

PARENTAL INFLUENCE ON WEIGHT BIASES IN SCHOOL-AGE CHILDREN

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ABSTRACT

EMILY ELIZABETH WASSON: Parental Influence on Weight Biases in School-Age Children (Under the direction of Stephanie Miller)

Obesity rates have rapidly increased in America over the past few decades, and with this rise comes an increase in the negative psychosocial consequences experienced by victims of weight bias. Although a fair amount of research on weight bias (i.e., the negative attitudes or beliefs one holds toward overweight individuals) has been done in adults and adolescents, limited research has been done in young children. This study worked to fill gaps in the literature by investigating if children between the ages of five and nine would show weight biases, if the biases against individuals would vary by the ethnicity and gender of the target, and if children's biases related to parents' biases and health habits. To measure bias, children completed an explicit Anti-Fat Attitudes Questionnaire and a more implicit Figure Rating Scale examining biases toward individuals of varying gender and ethnicity. Parents also completed the Anti-Fat Attitudes Questionnaire and a health habits survey. Children displayed significant biases against overweight individuals, with more bias relating to the controllability of obesity. Children did not show different biases toward individuals of different genders and ethnicity, nor did their biases relate to parental views.

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Parental Influence on Weight Biases in School-Age Children

Within recent years, the presence of obesity in both adults and children has rapidly elevated (Harriger & Thompson, 2009). As of 2010, an alarming two thirds of adults and one third of children are considered to be overweight or obese (Flegal et al., 2012). Many individuals are aware of the health risks caused by obesity, such as diabetes and an array of heart problems, but are not as informed of its psychosocial consequences (Harriger & Thompson, 2012). Research shows that obese adults are met with disadvantages in personal relationships and areas of life such as employment (e.g., lower hiring rates), education (e.g., fewer college acceptances), and healthcare (e.g., health care providers belittling overweight patients, Puhl & Brownell, 2003; Puhl & Latner, 2007). Obese children and adolescents often encounter bias or negative attitudes toward obesity that can lead to low self-esteem, depression, body dissatisfaction, difficulty developing interpersonal relationships, and even suicidal behaviors (Puhl & Latner, 2007). These negative consequences from others' weight bias can be just as dangerous as the physical risks of obesity. However, not all individuals hold such harmful views (Washington, 2011; Davison and Birch, 2004) and it is important to understand the factors that contribute to the formation of these biases, to help reduce their presence and create better prevention and intervention strategies.

Weight bias is defined as the negative attitudes and beliefs one holds towards individuals who are either overweight or obese (Bromfield, 2009). In medical terms, "obesity" and "overweight" encompass specific Body Mass Index (BMI) cutoffs. However, in most psychological literature the two words are commutable and refer to individuals having a BMI at or above the 85th percentile (Gavin, 2016; Puhl & Brownell,

2003). Bias against overweight or obese people can display itself in many ways, such as verbal teasing, physical bullying, and being socially ostracized (Bromfield, 2009).

Crandall determined through his Antifat Attitudes Questionnaire (1994) that these biases can be categorized into three different groups: *dislike* (e.g., prejudice against overweight people), *fear of fat* (e.g., how much one finds their own weight or the thought of gaining weight relevant to them), and *willpower* (e.g., how much the individual thinks that overweight people can control their weight, as opposed to just being due to genetic factors, Crandall, 1994).

Weight Biases in Children. Although children can experience weight bias from a number of sources, including parents, educators, and even health care providers, they themselves are one of the main perpetrators. While the occurrence of weight related bullying and teasing seems unsurprising in adolescents, these harmful biases have actually been shown to develop in children as early as ages three or four (Cramer & Steinwert, 1998; Lowes & Tiggeman, 2003; Spiel, Paxton, & Yager, 2012). Cramer and Steinwert conducted an experiment in which 3- to 5-year-olds were read a story that included one child acting meanly and another child acting kindly. The study found that when asked to identify between an image of a larger child and an image of a thinner child which was “mean” and which was “nice,” children were more likely to describe the attribute of meanness to the larger image and niceness to the thinner image. These tendencies at such a young age did not seem to vary by gender or only apply to children with smaller body sizes. In fact, overweight children were even more likely to label other overweight children as “mean” (Cramer & Steinwert, 1998). This surprising trend of designating the larger child as “mean” seems to reflect a dislike bias and was found to be

firmly present at age three and grow stronger through age five (Cramer & Steinwert, 1998). These biases continue to intensify with development, with studies showing that by age six children develop a desire for thinness, perhaps indicating a fear of fat (Lowes & Tiggeman, 2003; Crandall 1994), and by age eight there is a strong presence of negative attitudes towards overweight individuals related to willpower. For example, children might consider overweight people as lazier due to the belief that weight can be controlled, and therefore believe that overweight individuals choose not to exercise such control. This belief in the controllability of weight also creates positive attitudes towards non-overweight individuals, such as considering non-overweight people as being hard working (Spiel, Paxton, & Yager, 2012).

