PETERSON, JAMIE LEE, M.A. Weight Stereotyping in Young Children: An Early Personality Reasoning Perspective in 3- to 6-year-olds. (2010).
Directed by Dr. Janet J. Boseovski. 61 pp.

Weight stereotyping is the relative devaluation of an overweight body size (Sigelman, Miller, & Whitworth, 1986), which has been detected as early as 3 years of age (Cramer & Steinwert, 1998). Previous studies of weight stereotypes have not been informed by what we know about children's social reasoning processes (i.e., positivity and negativity biases), essentialist beliefs about weight (i.e., contagiousness, biological origins, stability, and changeability) or concurrently developing cognitive and social abilities (i.e., cognitive flexibility, theory of mind, and working memory). The current study examined weight stereotypes in 80 3- to 6-year-old children using a story-distracter-recall paradigm. Results indicate that with age, children are more accurate in labeling positive traits. Essentialist weight reasoning was not consistent across domains, but generally increased with age (from 6.15 to 8.7 on a 14-point scale). Cognitive abilities were related to weight essentialism; notably, increases in cognitive flexibility and working memory were associated with decreases in weight stability beliefs for older children. Implications for the role of weight stereotypes in behaviors (i.e., discrimination) and the formation of stereotype interventions are discussed.

WEIGHT STEREOTYPING IN YOUNG CHILDREN:

AN EARLY PERSONALITY REASONING

PERSPECTIVE IN 3- TO 6-YEAR-OLDS

by

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A Thesis Submitted to
The Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Greensboro
2010

Approved by

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APPROVAL PAGE

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I

INTRODUCTION

According to Allport (1954), a stereotype is "an exaggerated belief associated with a category. Its function is to justify (rationalize) our conduct in relation to that category" (p. 191). Stereotypes can be associated with any person or group attribute including gender, physical appearance, race, and ethnicity (Bigler & Liben, 2007). There has been considerable research on children's stereotypes about gender (Banse, Gawronski, Rebetez, Gutt, & Morton, 2010; Signorella, Bigler, & Liben, 1993; Trautner et al., 2005), physical handicaps (Richardson, 1970; Richardson, Goodman, Hastorf, & Dornbusch, 1961; Sigelman et al., 1986), physical attractiveness (Griffin & Langlois, 2006; Langlois & Stephan, 1977; Langlois et al., 2000), race and ethnicity (Aboud, 1988; Augoustinos & Rosewarne, 2001; Chiesi & Primi, 2007; Sigelman & Singelton, 1986), yet less is known about children's weight-based stereotypes.

The personality reasoning literature suggests that children's early categorical perceptions of others' personalities may contribute to the formation and development of stereotypes, including stereotypes of social categories (e.g., weight). This thesis will begin with a review of literature on stereotyping and personality attribution, followed by a discussion of their implications for how children may engage in weight stereotyping. A

study was conducted that examined children's processing of personality information (i.e., agreeability) in relation to weight information (i.e., average weight or overweight). Results will be presented, as well as a discussion of their implications for childhood weight stereotyping and discrimination.

Weight stereotyping is the relative devaluation of an overweight body size (Sigelman et al., 1986), or the belief that overweight people are different from others in terms of personality or behavior (Cramer & Steinwert, 1998; Klaczynski, Daniel, & Keller, 2009). Crandall (1994) asserts that the obese are more negatively stigmatized than any other social group or category. Further, recent research indicates that the number of overweight and obese children in the United States has almost tripled in the last 30 years (CDC, 2004) and weight stereotyping has strengthened over the last 40 years (Latner & Stunkard, 2003). Given its general negative perception, increasing prevalence, and links to stereotyping, weight should be studied as it relates to children's conceptions of others.

Children as young as 3 years of age have exhibited weight stereotyping by labeling overweight children as mean and undesirable as playmates (Cramer & Steinwert, 1998). Some investigations have found a stigma present throughout childhood, but with a gradual decline in preadolescence (Powlishta, Serbin, Doyle, & White, 1994; Stager & Burke, 1982); however, other investigations have found increases with age into preadolescence (Brylinsky & Moore, 1994; Richardson, 1970). Practically, it is important to study early weight stereotyping as insights into the processes involved may have implications for creating intervention programs that could reduce or prevent

continued obesity after childhood (Brownell, Schwartz, Puhl, Henderson, & Harris, 2009). These programs may help to counteract the potential negative influences of being young and overweight on psychological, emotional, and social development (McClanahan, Huff, & Omar, 2008) by altering the control attributions (i.e., blaming the person) that those who stereotype associate with being overweight (Anesbury & Tiggeman, 2000; Bell & Morgan, 2000; Crandall, 1994; Musher-Eizenman, Holub, Barnhart, Miller, Goldstein, & Edwards-Leeper, 2004; Puhl & Latner, 2007; Sigelman & Begley, 1987; Tiggemann & Anesbury, 2000).

Theoretically, little is known about the mechanisms that drive stereotyping and weight reasoning in early childhood, namely, the extent to which children may overgeneralize appearance-based or personality-based traits across domains (e.g., what influence knowledge of a target's appearance may have on a person's recall of the target's personality or vice versa). Given that stereotypes about weight are most often negative and tied to personality factors, understanding how children reason about others when provided with both weight and personality information will aid the process of understanding stereotyping by determining which domain (i.e., appearance or personality) is more salient to children when reasoning about others.

Stereotype Development

Categorization, the act of labeling or organizing others into groups, is thought to be a precursor to stereotyping (Bigler & Liben, 2007). Children can categorize other people into groups quite early, although it depends on the category in question (Macrae,

Stangor, & Hewstone, 1996). Gender appears to be a primary dimension for categorization, with children as young as 7 months able to differentiate between male and female voices (Miller, 1983). Preschoolers are also able to classify others by ethnicity (Aboud, 1988), body type (Lerner, 1973), and age (Edwards, 1984). By middle childhood, children appear to categorize by salient factors also attaching meaningful beliefs (i.e., stereotypes), affect (i.e., prejudice), and behaviors (i.e., discrimination) to these categories similarly to adults (Bigler & Liben, 2007). Although patterns of stereotyping appear to be similar in preschoolers and elementary-aged youth, younger children are often more rigid in their beliefs (Penny & Haddock, 2007a), while older children exhibit more flexible thinking (Banse et al., 2010; Powlishta et al., 1994; Trautner et al., 2005) and social desirability (Augoustinos & Rosewarne, 2001), which may reduce the prevalence of explicit stereotyping.

Although weight stereotypes have not been widely studied in young children, relevant information from other domains of stereotyping provides a context for general stereotype development during this period. In terms of children's knowledge of stereotypes, there is a progression such that stereotypes are apparent by preschool, at ceiling during elementary school, and then may become seemingly more flexible into early adolescence.

By 3 years of age, children display knowledge of gender stereotypes by organizing photos by gender, identifying their own gender, and using same-sex gender labels to guide their behavior (Thompson, 1975). By 4 years of age, children exhibit

physical handicap stereotypes manifested as negative beliefs and expectations associated with those who deviate from the norm such as a person in a wheel chair or with a facial deformity (Sigelman et al., 1986). Also at 4 years of age, children display ethnic or racial stereotypes as predisposed reactions toward others based on their ethnic or racial membership (Aboud, 1988; 2003). Finally, at 5 years of age, children display physical attractiveness stereotypes manifested as negative beliefs and expectations associated with unattractive people (Griffin & Langlois, 2006; Langlois et al., 2000).

