they were more understanding of a minority group status, such as being overweight.

Older children reported more negative attitudes toward an overweight child, which was contrary to expectations. It may be that older children's judgments of their peers are influenced more by group ideals or physical appearance (Fabes et al., 2009; Mueller et al., 2010). Girls were more likely to report negative attitudes toward an overweight child, which was unexpected. However, studies investigating the influence of gender on children's attitudes of overweight children differ and therefore further research, assessing children's reasons for their preferences, is needed to understand this relationship.

Children with more experiences as a victim were expected to have positive attitudes toward an overweight child; but, study results showed no significant relationship between these variables. Perhaps having previous experiences as a victim does not translate to how children judge others who are victimized, such as children who are overweight. Using the same data set as the current study, Nabors et al. (2011) showed that previous experience as a victim was related to attitudes toward overweight children. However, the current study used CFA which is a more stringent test. Nabors et al. also combined physical and verbal victimization to create a total victimization score. Though, due to the nature of this study and consistent with previous research, the current study only used items reflecting verbal or relational victimization (Anderson & Hunter, 2012).

While these results suggest that children's race, gender, age, and perceptions of responsibility impacted their attitudes toward their overweight peers, the current model only accounted for only 17% of variance in children's attitudes. Hypotheses were not consistently supported, suggesting that more research on the complex interrelationships among variables impacting attitudes about weight need to be assessed. Moreover, other factors may account for a greater amount of the variance in children's attitudes, and

future research is needed to examine whether other factors, such as positive experiences with people who are overweight or having an overweight member in the family, influence attitudes.

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Table 1. Subsets of Questions Used to Measure Selected Concepts

Previous experience as a victim

Items:

1. How often do other kids tease or make fun of you?
2. How often do other kids bully or pick on you?
3. How often do other kids hit or push you?
4. How often do other kids gossip or say mean things about you?
5. How often do other kids hurt your feelings by excluding you?

Available responses for all items:

1. Never
2. Happens to me once a year
3. Happens to me two to three times a year
4. Happens to me four to six times a year
5. Happens to me once or twice a month
6. Happens to me once or twice a week
7. Happens to me almost every day

Perceived responsibility for being overweight

Item:

1. How much is this child to blame for how he/she looks? Blame means that he/she is the one who did it.

Available responses:

1. Not at all
2. A little
3. Some
4. Pretty much
5. A lot
6. All the way

Attitude toward overweight child

Item:

1. Which child was chosen as the victim in the story?

Available responses:

1. Circled overweight figure
 2. Circled skinny figure
-

Table 2. Means and Standard Deviations for Study Variables

	Mean	SD
Race*	.64	.48
Gender**	.56	.50
Age	10.36	1.31
BMI	21.59	5.73
Items representing previous victimization***		
1. How often do other kids tease or make fun of you?	2.98	2.35
2. How often do other kids gossip or say mean things about you?	3	2.28
3. How often do other kids hurt your feelings by excluding you?	2.46	2.08
Perceived Responsibility****	2.9	1.79
Attitude toward overweight peer*****	.27	.44

Note. *Race was coded into "1 = Nonwhite" and "0 = White."

**Gender was coded into "1 = Female" and "0 = Male."

***Available responses were "1 = Never," "2 = Happens to me once a year," "3 = Happens to me two to three times a year," "4 = Happens to me four to six times a year," "5 = Happens to me once or twice a month," "6 = Happens to me once or twice a week," "7 = Happens to me almost every day."

****Available Responses were "1 = Not at all," "2 = A little," "3 = Some," "4 = Pretty much," "5 = A lot," "6 = All the way."

*****Attitude toward overweight peer was coded into "1 = Circled skinny figure" and "0 = Circled overweight figure."

Table 3. Frequencies of study variables

Race	White		Nonwhite				
	93		166				
Gender	Female		Male				
	145		114				
Age	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	
	1	81	90	20	46	21	
BMI	Percentile	0-10	11-25	26-50	51-75	76-90	91-100
	BMI Range	13.4-	16.11-	17.41-	19.7-	24.67-	29.99-
		16.04	7.4	19.68	24.48	29.98	42.99
	Frequency	27	38	65	62	39	25
Items representing previous victimization*	1	2	3	4	5	6	7
1. How often do other kids tease or make fun of you?	118	33	25	7	11	24	41
2. How often do other kids gossip or say mean things about you?	107	41	26	11	14	23	37
3. How often do other kids hurt your feelings by excluding you?	140	39	20	7	10	20	23
Perceived Responsibility**	1	2	3	4	5	6	
	86	38	45	32	21	37	
Attitude toward overweight peer	Circled Overweight Figure			Circled Skinny Figure			
	189			70			

Note. *Available responses were "1 = Never," "2 = Happens to me once a year," "3= Happens to me two to three times a year," "4 = Happens to me four to six times a year," "5 = Happens to me once or twice a month," "6 = Happens to me once or twice a week," "7 = Happens to me almost every day."

**Available Responses were "1 = Not at all," "2 = A little," "3 = Some," "4 = Pretty much," "5 = A lot," "6 = All the way."

Table 4. Intercorrelations among all latent variables

	1.	2.	3.	4.	5.	6.	7.
1.	1.00						
2.	.05	.50					
3.	.17	-.01	1.00				
4.	-.10	-.02	.03	1.00			
5.	-.18	.19	-.11	.15	1.00		
6.	-.26	-.15	.11	.27	.03	1.00	
7.	.26	-.01	-.16	-.04	.00	-.39	1.00

Note. 1 = Child Attitude

2 = Previous Experience as a Victim

3 = Blame

4 = BMI

5 = Gender

6 = Age

7 = Race

Table 5. Causal effects of attitude toward an overweight child, perceived responsibility, previous experience as a victim, and BMI

	Causal Effects		
	Direct	Indirect	Total
<i>Attitude Toward Overweight Child and...</i>			
Age	-.165	0	-.165
Gender	-.174	0	-.174
Race	.229	-.028	.201
BMI	0	0	0
Previous Victimization Experience	0	0	0
Perceived Responsibility	.205	0	.205
<i>Perceived Responsibility...</i>			
Age	0	0	0
Gender	0	0	0
Race	-.137	0	-.137
BMI	0	0	0
Previous Victimization Experience	0	0	0
<i>Previous Victimization Experience...</i>			
Age	-.191	0	-.191
Gender	.193	0	.193
Race	0	0	0
BMI	0	0	0
<i>BMI and...</i>			
Age	.298	0	.298
Gender	.142	0	.142
Race	0	0	0

Figure 1. Hypothesized SEM Model: Relationships of Background and Responsibility Factors to Child Attitude

Figure 2. Loadings for Combined Structural Equation Measurement Model

Figure 3. Final Path Model