Parents' role in developing weight biases. One critical contributing factor to the development of early weight bias is the influence of parents. According to the social learning theory, children do not simply learn through trial and error, but can learn behavior just by watching someone else (Bandura, 1971). In this process of observational learning, when children watch an individual model behavior they engage in a cognitive process that involves the learner paying attention, constructing, and remembering mental representations of what they watched. They can later retrieve those representations and use them to guide their behavior. For example, a child could learn fear of fat by first seeing a parent model the behavior by frequently making comments about their fear of gaining weight. After seeing this behavior modeled, this child may observationally learn to fear fat and also engage in the same behavior of making frequent comments about a fear of gaining weight. Parents are perhaps the most important models in children's lives, placing them in a prime position to teach their children weight biases (Sigelman & Rider,

2012). As such prominent models, it is likely that children's biases will reflect parents' biases.

Research has demonstrated a link between parent and child weight related biases. For example, Davison and Birch (2004) demonstrated that 9-year-old girls were more likely to have weight biases (agreed with negative statements about overweight people, such as "it is hard for fat people to make friends") when their parents placed an emphasis on being thin. The authors suggested results could be caused by children observing and identifying with the way parents promote being lean (e.g., describing fat as bad could teach children that overweight people are also "bad"). Another study found that 10-year-olds assigned more negative adjectives to larger silhouettes when their parents had strong beliefs about one's personal control over weight and were thin (Hansson & Rasmussen, 2010). According to social learning theory, parents' promotion of the idea that people are overweight due to their own actions may lead their children to also hold these views. Although weight is actually more frequently caused by genetic factors, the wider western belief is that weight can be controlled with diet and exercise (Tiggemann & Anesbury, 2000). This attribution suggests that one would hold stronger biases if they held this belief of controllability, because they consider weight to be a physical attribute that can be controlled (Klaczynski, 2009; Tiggemann & Anesbury, 2000).

Parents may also teach children to follow societal concepts of body size, such as the thin ideal (Damiano et al., 2015, Haines et al, 2008). The thin ideal is the assumption that thinness is positive and larger bodies are negative. This may be promoted through parent behaviors, such as their own assessments of their physical appearance and their dieting and exercise habits. With obesity being such a prevalent issue, encouraging

children to be a healthy weight is reasonable, so long as being lean is not promoted to an extreme level (Davison & Birch, 2004). Parents must also be sure to encourage healthy weight to not cast overweight or obese people negatively. Parents should make clear that body size does not determine individuals' personal qualities and avoid using labels such as "fat is bad" because children could infer from that that fat people are actually bad (Davison & Birch, 2004). It is important to note that parents may also indirectly introduce their children to the thin ideal through their exposure to television, radio, magazines, and other forms of social media (Davison & Birch, 2004). Even toys like Barbie and male action figures promote thinness as a positive characteristic to children (Harrison, 1998; Damiano et. al, 2015). These exposures to media, music, even toys are all ways that children can see the thin ideal modeled, and therefore learn to treat thinness positively and larger sizes negatively.

Limited research has been done with children under nine concerning the relationship between parents' and children's weight biases (Holub, Tan, & Patel, 2011). Mother's negative body image attitudes have been shown to predict 3- to 5-year-old children's likelihood of assigning positive characteristics to thinner figures, and mother's body dissatisfaction has been linked to 5- to 8-year old children's body dissatisfaction (Lowes and Tiggeman, 2003, Spiel, Paxton, and Yager, 2012). Regarding weight biases specifically, a study found that mother's fear of fat was the best predictor of 3- to 6-year-old children assigning less positive characteristics to images of overweight people than images of thin or average people, likely because children observing mothers talking about their own weight and dieting models fear of fat that children may internalize as well (Holub, Tan, & Patel, 2011). In a study examining the influence of fathers, Damiano et

al. (2015) discovered that 4-year-old boys were more likely to assign negative characteristics to larger figures if their fathers had stronger weight biases, presumably because boys learn from their fathers to think of thinner weight positively and overweight negatively. Fathers have been shown to influence their adolescent sons' strategies to lose weight and gain muscle, while another study found that negative input from fathers about weight can increase the likelihood of binge eating behaviors in sons (McCabe and Ricciardelli, 2005; Field et. al, 2008). Father's body dissatisfaction has been shown to influence daughters, while other research has suggested that fathers' dieting is not correlated to either sons' or daughters' biases at all (Damiano, 2015). More research is needed to investigate the association between parent and young children's attitudes about weight (Holub, Tan, & Patel, 2011), and to explore whether parents' health habits, such as diet and exercise, factor into their children's weight biases.