During the elementary years (i.e., 5 to 8 years of age), gender stereotype knowledge reaches a ceiling (Banse et al., 2010; Signorella et al., 1993; Trautner et al., 2005), and negativity towards physical handicaps strengthens (Richardson, 1970; Sigelman et al., 1986). Physical attractiveness stereotypes (Langlois & Stephan, 1977) and ethnic stereotypes (Aboud, 2003) also become more consistent during this period. Stereotypes then become more flexible with gender (Banse et al., 2010; Trautner et al., 2005) ethnic (Augoustinos & Rosewarne, 2001; Powlishta et al., 1994), and physical handicap (Richardson et al., 1961) stereotype flexibility increasing until about 9 to 11 years of age. However, physical handicap flexibility may vary by domain (i.e., physical or cosmetic handicap, see Richardson, 1970; Sigelman et al., 1986), while gender (Powlishta et al., 1994) and physical handicap stereotypes show different patterns depending on the gender of the participant (Richardson, 1970; Sigelman et al., 1986).

In sum, young children have stereotype knowledge as early as age 3, with gender stereotypes appearing the earliest and physical attractiveness stereotypes appearing the

latest in development. Children exhibit rigid beliefs associated with social categories until reaching a plateau in stereotype knowledge around 6 years of age; however, between about 7 and 11 years of age, children exhibit increasing flexibility and social desirability regarding their social stereotypes. Although the developmental trends for general stereotyping seem to follow a similar pattern, bias in one domain (e.g., gender) is not necessarily predictive of bias in another domain (e.g., ethnicity; Powlishta et al., 1994).

Weight Stereotypes

Physical appearance functions as a salient, visible dimension that influences children's categorizations and impressions of others (Langlois & Stephan, 1977), and weight is a component of physical appearance. Weight stereotypes can manifest as negative perceptions of overweight individuals, positive perceptions of average weight or thin individuals, or both (Cramer & Steinwert, 1998). Cross-sectional research indicates that weight stereotypes are present from 3 years of age (Cramer & Steinwert, 1998; Margulies, Floyd, & Hojnoski, 2008), and have been documented during childhood (Hill & Silver, 1995; Tiggemann & Anesbury, 2000; Tillman, Kehle, Bray, Chafouleas, & Grigerick, 2007), preadolescence (Latner, Simmonds, Rosewall, & Stunkard, 2007; Powlishta et al., 1994), adolescence (Puhl & Latner, 2007), and adulthood (Hilbert, Rief, & Braehler, 2008; Klaczynski et al., 2004). Weight stereotypes have been displayed by youth of Caucasian, African American, Hispanic, and Greek ethnicities (Greenleaf, Chambliss, Rhea, Morrow, & Martin, 2006; Koroni, Garagouni-Areou, Roussi-Vergou,

Zafiropoulou, & Piperkakis, 2009; Margulies et al., 2008), against Caucasian, Hispanic, African American, and Greek targets (Klaczynski et al., 2009; Koroni, et al., 2009; Margulies et al., 2008) and by people of all weights and body types (Counts, Jones, Frame, & Jarvie, 1986; Cramer & Steinwert, 1998; Holub, 2008). Weight stereotypes have been documented across domains in peer interactions, education, and family settings (see Puhl & Latner, 2007, for a review).

There has not been extensive research on weight stereotypes during early childhood (i.e., between 3 and 6 years of age). However, Richardson (1970) tested 5- to 12-year-olds with a ranking procedure using targets that differed by one characteristic (e.g., no physical handicap, in a wheelchair, with a leg brace, missing a hand, with a facial disfigurement, or overweight), and found that on average, the overweight target was least liked across all ages. Similarly, on a task that required children to use a selection of targets (e.g., no obvious disfigurement, the opposite sex, wearing glasses, in a wheelchair, facially disfigured, and overweight) to answer an open-ended task ("…Tell me all about this kid."), free choice task ("…Which ones are nice- do nice things/bad- do bad things?"), and forced-choice task ("…Point to the one you like best."), Sigelman et al. (1986) found that 4- to 8-year-olds' positivity towards overweight targets decreased and negativity towards overweight targets increased with age.

Musher-Eizenman et al. (2004) presented 4- to 6-year-old Caucasian children with three tasks to compare underweight, average, and overweight groups. Children assigned six pairs of adjectives to a figure from each weight group. Then, children were

presented with 18 figures (three of each weight group and each gender) and picked three that they would most like to play with and one as a best friend. Finally, children were asked about their controllability beliefs associated with the overweight group (e.g., food, fault, exercise, and change). Adjective ratings for overweight figures were significantly lower than those for both average weight and thin figures. Participants selected the overweight figures as friends and best friends significantly less than the thin or average weight figures. Participants attributed a low to moderate amount of control to the overweight figure. Control attributions were significantly correlated with the adjective ratings for the overweight characters, but not with friendship choices.

In a similar study, Margulies et al., (2008) tested 3- to 5-year-old African American children at Head Start to compare underweight, average weight, and overweight groups using adjective attribution, friendship selection, and attribution of control tasks. Mean adjective ratings for the overweight figures were significantly lower than ratings of underweight, but not average weight figures. Participants preferred average weight figures first for all activities and friendship questions. Greater control was attributed to the overweight than the underweight figure, and controllability scores were negatively correlated with adjective ratings for overweight, but not underweight figures.

Cramer and Steinwert (1998) examined 3- to 5-year-old's perceptions of overweight individuals. Children were presented with oral scenarios that depicted a nice and a mean character (e.g., "Jenny complimented Susan's sand castle, but Susan called

Jenny's castle ugly, and with that she kicked it over."). Children were asked, "Which one of these two girls is (name of character), the nice/mean one who (action)?" They responded by pointing to a character from a selection of three drawings (thin, average, and overweight). Overweight targets were chosen as mean more often than thin or average targets, whereas thin and average targets were chosen as nice more frequently than the overweight targets. Although participants of all ages responded in this manner, it was not until 4 years of age that children verbalized that body size was the basis for their responses. Stereotypes against overweight targets were evident across body types, but overweight children displayed stronger negativity toward the overweight targets than average weight or thin children.

Another study by Penny and Haddock (2007a) assessed 5- to 10-year-old children's perceptions of overweight individuals. They presented participants with 12 scenarios that depicted a character who exhibited high or low levels of intelligence, social ability, artistic ability, and athleticism (e.g., "Geoff and Ed play tennis. Geoff is really good and wins all his games, but Ed does not win any games."). Then, participants chose a target among four identical pairs of characters (one of the pair was average, one was overweight) that looked most like each character from the story. Of the several interactions that were found, the most relevant to the current study was in the social domain. For 5- to 8-year-olds, scores for high and low social ability were significantly different such that participants were less likely to associate overweight children with high social ability. In contrast, scores for high and low social ability were also significantly

different for 9- to 10-year-olds, but in the opposite direction, such that participants were more likely to associate overweight children with high social ability.

Limitations of Previous Research

The previous research on weight stereotyping has been limited, as it has not been motivated by what we know about how young children reason about the characteristics of others early in life. Generally, the literature has focused solely on the negative stigma associated with being overweight. This is informative because it provides information about children's associations of 'bad' with overweight. However, studies were unable to test for a positivity bias, a profile of personality attribution that may guide children's reasoning about others (Boseovski, in press; Boseovski & Lee 2006; 2008; Boseovski, et al., 2009; Heyman, et al., 2003; Lockhart, et al., 2002). Previous studies utilized guided follow-up questions that required one target to be chosen as mean or of low ability, and one target to be chosen as nice or of high ability (e.g., Cramer & Steinwert, 1998; Penny & Haddock, 2007a) or one target to be chosen as most liked or a best friend (e.g., Richardson, 1970; Margulies et al., 2008; Musher-Eizenman et al., 2004). Thus, children were prevented from responding that all targets possessed these qualities. Additionally, these studies were unable to determine whether personality or appearance was more salient for children's social perceptions because they only provided participants with either trait or weight information while eliciting inferences in the other domain.