Gender and Ethnicity Differences in Weight Bias. Because the thin ideal seems to be pushed more on girls, many studies have examined whether gender differences exist in weight biases. With regard to whether a child's own gender influences weight biases, results have not been consistent (Spiel et al., 2012). Cramer and Steinwert did not find significant gender differences in their adjective assignment task, whereas Holub's study showed more girls displayed antifat attitudes than boys (Cramer & Steinwert, 1998; Holub, 2008). These findings might be inconsistent because children might not initially have gender differences, but the differences could emerge later in life as children identify more and more with the traditional gender roles of their parents. With regard to whether the gender of the target influences biases, there appears to be a difference in adults. Greater bias is usually shown towards women (Klaczynski, Daniel,

& Keller, 2009), such as parents giving financial support more to normal weight daughters than overweight daughters, but not finding the same results with sons (Crandall, 1995; 1991). In child samples results are less conclusive. Tiggemann and Anesbury (2000) found that 8- through 12-year-old children's assignment of positive and negative adjectives to a normal weight and overweight figure did not significantly differ based on whether the figure was male or female. Thus more research examining whether the gender of the perpetrator and target influence weight biases in children is needed.

In addition to gender, ethnicity is also likely an important influence on the development of weight bias. Ethnicity has been found to contribute to body dissatisfaction (Xanthopoulos, 2011), but not widely studied with regard to weight bias. There seems to be some evidence that one's own ethnicity and the ethnicity of the target influences weight bias. A study with adolescents discovered that both Hispanics and Caucasians assigned negative personality traits more frequently to overweight Caucasian figures than overweight Hispanic figures (Klaczynski, Daniel, & Keller, 2009). This finding was proposed to be caused by the social identity theory, which suggests that socially marginalized groups might be more accepting of differing appearances in order to protect the group (Klaczynski, Daniel, & Keller, 2009). According to this theory, as the majority group, Caucasians might not show these same acceptances because they do not need to use the same protective in-group strategies. In line with the social identity theory, studies in adults have shown that African Americans tend to show less bias towards overweight individuals (regardless of ethnicity) compared to Caucasians (Latner, Stunkard, & Wilson, 2005). Research also suggests that Caucasian females receive the most bias, possibly due to cultural beauty norms (Magness, 2015). Despite the links

found between ethnicity and weight biases in adolescents and adults, little research has been done regarding this relationship in children (Puhl & Latner, 2007).

The Present Study. The present study intended to fill some of these gaps in the literature by exploring the link between parental and child weight biases in an age range that had not been extensively examined (5-year-olds to 9-year-olds). Children's weight biases were assessed by using the explicit measure of the Anti-Fat Attitudes Questionnaire and the implicit measure of the Figure Rating Scale. In the Anti-Fat Attitudes Questionnaire, children indicated how much they either agreed or disagreed with different negative statements about overweight people. Children also completed the Figure Rating Scale to examine more implicit biases. In the Figure Rating Scale, children indicated the actual and ideal weight of figures that varied on ethnicity and gender. The parents' weight biases were assessed with the adult version of the Anti-Fat Attitudes Questionnaire. As a further measure of the belief of the controllability of weight, parents answered a survey measuring their diet and exercise habits.

Three questions were addressed in this research. First, I examined whether children at this age range showed explicit and implicit biases. Examining bias in this young age range is novel, as most work with younger children has dealt with trait attribution, rather than explicit biases. I thought it possible that explicit and implicit biases (of a different measure) would be exhibited in this younger age range based on work demonstrating young preschoolers attribute negative attributes to overweight (Cramer & Steinwert, 1998). Second, I investigated whether the biases that children show toward other individuals differ by the target's gender and ethnicity. In the Figure Rating Scale, children saw target pictures of children that varied between race (i.e.,

Caucasian and African American) and gender. Given that research in adults has found that Caucasian females tend to receive the most bias (Magness, 2015), I thought it possible that these gender biases could exist in children but did not have a clear prediction given the lack of research in younger age ranges. Last, I examined whether child biases related to parent biases. Although parental biases and child biases have been found to be linked in older children (Davison & Birch, 2004; Hansson & Rasmussen, 2010), limited research has been done regarding this relationship in children under nine. I expected to see associations between parental biases and child biases, in line with the social learning theory (Bandura, 1971; Sigelman & Rider, 2012) and research in older children.

Methods

Participants

Parents/guardians and children were recruited for this study from local schools and from a database of parents and children indicating interest in research in child development from a small city in the southern United States. Participants in the present study consisted of 10 children ($M_{age} = 7.62$, $SD_{age} = 1.55$) and 5 parents. Of the ten children, 7 were males and 3 were females, and 7 were Caucasian, 2 Hispanic, and 1 African American. Of the parents/guardians that participated and provided their ethnicities and ages, one was Caucasian and 32 years old and one was African American and 47 years old. Three mothers, one father, and one guardian participated in the research for a chance to win a \$50 gift card to Walmart, and children participated for prizes and a t-shirt.