Second, it is unclear if previous studies elicited traits (i.e., stable, internal qualities that enable people to summarize, justify, and predict other's actions; Yuill, 1993) or

labels (i.e., situational descriptors of a person in a particular moment) in children's responses. This lack of distinction between labels and traits in previous studies makes it unclear if participants think the targets are mean for the moment (i.e., a label), or mean people in general (i.e., a trait attribution). Since children's conceptions of targets have only been examined at a single point in time (e.g., Cramer & Steinwert, 1998; Margulies et al., 2008; Penny & Haddock, 2007a; 2007b; Powlishta et al., 1994; Richardson, 1970; Sigelman et al., 1986), it remains unclear if children believe targets may exhibit traits strictly in the given situation, or if this trait is a more enduring quality of the person. Children use this information for trait and behavior predictions (e.g., "Will this person be mean again in the future?" and "Should I befriend this person?").

Third, previous studies presented participants with extreme scenarios about targets that were all positive or all negative (e.g., Cramer & Steinwert, 1998; Penny & Haddock, 2007a). Given that young children are easily primed by valence (e.g., Heyman & Giles, 2004), these scenarios may have primed participants to think in a more evaluative manner than they would have without the biased information. Thus, when presented with information about a target that was entirely the same valence, children may have thought or responded more categorically than they may have in a more realistic setting.

Finally, previous studies required children to project their ideas about appearance and personality from oral scenarios onto visual images (e.g., Cramer & Steinwert, 1998; Margulies et al., 2008; Penny & Haddock, 2007a; 2007b; Powlishta et al., 1994). This

procedure required substantial inferential leaps and may have seemed unrealistic to participants as they were typically presented with several identical characters differing only by weight (which may also have encouraged cross-weight stigmatization; see Penny & Haddock, 2007b).

Current Study

It is critically important to establish how children reason about others when provided with both weight and trait information together given that most weight stereotypes involve traits, and children often have both types of information about others when making social judgments in the real world. Evidence across the literature provides mixed results regarding appearance and personality, specifically, which is more salient to children when forming impressions of others (Diesendruck & haLevi, 2006; Gelman & Markman, 1986; Griffin & Langlois, 2006; Heyman, & Gelman, 2000; Latner & Stunkard, 2004). Children as young as 3 years use trait similarities to make inductive inferences when pitted against superficial appearance similarities (Gelman & Markman, 1986; Heyman & Gelman, 2000), yet children will also make personality attributions based solely on appearance cues (e.g., weight) as early as 3 years (Cramer & Steinwert, 1998).

The current study assessed which of these domains, appearance or personality, are more salient in the processing of weight and agreeability information in 3- to 6-year-old children. Participants were presented with scenarios about overweight and average weight characters that also described the character's personality (e.g., nice or mean), and

then asked to recall the information. Agreeableness was selected for the current study because social behavior is stressed in school settings (Stipek & Daniels, 1990) and this dimension is primary for children's trait reasoning about others (Heyman et al., 2003). The scenario format used was inspired by Heyman et al. (2003), which examined children's reasoning about ability and outcomes. Behavior descriptions were chosen from numerical rankings provided by Levy and Dweck (1999) to ensure the 'good' and 'bad' examples of each trait are similar in degree. Participants were presented with scenarios that included multiple pieces of target information (e.g., name, weight, age, filler information, agreeability, example of agreeability, shirt color) to increase the task's cognitive load and induce the participant's use of weight- or trait-related schemas (Stangor & McMillan, 1992). Specifically, the higher the cognitive load, or mental demands of the task, the less accurate the child's recall of the information should have been. Therefore, participants were expected to revert to their ideas, or general mental representations of the characters, to answer questions when they could not remember provided information.

Three types of questions were asked for the study's dependent measures. Objective questions assessed participants' recall of targets' agreeability and weight information in the main task. Predictive and essentialist questions were asked in the essentialism task. Predictive questions assessed participants' conceptions of agreeability over time (i.e., in the past and in the future). Essentialist questions assessed participants' inferences of meaningful information by treating weight as a natural kind or category (see

Gelman, Heyman, & Legare, 2007). Children's conceptions of weight were examined across several essentialist domains including contagiousness (i.e., the notion that persons or objects that come into contact with each other have non-visible, transferrable essences; Gelman, 2003), biological origins (i.e., beliefs about the genetic origins of weight), stability (i.e., beliefs about weight over time), and changeability (i.e., that weight can be altered). Essentialist beliefs have been proposed to contribute to stereotyping (Gelman, 2003). Specifically for body weight, increased beliefs that overweight people may be more contagious, biologically different, permanently fixed, and unalterable may manifest as negative stereotypes of overweight people.

Essentialist beliefs have been detected as young as 2 years of age (Gelman, 2003), yet these beliefs may not be coherent across dimensions (e.g., brain, blood, change) until about 9 years of age (Gelman et al., 2007). However, Gelman et al. did not examine weight and found that the youngest participants in their sample (7-year-olds) displayed the most essentialist reasoning. Thus, body weight should be examined as an essentialized social category in preschool and early elementary aged children.

The current study addressed previously mentioned limitations by using prediction questions to assess the extent of the child's attribution of the target over time to distinguish traits from labels. Second, participants were provided with both matched (i.e., all positive or all negative) and mixed (i.e., both positive and negative) valence scenarios to avoid priming overly evaluative reasoning. Third, the current study presented children with objective information in order to compare the amount (i.e.,

weight, trait, or both types of information) and direction (i.e., more positive or more negative) that children may distort the provided information to fit with their ideas about appearance and personality. Using this method, the current study was designed to determine which domain is more salient in children's social reasoning, or if children's reasoning is guided by a general positivity bias. Fourth, by assessing children's essences associated with weight across several domains, the current study determined the degree to which various essentialist beliefs were associated with weight, coherent across domains, and potentially related to recall of weight and trait information from target scenarios.

Finally, no single study has previously examined the period between 3 and 6 years of age that encompasses rapid changes in the domains of cognitive flexibility (Zelazo, Frye, & Rapus, 1996), simple working memory (Carlson, Moses, & Breton, 2002; Davis & Pratt, 1995; Kaufman & Kaufman, 1983), and theory of mind (Taylor, 1988). Thus, the current study examined this period by including measures of these domains to assess how other cognitive processes may contribute to weight stereotyping and personality reasoning, and how these cognitive and social abilities may be related to essentialist beliefs about weight.

Cognitive flexibility was examined because it requires the ability to see an object in multiple ways (e.g., a red bunny card can be categorized by color as red or by shape as a bunny; Zelazo et al., 1996). Thus, it may be relevant to understanding that although other people may be grouped into the same weight category and share salient properties, they may also be seen in different ways as members of other categories. For example,

someone with cognitive flexibility can recognize that just because Bryan is overweight now, he may not have always been overweight, and could potentially become a member of another weight group (i.e., thin or average weight) in the future. Cognitive flexibility was tested using the Dimensional Change Card Sort (DCCS) task (Zelazo et al., 1996).

Working memory was examined because it is a system that allows one to temporarily hold information in mind while also processing that information (Baddeley, 1986). Thus, this may be relevant to keeping provided weight or trait information in mind while forming impressions of the targets. For example, someone with working memory can remember that although Bryan is overweight (which is construed as negative), he also has other relevant social qualities (i.e., he is nice). Simple working memory was tested using the auditory Backwards Digit Span (BDS) task (Carlson et al., 2002) and the K-ABC Forward Digit Span (K-ABC) task Kaufman & Kaufman, 1983).

Theory of mind was examined because it is the ability to attribute mental states (e.g., beliefs, intents, desires, pretending, knowledge) to oneself and others, and to understand that others have beliefs, desires, and intentions that could differ from one's own (Premack & Woodruff, 1978). Thus, this may be relevant to understanding and predicting the behaviors of others. For example, a person with theory of mind can use the actions of others to infer traits and estimate future behavior (i.e., Bryan shared his crayons with his classmates; thus, he may be nice and likely to do other nice things in the future). Theory of Mind was tested using the Conceptual Perspective Taking (TOM) task (Taylor, 1988).