Procedure

Participants were part of a larger study examining weight biases in parents and children. Children completed several measures in a fixed order: (a) Figure Rating Scale (b) Parent Identification Scale (c) Flexibility Dimensional Change Card Sort (d) Flexibility Dimensional Change Card Sort (weight version) (e) Inhibition Choice Task (f) Antifat Attitudes Questionnaire (AFA). Only the Figure Rating Scale and AFA were used in the present study. Parents completed a Parent and Child Health Habits Survey and Antifat Attitudes Questionnaire.

Child Weight Bias Measures

Antifat Attitudes Questionnaire. Children's explicit weight biases were measured by the Antifat Attitudes Questionnaire (i.e., AFA, Crandall, 1994). This questionnaire was selected for its psychometric strength and the simplicity of its questions (Allison & Baskin, 2009; Setchell et al, 2014). The questionnaire's thirteen Likert-type items were broken down into the three subscales of *dislike*, *fear of fat*, and *willpower*, to measure one's dislike of overweight individuals, fear of gaining weight, and level of belief that personal control determines body weight. Participants could respond from very strongly disagree (0), to very strongly agree (5). Each subscale was averaged, with higher scores suggesting a stronger bias. This measured explicit bias by determining whether the children explicitly endorsed negative statements about overweight individuals. The AFA was originally developed for an adult population with a reading level of 4.9. For the child measure, the reading level was scaled down to a 3.5 and children were read each statement aloud so that they would have a better understanding of the questions. For example, the question "I tend to think that people

who are overweight are a little untrustworthy” was simplified to “I sometimes think that I can’t trust people who are fat.” Images of thumbs up and thumbs down in varying degrees were included on top of the Likert scale to help children better understand the questions (see Appendix A), and the experimenter would explain strongly disagree to strongly agree in terms of “really not true” to “really true.” For example, the answer choices would be read as, “Do you strongly disagree, so you think that’s really not true?”

Figure Rating Scale. In the Figure Rating Scale (Magness, 2015) children were presented with images of children on a computer and asked to identify both their *actual* weight and their *ideal* weight. Eight images of normal weight (5.1 x 1.19 inches) and overweight (5 x 2 inches) children were drawn for the purpose of this study so that the primary differences between the images were related to weight, gender, and ethnicity (see Figure 1). Figure 2 depicts how children were asked to identify the actual and ideal weight of each figure. Children were first shown an image of a child and asked to use the slider to indicate which picture looked the most like the image of that child. The researcher would ask “which of these people do you think this person looks the most like?” and then the child would move the slider to the picture or point to the figure, in which case the experimenter clicked on the image for them. The same image was presented with a new slider, and the children were asked to identify which picture looked the most like what the person *should* look like. The intention of using this scale was to measure bias by calculating a discrepancy value between the actual and ideal weights. Higher discrepancies have been shown to relate to explicit measures of bias in adults (Magness, 2015). This measure was designed to obtain implicit biases in children as opposed to just asking them what they thought about overweight individuals, as in the

AFA. By allowing the children to select actual and ideal weights without attaching labels to them (such as big or small, skinny or fat) I hypothesized that children would both be more likely to understand the task and more likely to provide truthful answers, as opposed to just answering in a way they thought was socially correct. It also provided a way to examine whether biases differed based on the gender and ethnicity of the target.

Parent Weight Bias and Health Habit Measures

Anti Fat Attitudes Questionnaire. The adult version of the AFA (Crandall, 1994) was administered to adults either online or in paper form (see Appendix B). As the questionnaire online put the answer choices in the opposite order than the children's answer choices, the parent data was reverse scored in order to match the children's scale.

Health Habits Survey. Parents completed a health habits survey that asked questions about the health habits of both themselves and their children. The survey was adapted from the Amherst Health and Activity Study (i.e., AHA; Sallis et. al, 2002) and the San Diego Health and Wellness Survey (Sallis et. al, 1989). The survey was comprised mainly of items from the well-established and reliable AHA (Ferreira et. al, 2006). The items on the survey acquired the child's body mass index (i.e., BMI), eating habits, level of physical activity, and the parent's perception and encouragement of the child's physical activity, parent's exercise habits, and parent's enjoyment of exercise. The remaining items were from the San Diego Health and Wellness Survey, a reliable survey (Sallis et al, 1990) that gathered more information on the parent's health habits. This survey attained the parent's BMI, self-perception, and eating habits (i.e, the frequency at which they ate different kinds of food). In the present study I examined parent's answers to a particular question examining the level of physical activity of the parents, which

asked “Compared to others of your age and sex, would you say you are: much less active, somewhat less active, about as active, somewhat more active, (or) much more active?”

This was used to examine parent attitudes toward health and physical activity, with parents possibly answering at the extreme end of the spectrum (i.e., very active relative to peers). I hypothesized that if parents were extremely active, they might discuss weight more in front of their children and therefore indirectly help develop the beliefs of controllability and willpower in their children, contributing to developing biases.

Results

Do children show weight bias? Table 1 depicts descriptive statistics for adult and child measures. With regard to explicit measures on the AFA, a one sample t-test did not suggest children were answering different than the neutral (score of 3) option for the dislike, fear, and willpower subscale of the AFA, $t(8)=-1.37, p=.21$, $t(8)=.40, p=.70$, $t(8)=1.23, p=.25$, respectively. A repeated measures general linear model revealed differences between the different bias subscales on the AFA, $F(2,7)=9.97, p=.01$. Within subject contrasts suggested that children were marginally less biased in the dislike subscale compared to fear, $F(1,8)=3.98, .08$, and willpower $F(1,8)= 2.62, .07$. I also examined how child bias measures related to one another, and found that three relations were marginally significant (see Table 2). More dislike was related to a higher fear of fat, $r(7)=.66, p=.055$, and willpower, $r(7)=.86, p=.003$. And higher bias in willpower was also marginally related to a stronger overweight actual vs. ideal difference, $r(7)=.63, p=.07$. In the Figure Rating Scale, a paired samples t-test revealed that children showed more bias (thinking people should be smaller, based on the difference score) for overweight compared to normal weight, with $t(9)= 3.87, p=.004$ (see Figure 3).

Do children's biases differ based on target ethnicity and gender? For this analysis I examined whether the bias showed toward overweight individuals differed based on gender and ethnicity. A repeated measures general linear model was conducted to examine whether biases differed towards targets of different genders and races. There was no significant difference in children's ratings for girls ($M=30.85$, $SD=22.99$) compared to boys, ($M=29.40$, $SD=30.43$), $F(1,9)=.03$, $p=.87$. Although Caucasian individuals had a lower difference score ($M=26.80$, $SD=23.23$) compared to African Americans ($M=33.45$, $SD=25.14$), the difference was not significant, $F(1,9)=1.21$, $p=.30$ (See Table 3). There was also no interaction between weight and gender, $F(1,9)=.10$, $p=.77$, so the amount of bias shown toward each gender did not vary by ethnicity. There was also no significant difference in children's biases towards normal weight individuals regarding gender $F(1,9)=.58$, $p=.47$, ethnicity $F(1,9)=.05$, $p=.83$, or a gender by ethnicity interaction $F(1,9)=1.11$, $p=.320$. Because there was a small sample size, I did not examine whether the gender and ethnicity of the participant influenced bias.

Do parent attitudes and habits relate to child biases? Although some of our hypothesized relationships between parent and child views trended in the right direction (e.g., parent willpower showed a .36 correlation with child willpower) none of the relationships between parent and child biases were significant, $r's < .60$ and $p's > .15$ (see Table 1).

Discussion

In the present research I examined three questions relating to biases in children, differences in biases toward different genders and ethnicities, and links to parental biases and health habits. I found that children show implicit and explicit biases that may be

stronger in examination of willpower. There was no evidence that biases were different toward different genders and ethnicities. No evidence was found for links to parental biases and health habits. Based on these results, children do show weight biases, but it is important for more research to be done to better understand why these biases develop.

Results from the AFA did not suggest that young children endorsed scores higher than “neutral” on explicit subscales. This was not completely in line with Crandall’s (1994) original adult scores, as adults showed significantly higher than “neutral” on both fear and willpower. Although children’s scores in [the present](#) study were not as high as Crandall’s adult scores, they did [replicate the finding of higher](#) scores for fear and willpower [compared to](#) dislike. This could indicate that children’s biases simply have not developed as fully as their parents yet, but further develop later in life. Children might have been less biased in dislike than in fear and willpower because they were answering in accordance with social desirability. Fear of fat (e.g., not wanting to gain weight) and willpower (e.g., thinking overweight people could lose weight through effort) are more socially acceptable than thinking negative things about overweight individuals directly (e.g., I don’t like fat people). This is possible, as there is evidence that social desirability is present in children in regard to self-reported health attitudes (Klesges et. al, 2004).