Given the aforementioned modifications and additions, several hypotheses were made. It was predicted that overall, children's recall of target scenario information would increase with age, however, children's incorrect responses could be examined for biases for trait or weight information. It was predicted that when given both appearance and personality information, personality would be more salient to children, and this salience would increase with age. Alternatively, it is possible that positivity may trump both weight and trait information. For essentialism, it was predicted that essentialist beliefs about weight would increase and become more coherent across domains with age. For cognitive and social measures, performance was expected to improve with age, contribute to performance on the main task (i.e., increases in recall), and relate to decreases in weight stereotypes (i.e., decreases in weight essentialism).

CHAPTER II

METHOD

Participants

A total of 81 children were tested. There was one participant whose data were unusable due to an incomplete testing session. Thus, data from 80 participants were included in the final analyses (52.5% female). There were 20 participants at each of the following ages: 3 years (M = 41.75, SD = 3.88; 11 females), 4 years (M = 53.65, SD = 2.72; 10 females), 5 years (M = 66.6, SD = 3.87; 12 females), and 6 years (M = 76, SD = 6.94; 9 females). The ethnic make-up of the sample included approximately 41% Caucasian, 36% African American, 10% Mixed, 3% Asian, and 1% Hispanic children (9% did not respond). The economic make-up of the sample included annual household incomes of approximately 35% with $60,000 or above, 10% between $40,000 and $60,000, 12.5% between $20,000 and $40,000%, and 5% under $20,000 (37.5% did not respond). Participants were recruited from local child-care centers or preschools, and from a database of children from Greensboro, North Carolina. Testing took place at the participants' child-care center or a University lab.

Design

The between-subjects variable was participant age. The within-subjects variables included the weight of the target character (chubby or thin) and agreeability of the character (nice or mean). Weight and agreeability were crossed to create four scenarios:

thin/nice, thin/mean, chubby/nice, and chubby/mean. Tasks were presented in a fixed order: weight-training silhouettes, DCCS, target scenarios, essentialism, BDS, TOM, and K-ABC. There was one exception to this order such that BDS was used during the 1 min delay between scenario presentation and follow-up questions for 5- to 6-year-olds in the target scenario task, instead of between the essentialism and TOM as for the 3- to 4-year-olds.

Procedure

Participants were tested individually in the university lab or in a quiet room of the participants' child-care or preschool facility. All characters were gender consistent with the child because maximum identification with the character was desired (see Heyman & Dweck, 1998). The testing session ranged from 20 to 30 min. Participants' answers were recorded on score sheets by the experimenter and recorded via videotape when given parental video consent.

Weight-Training Silhouettes. This task was conducted to ensure that participants understood 'chubby' and 'thin', the primary weight terms used in this project. First, participants were presented with pictures of two silhouettes that were accompanied by short descriptions ("This is a thin boy/girl. He/she is not skinny or chubby. He/she is in-between. He/she is thin." and "This is a chubby boy/girl. He/she weighs a lot. He/she is heavier than skinny and thin kids. He/she is chubby."). The thin silhouette was presented first because the chubby scenario used 'thin kids' as a reference point in its description such that chubby kids are "heavier than the thin and skinny kids".

Then, knowledge questions were asked ("Can you point to chubby?", and "Can you point to thin?") in a random order. If participants responded incorrectly (i.e., misidentified the chubby or thin silhouette), the task was repeated.

Characters for the weight-training phase were depicted by silhouettes (8 ½ in x 11 in) of a chubby and thin boy or girl adapted from Holub and Shafique (in prep; see Appendix A). Color pictures of a chubby boy or girl were used to accompany essentialism questions (see Figure C1). Computer generated images were selected to ensure the photos were matched for attractiveness and appearance. Thin characters represented "average" and chubby characters represented "obese" weight groups from the Contour Drawing Rating Scale (Thompson & Gray, 1995).

DCCS (Zelazo et al., 1996). This is a rule use task that measured cognitive flexibility, or the ability to think about one object in multiple ways. Prior to each game, the experimenter attached target cards to each of the sorting bins. Target cards were a blue boat and a red bunny, and the sorting cards were blue bunnies and red boats. Participants were instructed to sort according to one dimension (e.g., shape) for five pre-switch trials. Instructions were repeated prior to each trial. Then, using the same cards and bins, participants were instructed to sort by the other dimension (e.g., color). The order of sorting dimension and position of the target cards were counterbalanced across participants. Materials for this task included 14 laminated cards (5 in x 3.5 in) and two plastic bins.

Target Scenarios. This task investigated the central question of this project: how children's impressions of others (i.e., decisions that someone is nice or mean) are influenced by the target person's weight. Participants were presented with four scenarios, one in each possible combination of weight and agreeability. This is a nice target scenario for a male participant: "I know a boy named Larry and he's at preschool/school. Larry is a chubby/thin boy who is the same age as you. Larry has art class right now and they are drawing pictures with crayons. Larry is nice - he shares his crayons with his classmates. Larry likes to color pictures, and he's drawing some trees. Larry is wearing a blue shirt today." See Appendix B for a full list of scenarios.

Then, there was a 1 min delay between scenario presentation and follow-up questions that was determined through piloting. During this delay, participants engaged in a backward number task that varied for each age group. Three- to 4-year-olds completed a backward counting task (adapted from Smyth & Pelky, 1992). Five- to 6-year-olds completed the backward digit span task (Carlson et al., 2002; Davis & Pratt, 1995). Both tasks were designed to tax participants' memory by requiring them to recite a set of numbers; however, a more simplified task was used for the 3- to 4-year-olds because it is not until about 5 years of age that children generally pass the first set of 2 digit numbers in the backwards digit span (Carlson et al., 2002). The distracter task between each target presentation consisted of character cards (e.g., Mickey Mouse, Elmo, etc.) and four questions about each card ("Do you know who this is?", "What does (the

character) like to do?", "Who are some of (the character's friends?", and "How do you know (the character)?").

After each scenario, participants were asked a series of questions. Follow-up questions included participants' general impression of the target first ("What kind of girl/boy is (the target)?"), the target's weight and agreeability presented in a random order with the constraint that "not chubby or thin" and "not nice or mean" were always presented as the final option ("Is she/he chubby, thin, or not chubby or thin?" and "Is she/he nice, mean, or not nice or mean?"), and a friendship question presented last ("Do you want to be friends with (the target)?").

Essentialism Questions. This task investigated the secondary question of the project: what is the 'essence' or belief that characteristics associated with the chubby weight group are relatively stable, unchanging, and biologically based (Gelman, et al., 2007). Participants were presented with a short introduction about a gender-consistent character with an accompanying picture: "Remember that we talked about some chubby kids in the stories you just heard? Well, this is Ben/Brittany, a different chubby boy/girl who is just your age, and I want to ask you some questions about him/her." Essentialism questions were divided into four domains: contagion ("If you wanted to wear a hat, would you try on Ben/Brittany's hat?"), stability ("Now think of Ben/Brittany a long time from now in the future when he/she will be a grown up. Will he/she be chubby, thin, or not chubby or thin?"), biological origins ("A girl/boy named Anna/Adam is not chubby.

Do you think that Ben's/Brittany's blood is the same as Anna's/Adam's blood?"), and changeability ("Could Ben/Brittany stop being chubby?"). See Appendix C for a full list.

Domain order and questions within each domain were pre-randomized into two orders. Each random order was counterbalanced across participants. Response options within each question (e.g., "nice, mean, or not nice or mean" with the constraint that "not nice or mean" was always presented as the final option) were also pre-randomized. Materials included a gender-neutral child's ball cap and color pictures of overweight target characters (see Appendix C1).