I also found evidence for biases in young children in the Figure Rating Scale. In this measure, children were asked to identify an image’s actual weight on a sliding scale, and then asked to identify what they thought the same image’s weight should be. Higher discrepancy scores were thought to reflect bias because the children were claiming that the image should be much smaller than it actually was. Further, larger discrepancy scores have been linked to more explicit bias (e.g., correlations with the AFA) in adults

(Magness, 2015). [These early differences in the figure rating scale are](#) consistent with the literature that indicates weight biases are present as young as age three on more implicit measures (Cramer & Steinwert, 1998; Lowes & Tiggeman, 2003; Spiel, Paxton, & Yager, 2012). Biases may have been more prevalent in this task than the AFA, as children might be better able to understand tasks like the Figure Rating Scale and trait attribution than more complex tasks like the AFA. Social desirability may have been less present in such tasks as well.

I also found correlations between several of my measures of bias, suggesting that children were likely not answering in a haphazard fashion but showing relations between related concepts. For example, higher bias in willpower was linked to higher biases on the Figure Rating Scale. This could indicate that children are internalizing the belief that weight is a controllable factor, in line with Spiel [et al.](#) (2012). If children think overweight individuals could lose weight through diet and exercise, they might think individuals who are overweight are lazy for not doing so. This line of thinking could be the cause of the children indicating biases on the Figure Rating Scale by saying the larger individuals should be smaller than they actually are. The idea that children are endorsing the belief that weight is a controllable factor also explains the correlation I found between dislike and willpower. If children are thinking that weight can be controlled, thinking negatively of people who do not control it seems plausible. Another correlation was between dislike and fear of fat. This is interesting, as Crandall (1994) did not find dislike and fear to be correlated in his research with adults. This could be because parents are using labels in front of their children to model fear of fat (i.e., “fat is bad”) but children

are associating the labels with people (i.e., “fat people are bad) and therefore developing a dislike bias, in line with Davison and Birch’s (2004) research.

I did not find evidence that biases were different based on the target’s gender or ethnicity. This was somewhat surprising, as in adults Caucasian females tend to receive more bias (Klaczynski, Daniel, & Keller, 2009, Magness, 2015). However, research findings in children with regard to gender and ethnicity have been inconsistent, so the lack of difference in this study was not unheard of. Had I had a larger sample size, difference might have occurred, or it is possible that children simply are not showing more or less biases toward different genders and ethnicities at young ages. I also could not fully consider whether the gender and ethnicity of the raters influenced biases, as I did not have a large and diverse enough sample.

No relation was found between parent attitudes and habits and child biases, which was theoretically surprising when considering the social learning theory and that parents are such prominent models in children’s lives. This was most likely due to the small sample size acquired, and relations might have been found in a larger sample. Due to the lack of diversity in the sample, there were not enough fathers present to look at the Parent Identification Questionnaire. With a larger sample size, I expect children’s biases would have been more strongly related to the parent that they identified with more, as they would be looking more to that parent as a role model.

In conclusion, school age children seem to show biases against overweight children. While it is unclear whether these biases vary by gender or ethnicity, or are influenced by their parents’ biases, the matter still remains that children are developing these harmful biases at very young ages. There were several limitations to this study, with

the larger limitation being the small sample size. I did see implicit weight biases in the children, but did not find differences based on gender or ethnicity. With a larger sample size, I believe more differences might have been seen in regard to [gender and ethnicity](#), but the research findings with young children on these [topics](#) have been [inconsistent](#).

Parent feedback was also limited, but with a larger sample I believe a stronger relationship between parental and child biases would have been seen, especially since parents are such critical models to their young children. Further research should continue to investigate if, and if so how, parents contribute to these biases, or if they are more learned through other factors such as media exposure, peers, etc. Only by further exploring ways in which children learn these biases can progress be made in correcting and preventing them.

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Table 1
Descriptive Statistics for Child Measures

	<i>M (SD)</i>	Range	<i>n</i>
Age	6.75 (1.56)	4.38 – 8.80	10
Overweight (Actual-Ideal)	30.13 (23.01)	1-60.25	10
Normal Weight (Actual vs. Ideal)	1.1 (7.85)	-10-15.25	10
AFA Dislike	2.48 (1.15)	1-5	9
AFA Fear of Fat	3.19 (1.38)	1-5	9
AFA Willpower	3.37 (.90)	2-5	9

Descriptive Statistics, Adult Measures

	<i>M (SD)</i>	Range	<i>n</i>
AFA RS Adult Dislike	2.00 (.72)	1.14-3.00	7
AFA RS Adult Fear of Fat	5.81 (1.27)	4.33-7.67	7
AFA RS Adult Willpower	5.05 (.87)	4.00-6.33	7
Level of Physical Activity	3.57 (1.27)	2.00-5.00	7

Note: AFA=Antifat Attitudes Questionnaire, RS=Reverse Score

Table 2

<i>Correlations Among Study Variables</i>									
	1	2	3	4	5	6	7	8	9
1. Age (in years)	1.00								
2. Child AFA Dislike	-.03	1.00							
3. Child AFA Fear	-.38	.66*	1.00						
4. Child AFA Willpower	.06	.86+	.53	1.00					
5. Child FR Diff (overweight)	.15	.32	.15	.63	1.00				
6. Child FR Diff (normal weight)	-.14	-.90	-.14	.03	.08	1.00			
7. Parent Physical Activity	.43	-.32	.25	.00	.05	-.49	1.00		
8. Parent AFA Dislike	.60	-.05	-.01	-.12	.11	-.77*	.49	1.00	
9. Parent AFA Fear	.32	-.05	-.39	.08	.18	-.33	-.33	.44	1.00
10. Parent AFA Willpower	.15	-.26	-.22	.36	.42	.64	.32	-.44	-.64

Note: AFA= Antifat Attitudes Questionnaire, FR= Figure Rating Scale

* $p < .05$, + $p < .10$

Table 3
Figure Rating Scale by Gender and Ethnicity

	<i>M (SD)</i>	Range	<i>n</i>
<i>By Gender</i>			
Overweight (Actual-Ideal) Girls	30.85 (22.99)	0 to 58.5	10
Overweight (Actual-Ideal) Boys	29.4 (30.43)	-7 to 80	10
Normal weight (Actual-Ideal) Girls	7.3 (24.74)	-45 to 45	10
Normal weight (Actual-Ideal) Boys	-5.1 (29.04)	-54 to 51.5	10
<i>By Ethnicity</i>			
Overweight (Actual-Ideal) C	26.8 (23.23)	0 to 56.5	10
Overweight (Actual-Ideal) AA	33.45 (25.14)	1 to 67.5	10
Normal (Actual-Ideal) C	.15 (14.35)	-27.50 to 23.50	10
Normal (Actual-Ideal) AA	2.05 (16.43)	-28.00 to 34.00	10
<i>By Gender and Ethnicity</i>			
Overweight Cboys	24.30 (40.22)	-35 to 67	10
Overweight Cgirls	28 (24.67)	-12 to 55	10
Overweight AABoys	34.50 (34.66)	-27 to 94	10
Overweight AAGirls	33.70 (23.26)	0 to 65	10
Normal Weight C Boys	-10.8 (29.86)	-84 to 17	10
Normal Weight C Girls	11.10 (41.25)	-72 to 90	10
Normal Weight AA Boys	.60 (40.67)	-83 to 86	10
Normal Weight AA Girls	3.50 (13.60)	-18 to 27	10

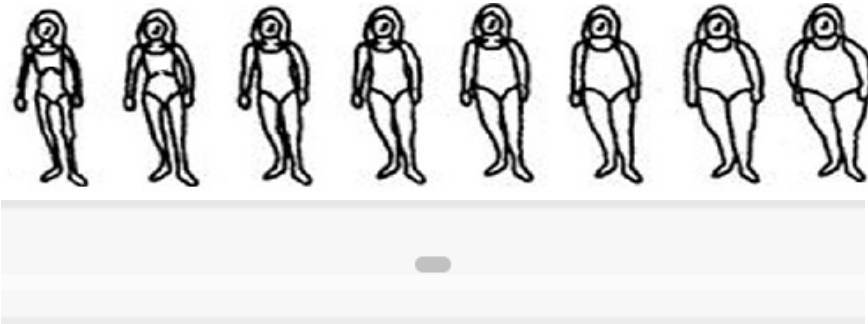
Note: C=Caucasian AA=African American



Figure 1. Images used in the figure rating scale.



Move the slider to the picture that shows what you think this girl looks like.



Move the slider to the picture that shows what you think this girl *should* look like.

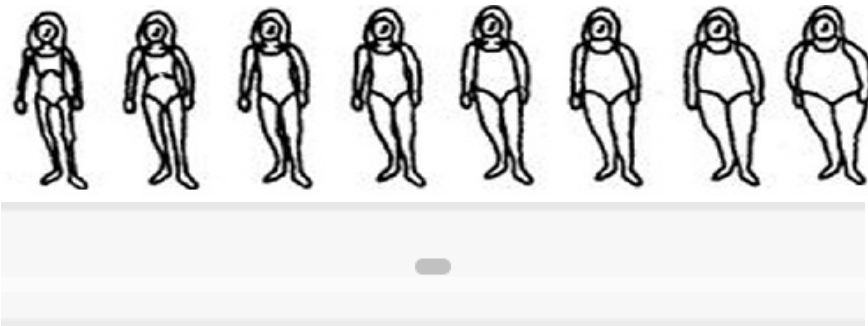


Figure 2. Depiction of the Figure Rating Scale for a female Caucasian Target.