BDS (Carlson et al., 2002; Davis & Pratt, 1995). This task measured working memory, defined as a system that holds information in mind temporarily while simultaneously processing other information (Baddeley, 1986). Participants were told about "a silly bunny" named Fluffy who likes to say and do things backwards. After participants heard a list of numbers, they were asked to repeat the numbers in backwards order. They heard three sets of numbers in four different lengths (e.g., 2 digits, 3 digits, 4 digits, 5 digits). Materials included a bunny puppet.

TOM (Taylor, 1988). This task measured the ability to distinguish between what one knows and what one sees, which is one aspect of theory of mind. The experimenter showed and described a picture of an elephant and a giraffe named George who was sitting. Then, the picture was covered except for what could be seen through a small, square cutout. Parts of the picture were visible through the window in a set order: blank space, an indistinguishable part of the giraffe, indistinguishable parts of both the giraffe

and the elephant, and a distinguishable part of the giraffe. After the picture was covered, the experimenter brought out a puppet and asked the participant if the puppet knew the provided information (e.g., “Does Leo know there is an elephant in this picture?” and “Does Leo know there is a giraffe in this picture?”). For the last two trials, participants were asked additional questions (e.g., “Does Leo know the giraffe is sitting?”, “Does Leo know the giraffe’s name?”, and “Does Leo know the elephant’s name?”). Materials included a laminated line drawing of an elephant and a giraffe, four laminated pages with a square cutout, and a lion puppet.

K-ABC (Kaufman & Kaufman, 1983). This task measured short-term memory (or simple working memory, see Garon, Bryson, & Smith, 2008), defined as the amount of information able to be actively kept in mind. Participants were instructed to repeat digits exactly as they heard the experimenter say them when it was the child’s turn (indicated by the experimenter pointing to the child). Digits were presented at a rate of one digit per second from a string of 2 single digit numbers to a string of 9 single digit numbers with 3 exemplars of each length. Three incorrect items in a row (including the first two items that were used as training items) was used as the stopping criterion.

CHAPTER III

RESULTS

Target Scenarios

Children's responses on target scenarios were examined to determine the overall recall of trait and weight information, the salience of appearance versus personality, contributions to recall from cognitive and social variables, and how these associations change with age.

Weight-training silhouettes. Participants were trained on weight terms until they correctly identified the 'thin' and 'chubby' targets with a maximum of three attempts. Older children (M = 1.15, SD = .362) correctly identified the targets in fewer attempts than younger children (M = 1.4, SD = .545), $F(1, 78) = 5.838$, $p = .018$, $\eta_p^2 = .07$.

Does children's recall change with age? As hypothesized, older children recalled more of both weight and trait information from the target scenarios (M = 2.2, SD = 1.14, range: 0-4) than younger children (M = .95, SD = .846, range: 0-4), $F(1, 78) = 31.130$, $p < .001$, $\eta_p^2 = .285$.

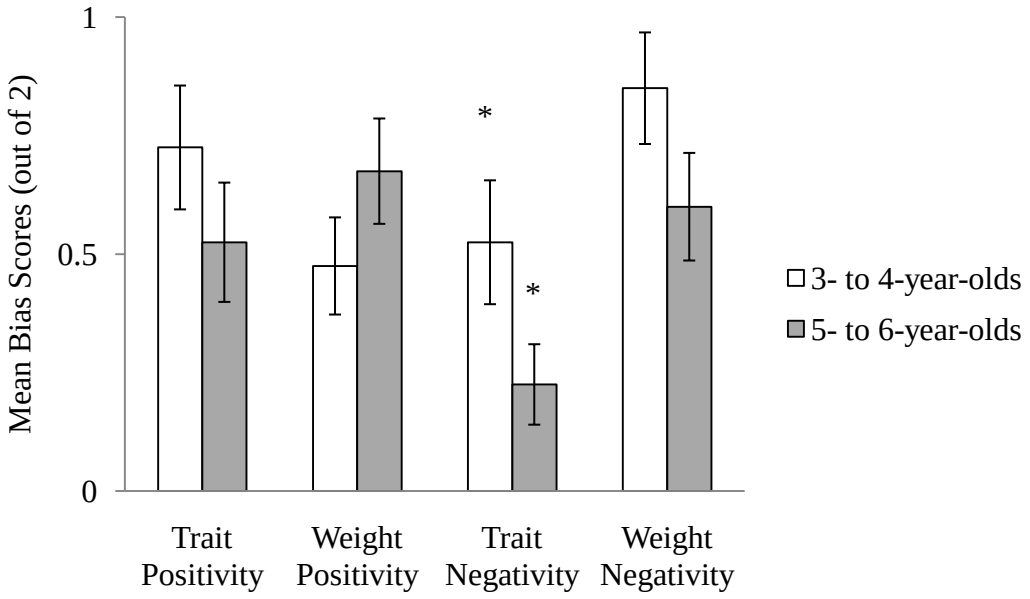
Do children display biases for weight or trait information? Children's incorrect responses were examined for patterns (i.e., a positivity bias or a negativity bias for weight or trait information). Trait positivity bias was examined in the two scenarios about mean targets (i.e., two 'mean' responses indicated recall, score = 0; one 'nice' response

indicated trait positivity for both scenarios, score = 2). Weight negativity bias was examined in the two scenarios about thin targets (i.e., two 'thin' responses indicated recall, score = 0; one 'thin' response indicated weight negativity for one scenario, score = 1; two 'chubby' responses indicated weight negativity for both scenarios, score = 2). Four variables were created to examine these biases: trait positivity, weight positivity, trait negativity, and weight negativity (range: 0-2, higher scores indicate more biased responses).

A two-way 4 (bias: trait positivity, weight positivity, trait negativity, and weight negativity) x 2 (age: 3- to 4-year-olds or 5- to 6-year-olds) repeated measures ANOVA revealed a significant main effect of bias, $F(3, 76) = 3.767$, $p = .011$, $\eta_p^2 = .151$, but was qualified by a marginally significant interaction with the between subjects variable age, $F(3, 76) = 2.273$, $p = .081$, $\eta_p^2 = .076$. Older children were less likely than younger children to label a nice target as 'mean' ($t = 1.94$, $p = .055$); however, age groups did not significantly differ for trait positivity ($t = 1.14$, $p = .386$), weight positivity ($t = -1.34$, $p = .577$), or weight negativity ($t = 1.54$, $p = .126$; see Figure 1). Thus, as predicted, children were more accurate at labeling positive traits with increasing age as evident by a decrease in biased responses about agreeability information in 5- to 6-year-olds compared to 3- to 4-year-olds.

Figure 1

Mean Response Patterns for Weight and Trait Information by Age and Type of Bias



**p = .05.*

Do cognitive or social variables predict recall? Consistent with the scoring procedures of Zelazo, Müller, Frye, and Marcovitch (2003) for the DCCS, participants must have correctly sorted all five cards on the pre-switch trials (e.g., if color, all cards must match with the target card's color) and also correctly sorted at least 4 out of 5 of the post-switch trials (e.g., if shape, 4 of the 5 cards must match with the target card's shape) to pass (fail = 0, pass = 1, range: 0-1).

Consistent with Carlson et al. (2002) for the BDS, participants were scored as correct if they repeated the provided numbers in the correct order. Each set of numbers was scored, and participants were credited for the longest number length correctly

repeated in backwards order (fail/only 2 digits = 1, 3 digits = 2, 4 digits = 3, 5 digits = 4, range: 1-4).

Consistent with Taylor's (1988) scoring scheme for TOM, participants' responses were sorted into five categories: yes bias (i.e., consistently answered "yes"), no bias (i.e., consistently answered "no"), Level I theory of mind (i.e., equating seeing with knowing), Level II theory of mind (i.e., the ability to recognize the different perspectives of the child versus the puppet), and no pattern (i.e., responses that did not fall into any other category and appeared to be random). To be classified as Level II theory of mind, participants must have answered "no" to every question except for a "yes" that the puppet knew there was a giraffe in the picture in the final trial (random = 0, yes bias = 1, no bias = 2, level I = 3, level II = 4, range: 0-4).

Consistent with the scoring procedures of Kaufman and Kaufman (1983) for the K-ABC, each sequence was scored as correct (1 point) or incorrect (0 points), depending whether the child repeated the sequence correctly. The raw score was then computed as the difference between the ceiling item (number of last sequence administered) and total errors (range: 0-22).

A multiple regression analysis was used to predict recall from performance on cognitive and social measures (e.g., DCCS, BDS, TOM, and K-ABC). It was hypothesized that all cognitive and social variables would be related to recall, therefore, predictors were simultaneously entered. In the four variable model, only DCCS (t = 3.371, p = .001) and BDS (t = 2.728, p = .008) were significant predictors ($p < .05$) of

recall, but TOM (t = .941, p = .350) and K-ABC (t = .988, p = .327) were not significant predictors. Thus, only cognitive flexibility and working memory predict a significant, unique amount of variance in recall, and the two predictor model explains 50.3% of the variance in recall, $F(2, 77) = 39.012$, $p < .001$, $R^2 = .503$.[1]

Essentialism

Children's responses on the essentialism task were examined to determine if participants make non-obvious inferences by treating weight as a category, if these inferences are consistent across domains of essentialism, and how these associations change with age.

Does essentialist reasoning about weight change with age? Participants' responses were individually, dichotomously scored (not essentialist = 0, essentialist = 1, range: 0-1), and then scores were summed for each essentialist domain (contagion 1 range: 0-1, contagion 2 range: 0-1, stability range: 0-4, biological range: 0-2, and change range 0-6). A composite variable for essentialism was created by combining all domains of essentialism (range: 0-14, higher scores indicated more weight essentialism). As hypothesized, older children were more likely than younger children to report that weight was contagious, stable, biologically rooted, and unchangeable, $F(1, 78) = 16.512$, $p < .001$, $\eta_p^2 = .177$ (means displayed in Table 1). No gender, ethnicity, or socioeconomic status differences were found.

[1] Given that 12 participants did not have K-ABC data, using all four factors resulted in a smaller sample and did not improve the model, $F(4, 63) = 15.756$, $p < .001$, $R^2 = .500$.

Table 1

Children's Mean Performance on Essentialism Measures by Age

	3- to 4-year-olds			5- to 6-year-olds		
Measure	n	M (SD)	Range	n	M (SD)	Range
Contagion 1	40	.05 (.221)	0-1	40	.4 (.496)	0-1
Contagion 2	40	.15 (.362)	0-1	40	.425 (.501)	0-1
Stability	40	2.125 (.883)	0-4	40	2.35 (1.03)	0-4
Biological	40	1.15 (.483)	0-2	40	1.375 (.705)	0-2
Change	39	2.744 (2.47)	0-6	40	4.15 (2.08)	0-6
Total	39	6.15 (2.896)	0-14	40	8.7 (2.483)	0-14

Is essentialist reasoning about weight coherent across domains? Separate Pearson correlations for 3- to 4-year-olds and 5- to 6-year-olds indicated that essentialism about weight was not consistent across domains. For 3- and 4-year-olds, the greater the essentialism in contagion 1, stability, or change domains, the greater the total essentialism (*r*'s = .389 - .921, *p*'s = .000 - .013)**.** However, biological essentialism and contagion 2 were not significant (*r*'s = .076-.148, *p*'s = .361-.642; see Table 2).

Table 2

Summary of Correlations for 3- to 4-year-olds' Essentialist Reasoning about Weight

Measure	1	2	3	4	5	6
1. Contagion 1	-	.225	.099	-.072	.311*	.389*
2. Contagion 2	.225	-	.020	-.279*	-.043	.076
3. Stability	.099	.020	-	.135	.141	.484**
4. Biological	-.072	-.279*	.135	-	-.032	.148
5. Change	.311*	-.043	.141	-.032	-	.921**
6. Total	.389*	.076	.484**	.148	.921**	-

**$p < .05$; *$p < .10$.

Five- to 6-year-olds showed similar positive correlations across all domains (r's = .287 - .822, p's = .000 - .072) except for biological essentialism ($r = .11$, $p = .5$; see Table 3). Thus, essentialism was not coherent across all domains as predicted, and the data were inconclusive regarding coherence across essentialist domains with age.

Table 3

Summary of Correlations for 5- to 6-year-olds' Essentialist Reasoning about Weight

Measure	1	2	3	4	5	6
1. Contagion 1	-	.434**	-.131	.073	.040	.287*
2. Contagion 2	.434**	-	.102	-.027	.011	.332**
3. Stability	-.131	.102	-	-.186	.023	.374**
4. Biological	.073	-.027	-.186	-	-.127	.110
5. Change	.040	.011	.023	-.127	-	.822**
6. Total	.287*	.332**	.374**	.110	.822**	-

**$p < .05$; *$p < .10$.

Cognitive and Social Measures

Children's performance on cognitive and social measures was examined to determine how these abilities may contribute to recall of scenario information, essentialist reasoning about weight, and how these abilities change with age.

Does performance on cognitive and social measures change with age? Four separate one-way ANOVAs that examined age differences between 3- to 4-year-olds and 5- to 6-year-olds in performance on cognitive and social measures revealed that all scores significantly increased with age: DCCS, $F(1, 78) = 49.935$, $p < .001$, $\eta_p^2 = .390$; TOM, $F(1, 78) = 11.982$, $p = .001$, $\eta_p^2 = .133$; BDS, $F(1, 78) = 51.675$, $p < .001$, $\eta_p^2 = .398$; and K-ABC, $F(1, 66) = 48.692$, $p < .001$, $\eta_p^2 = .425$ (see Table 4). For this analysis, total performance scores on the DCCS were used instead of categorical pass/fail scores (range:

0-10, higher scores indicated better performance). As predicted, older children were better at perceiving an item in multiple ways, recognizing that others have beliefs that may differ from one's own, and holding information in mind while also processing or reporting back that information. No gender, ethnicity, or socioeconomic status differences were found across analyses for cognitive or social measures.

Table 4

Children's Mean Performance on the Cognitive and Social Measures by Age

	3- to 4-year-olds			5- to 6-year-olds		
Measure	n	M (SD)	Range	n	M (SD)	Range
DCCS	40	.175 (.385)	0-1	40	.675 (.474)	0-1
TOM	40	.1 (.441)	0-2	40	.575 (.747)	0-2
BDS	40	.15 (.427)	0-4	40	1.525 (1.132)	0-4
K-ABC	33	5.212 (2.902)	0-22	35	9.714 (2.408)	0-22

Is performance on cognitive or social measures related to recall on the target scenarios? For 3- to 4-year-olds, recall was positively correlated with the DCCS (r = .343, p = .03) and the K-ABC (r = .361, p = .039) such that the more young children exhibited cognitive flexibility and better memory on the cognitive tasks, the higher the recall on target scenarios. For 5- to 6-year-olds, recall was positively correlated with the DCCS (r = .552, p < .001) and BDS (r = .514, p = .001) such that the more cognitive flexibility and working memory older children exhibited on the cognitive tasks, the

higher the recall on target scenarios. Recall was only marginally correlated with BDS (r = .306, p = .055) and TOM (r = .288, p = .071) for younger children, and not significantly correlated with K-ABC (r = .240, p = .165) or TOM (r = .133, p = .414) for older children. Thus, although all cognitive and social measures were expected to relate to recall, only cognitive flexibly was consistent across age.