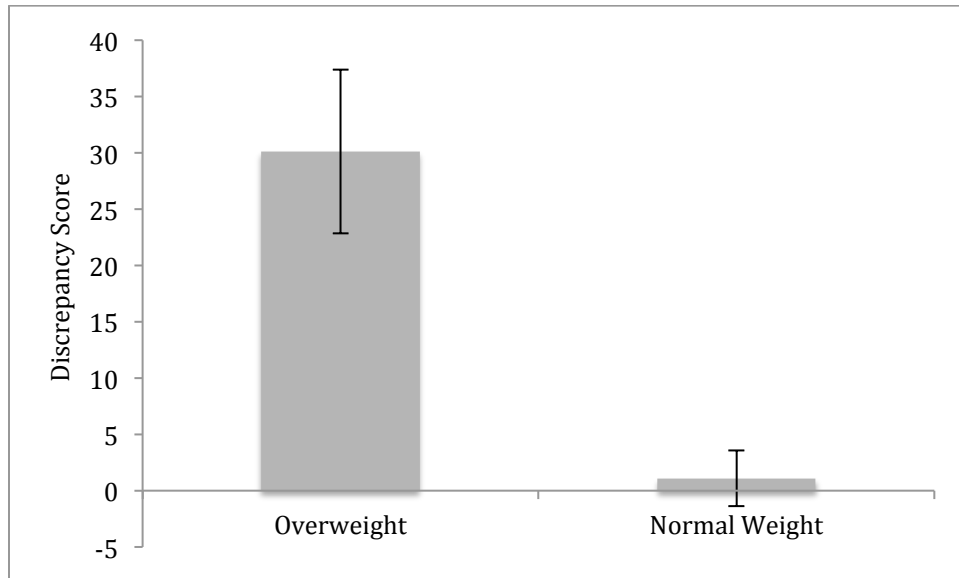
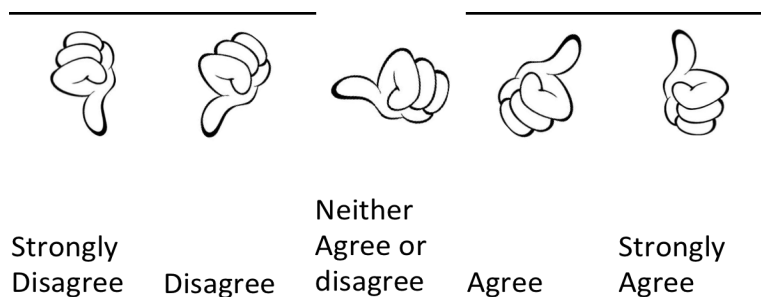


Figure 3. Children show higher biases (more discrepancies between actual and ideal weight) for overweight figures vs. normal weight figures.

Appendix A: Antifat Attitudes Questionnaire (for children)

The AFA is scored using a Likert-type response format (0 = very strongly disagree; 9 = very strongly agree). It is scored the same as the adult AFA, with higher scores indicating stronger anti-fat attitudes. The original grade level was a 4.9 and the current grade level is a 3.5.

1. I really don't like fat people much.
2. I don't have many fat friends.
3. Sometimes I think fat people can't be trusted.
4. I think most normal weight people are smarter than fat people.
5. I have a hard time taking fat people seriously.
6. Fat people make me kind of uncomfortable.
7. If I had to pick someone to play with, I would not pick a fat person.
8. I feel gross when I gain weight.
9. One of the worst things that could happen would be if I gained a lot of weight.
10. I worry about becoming fat.
11. People who weigh too much could lose weight through a little exercise.
12. Some people are fat because they can't control themselves.
13. When people are fat it is their own fault.



Scale used for child AFA.

Appendix B: Antifat Attitudes Questionnaire (for Adults)

The Antifat Attitudes Questionnaire (AFA) is scored using a Likert-scale response format (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The scale is broken into the three factors of *dislike* (items 1-7), *fear of fat* (items 8-10), and *willpower* (items 11-13). The items for each factor are summed and divided by the number of items of each factor, leaving three scales from 0 to 9. To match the children's scale, adult scores were reverse scored.

1. I really don't like fat people much.
2. I don't have many friends that are fat.
3. I tend to think that people who are overweight are a little untrustworthy.
4. Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.
5. I have a hard time taking fat people too seriously.
6. Fat people make me feel somewhat uncomfortable.
7. If I were an employer looking to hire, I might avoid hiring a fat person.
8. I feel disgusted with myself when I gain weight.
9. One of the worst things that could happen to me would be if I gained 25 pounds.
10. I worry about becoming fat.
11. People who weigh too much could lose at least some part of their weight through a little exercise. Some people are fat because they have no willpower.
12. Some people are fat because they have no willpower.
13. Fat people tend to be fat pretty much through their own fault.