Is performance on cognitive and social tasks related to essentialist reasoning about weight? Pearson correlations for 5- to 6-year-olds confirmed that with increasing cognitive flexibility, older children endorsed less weight stability (r = -.365, p = .007). Additionally, the greater the ability to hold information in mind while concurrently manipulating that information, older children endorsed less weight stability with marginal statistical significance (r = -.295, p = .064). However, K-ABC (r = .140, p = .421) and TOM (r = .054, p = .741) were not significantly related to essentialist weight reasoning. There were no significant correlations for younger children (r's = -.172 - .029, p's = .287 - .910). Thus, although each cognitive and social measure was predicted to relate to weight essentialism, only cognitive flexibility was significant.

CHAPTER IV

DISCUSSION

The present study examined 3- to 6-year-old children's social reasoning when provided with physical appearance and personality information. Our central aim was to document how children's impressions of others (i.e., decisions that someone is nice or mean) are influenced by the target person's weight using participant's responses on the target scenarios. Overall, younger children recalled approximately 1 of the 4 scenarios, and older children recalled approximately two scenarios. However, approximately half of children in both age groups responded with at least one response relevant to each bias (i.e., trait positivity, weight positivity, trait negativity, and weight negativity). Decreased biased trait responses for 5- to 6-year-olds suggest that with age, children were more accurate in labeling positive traits. This finding is consistent with previous personality reasoning research that found with age, children perceived traits to be more meaningful than appearance cues in tasks that pitted personality against appearance (e.g., Diesendruck & haLevi, 2006; Gelman & Markman, 1986; Heyman, & Gelman, 2000). This has implications for previous studies of weight stereotyping that provided information about one domain (i.e., weight or trait) and elicited responses in the other domain, namely, if provided with both types of information, children may pay more attention to trait information instead of weight.

Consistent with previous personality attribution research (e.g., Boseovski & Lee 2006; 2008; Boseovski, in press), the current study found that with increasing age, children were more reluctant to label targets as 'mean'. This finding supports the presence of a trait positivity bias in the early elementary years, and extends our understanding of this bias to include children's reasoning about personality when competing with appearance information (i.e., weight). Additionally, an inspection of obtained values suggests that older children were more positive and less negative than younger children for 3 of the 4 examined biases. Further research is needed to determine if this trend could be evidence of an overarching positivity bias for both weight and trait information that increases with age.

Although the trait positivity bias finding is at odds with much of the weight stereotyping literature that suggests young children are becoming increasingly negative during early childhood, perhaps it can be reconciled by children's essentialist beliefs about weight. Older children believed that weight was more contagious, stable, biologically based, and less likely to be changed. Essentialized thought likely contributes to stereotypes (Gelman, 2003), namely, weight stereotypes that have been documented to increase between 5 and 6 years of age (e.g., Penny & Haddock, 2007b; Richardson, 1970; Sigelman et al., 1986). Thus, although older children were less likely to label chubby and thin targets as 'mean', perhaps it is their essentialist beliefs about weight that drive children's actual behaviors towards chubby peers that have been well documented in previous literature (e.g., less likely to befriend, and less likely to choose as a playmate or

project partner; Cramer & Steinwert, 1998; Margulies et al., 2004; Musher-Eizenman et al., 2008).

This was the first study of its kind to examine essentialist beliefs about weight in a comprehensive manner using a pre-school and early elementary sample. As expected, essentialism increased with age, however, essentialist beliefs were not consistent across all domains for either age group. This is consistent with Gelman et al. (2007), who found that essentialist reasoning was not coherent across essentialist domains until about 9 years of age. However, Gelman and colleagues examined essentialist reasoning about a different set of characteristics (e.g., traits and talents such as 'curious' and 'good at music'; and novel descriptors such as 'vooper' and 'banana-hater') that pertained mostly to personality. Unlike personality, body weight is considered a hybrid trait that combines biological and psychological components (Lockhart et al., 2002) and is perpetually visible. Nonetheless, it seems that the development of children's weight-related essentialist thought parallels that of previously examined personality characteristics.

Regarding social and cognitive measures, cognitive flexibility was the only consistent, significant finding in relation to recall and essentialist reasoning. DCCS scores were associated with recall for both age groups, and related to weight essentialism for older children (i.e., 5- to 6-year-olds endorsed more weight malleability with increasing cognitive flexibility). Thus, the ability to perceive a target as a member of multiple categories (i.e., by weight and trait) contributes to accurate recall of both the target's weight and trait information. Then, as cognitive flexibility increases with age,

perhaps children are able to extend their perceptions of a target beyond its current weight group to include potential membership in multiple weight groups, namely, a thin baby or a thin adult. This is consistent with both the cognitive developmental literature (i.e., the progression from simple to more complex categorizations or higher-order rule use; Blaye & Jacques, 2009; Zelazo & Frye, 1998) and the stereotyping literature (i.e., increases in flexibility, or the belief that people from different categories can possess similar traits, were also associated with decreases in explicit stereotypes; Banse et al., 2010; Powlishta et al., 1994; Trautner et al., 2005). There was also a trend that working memory (as measured by BDS or K-ABC) may contribute to essentialist beliefs and weight reasoning in a manner comparable to cognitive flexibility, but further research is needed to clarify this finding.

Limitations

While the current study provided evidence about children's weight-related reasoning including contributions from essentialist beliefs, cognitive and social abilities, there are improvements that must be addressed in future studies. Conceptions of weight could not be examined over time within the same person as the child develops because the current study was cross-sectional. Thus, it would be informative for future research to examine patterns of weight reasoning longitudinally to document the development of weight reasoning within the same individual over time and experience for further support of causal implications between essentialist beliefs, cognitive and social abilities, and weight stereotypes.

Given that this method and procedure were created uniquely for this study, further adjustments may be needed. For example, a different delay length for each age group may be appropriate to prevent younger participants from forgetting much of the provided information and to preclude older participants from remembering much of the provided information. Similarly, there was nearly a floor effect and little variability on cognitive and social measures for 3- to 4-year-olds, which may have attenuated a potential relation between cognitive and social abilities and beliefs about weight for this age group. Perhaps sensitive measures of cognitive and social abilities more appropriate for a younger sample (i.e., only 3 to 4 years of age) are needed.

The current study used computer-generated pictures to ensure the characters' weight and attractiveness were consistent across targets. Actual pictures of children may have been more realistic for participants. However, previous studies have used hand-drawn, non-realistic looking pictures (e.g., Penny & Haddock, 2007a) or videos of actual children (e.g., Bell & Morgan, 2000) and obtained similar findings regarding negative weight-related beliefs.

Given that optimal identification with the characters was desired (see Heyman & Dweck, 1998), the mixed results regarding cross-gender weight stigmatization (see Puhl & Latner, 2007), and evidence that early childhood friendships are often formed among same gender peers (Feiring & Lewis, 1991), the current study provided participants with gender consistent targets. Thus, we were unable to examine children's social reasoning across genders.

Finally, an immediate goal is to increase the sample size. Increasing the sample size increases the power of a study to detect smaller effects. Thus, some of the marginal effects and trends may have become significant if more children were tested. Correlations would also be more stable if a larger sample was used.

Strengths

Our method was informed by both the stereotyping literature and the early personality reasoning literature. Using knowledge from both research areas, we were able to examine weight stereotypes in a more indirect, less restrictive manner that allowed children to respond in known patterns of early personality reasoning (i.e., positivity and negativity biases). We were also able to examine how children reason about others when provided with both trait and weight information instead of providing one type of information and eliciting inferences about the other, thereby increasing its similarity to children's daily peer interactions. Additionally, the current study included measures of essentialist beliefs about weight, cognitive and social abilities. Thus, in addition to documenting children's attitudes about targets, we were able to explain why children exhibited particular beliefs using performance from measures of concurrently developing beliefs and abilities.

Children's conceptions of weight can be examined using various stimuli and terminology. Visual images were not provided to participants in the target scenarios. This was preferred to providing images, which would have likely made appearance more salient than personality, thereby complicating our examination of weight or trait biases.

Also, the current study utilized ‘thin’ to represent average weight, and ‘chubby’ to represent overweight. These terms were favored instead of terms such as ‘normal weight’ (which implies it is the normative weight, and any other would be abnormal) and ‘fat’ (which invokes unrelated emotions and extreme dislike, Wadden & Didie, 2005).

Future Directions

Given that agreeability is primary in children’s conceptions of others (Heyman et al., 2007), the only personality factor examined in the current study was nice/mean. Similarly, given mixed findings regarding children’s conceptions of underweight targets, the current study only examined children’s conceptions of average weight and overweight groups. Future research should examine children’s social reasoning about weight and personality using other traits (e.g., intelligence) and appearance cues (e.g., underweight).

Children’s conceptions of weight should also be examined using the names of actual classmates they are familiar with from their daycare or school or by observing children’s interactions with peers from different weight groups. This would improve our understanding of how children’s ideas about thin and chubby children map onto their actual beliefs and behaviors (i.e., friendship and playmate choices) with others in these weight groups. Alternatively, this could also be examined using social network mapping (e.g., Strauss & Pollack, 2003) or playtime observations in conjunction with assessing children’s weight-related beliefs. Given that youth report the most common sources of weight-related teasing at school are their friends (Puhl, Luedicke, & Heuer, in press), and

overweight youth are more likely to be isolated or peripheral to social networks (Strauss & Pollack, 2003), it would be interesting to examine the relation, if any, between more implicit beliefs and explicit manifestations of weight-related attitudes.

Children's essentialist beliefs should also be considered in developing intervention programs to reduce negative weight stereotypes. Previous studies have established that control beliefs contribute to weight stereotypes (e.g., Bell & Morgan, 2000; Crandall, 1994; Margulies et al., 2008; Musher-Eizenman, et al., 2004; Sigelman & Begley, 1987; Tiggemann & Anesbury, 2000), and some interventions have attempted to reduce control beliefs by providing medical explanations for obesity (e.g., Anesbury & Tiggeman, 2000; Bell & Morgan, 2000). Although these interventions reduced controllability beliefs that children associated with being overweight, they were unsuccessful in altering behavior.

Perhaps a more comprehensive intervention that provides information about contagion and weight stability in addition to previously addressed biological (i.e., possible medical condition, metabolism, genetic predisposition; Bell & Morgan, 2000) and controllability components (i.e., diet and exercise do not solely control weight; Anesbury & Tiggemann, 2000), could be more effective in altering children's stereotypes and discrimination of individuals based on weight. Contagion messages could emphasize the lack of transfer between obese and non-obese individuals by teaching children that one cannot 'catch' obesity or any obesity-related illness by being friends or spending time with an overweight person. Stability messages could emphasize the lasting nature of

an obese classification that is attributable to a myriad of factors outside of the individual's control by communicating that people who are overweight now will likely always be overweight given the documented lack of long-term success with dieting and weight loss (see Puhl & Heuer, 2010).

The present research adds to the growing fields of personality reasoning and stereotype formation in young children. Specifically, our findings draw attention to the increasing importance of traits in children's social reasoning and the potential salience of traits when pitted against weight. Evidence from the current study emphasizes the need for a comprehensive examination of concurrently developing abilities to understand how children form impressions of others. However, additional research is needed to replicate unique findings, clarify marginal trends, advance the investigation of how weight stereotypes influence behaviors, create and evaluate intervention programs to reduce negative weight stereotypes.

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APPENDIX A

VISUAL STIMULI USED IN WEIGHT-TRAINING SILHOUETTES TASK

APPENDIX B

TARGET SCENARIOS

1. I know a boy/girl named Larry/Lisa and he's/she's at pre/school. Larry/Lisa is a CHUBBY/THIN boy/girl who is the same age as you. Larry/Lisa has art class right now and they are drawing pictures with crayons. Larry/Lisa is nice – he/she shares his/her crayons with his/her classmates. Larry/Lisa likes to color pictures, and he's/she's drawing some trees. Larry/Lisa is wearing a blue shirt today.

2. I know a boy/girl named Mark/Mary and he's at pre/school. Mark/Mary is a CHUBBY/THIN boy/girl who is the same age as you. Mark/Mary has writing class right now and they are making letters with pencil and paper. Mark/Mary is mean – he/she won't clean up the papers his/her classmate dropped. Mark/Mary likes to make letters, and he's/she's making m's and t's. Mark/Mary is wearing a white shirt today.

3. I know a boy/girl named Eric/Elizabeth and he's/she's at pre/school. Eric/Elizabeth is a CHUBBY/THIN boy/girl who is the same age as you. Eric/Elizabeth has playtime right now and they are playing with some toys. Eric/Elizabeth is nice – he/she shares his/her toys with his/her classmates. Eric/Elizabeth likes to play with toys, and he/she has some that are different colors. Eric/Elizabeth is wearing a red shirt today.

4. I know a boy/girl named Andrew/Anne and he's/she's at pre/school. Andrew/Anne is a CHUBBY/THIN boy/girl who is the same age as you. Andrew/Anne has math class right now and they are writing numbers with pencil and paper. Andrew/Anne is mean – he/she would not loan his/her extra pencil to his/her classmate who needed one. Andrew/Anne likes to count, and he's/she's counting blocks. Andrew/Anne is wearing a yellow shirt today.

APPENDIX C

ESSENTIALISM QUESTIONS AND VISUALS

Remember that we talked about some chubby kids in the stories you just heard? Well, this is BEN/BRITTANY, a different chubby girl/boy who is just your age, and I want to ask you some questions about him/her.

Contagion

"This is BEN/BRITTANY's hat. She/he likes to wear this hat a lot- this is BEN/BRITTANY's favorite hat."

1. If you wanted to wear a hat, would you try on ____'s hat?
2. How much do you like this hat?

Stability

Weight

1. Do you think that BEN/BRITTANY would be chubby if she/he grew up in a house where no one else was chubby?
2. Now think of BEN/BRITTANY a long time ago in the past when she/he was a baby. Was she/he chubby/thin/not chubby or thin?
3. Why is BEN/BRITTANY chubby? Is it because of things that people around her/him did?
4. Now think of BEN/BRITTANY a long time from now in the future when she/he will be a grown-up. Will she/he be thin/chubby/not chubby or thin?

Trait

1. Now think of BEN/BRITTANY a long time from now in the future when she/he will be a grown up. Will she/he be mean/nice/not nice or mean?
2. Now think of BEN/BRITTANY a long time ago in the past when she/he was a baby. Was she/he nice/mean/not mean or nice?

Biological

1. A girl/boy named Anna/Adam is NOT chubby. Do you think that BEN/BRITTANY's blood is the same as Anna's/Adam's blood?
2. A girl/boy named Nelly/Nathan is NOT chubby. Do you think that BEN/BRITTANY's brain is different from Nelly's/Nathan's brain?

Change

1. Could BEN/BRITTANY stop being chubby? (*If yes or maybe then ask next questions):*
    1. Could she/he stop being chubby if her/his doctor tried to stop her/him from being chubby?
    2. Could she/he stop being chubby if her/his family tried to stop her/him from being chubby?
    3. Could she/he stay being chubby if her/his teacher tried to help her/him to stay chubby?
    4. Could she/he stay being chubby if her/his friend tried to help her/him to stay chubby?
5. Would it be easy or hard to stop being chubby?

FIGURE C1

Visual Stimuli used in Essentialism Task