

The Effects of Discourse on Pediatric Health Outcomes: The Moderating Role of Child  
Sex

Bryce Pierre Torian

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

Master of Science  
In  
Psychology

Neil M. A. Hauenstein, Chair  
Russell T. Jones  
Madlyn Frisard

May 11<sup>th</sup> 2016  
Blacksburg, VA

Keywords: (pediatric obesity, parent-child discourse, implicit theories, body image)

# The Effects of Discourse on Pediatric Health Outcomes: The Moderating Role of Child

Sex

Bryce P. Torian

## ABSTRACT

Implicit theories are frameworks that allow an individual to conceptualize the world (Levy, Chiu, & Hong, 2006; Plaks, Levy, & Dweck, 2009). Incremental implicit theories assert humans as dynamic entities, capable of change, whereas entity implicit theories assert that humans are rigid, static, and incapable of change (Dweck, 1999). The present study examined entity and incremental themes in parent child discourse about weight related health decisions. Incremental themes are expected to be related to better pediatric health outcomes (BMI, physical activity, diet, and body image). A moderation model is proposed whereby links between parent child discourse and pediatric health outcomes, specifically body image, will be stronger for boys than girls. Moderation by sex was expected because parents may communicate differently to their children as a function of sex. Cultural ideals have much more stringent evaluations of women than men do and this may be reflected in communications involving parents and children. There were no significant mean-level differences in body image scores and parents' use of entity and incremental themes according to child sex. Additionally, parents use of entity and incremental themes did not predict any of the children's health-related outcomes. These results may indicate that child sex may not be the best predictor of parents' communications concerning children's weight-related decisions.

## Acknowledgements

I would like to acknowledge the hard work and dedication shown by my committee chair Dr. Neil M. A. Hauenstein. I would like to thank him for supporting and helping me throughout this process. Without his direction, I know this would not have been possible. I would also like to thank Dr. Russell T. Jones for his support and guidance throughout this process. His wisdom and knowledge were very beneficial. I would also like to thank Dr. Madlyn Frisard for her guidance as well. Her knowledge of the biological side of the study were paramount. All three committee members were the driving catalysts for this project and none of this would have been possible without their support, guidance, and dedication.

## TABLE OF CONTENTS

Introduction.....	1
Implicit Theories.....	2
Origins Within the Literature.....	2
Description and Selective Literature Review.....	5
Health Outcomes.....	12
Parent Discourse.....	14
Child Outcomes.....	16
The Role of Child Sex.....	17
Hypotheses.....	18
Method.....	18
Participants.....	19
Procedure.....	19
Discourse Task.....	20
Questionnaires.....	23
Child Diet Questionnaire.....	23
Child Physical Activity Questionnaire.....	24
Body Areas Satisfaction Scale.....	25
Body Figure Perceptions Scale.....	25
Body Mass Index.....	26
Results.....	26
Hypothesis Testing.....	26
Analyses.....	26

Supplemental Analyses.....	27
Discussion.....	29
Limitations.....	30
Future Directions.....	32
Conclusion.....	33
References.....	35
Figure 1.....	43
Figure 2.....	44
Figure 3.....	45
Figure 4.....	46
Table 1.....	47
Table 2.....	48
Table 3.....	49
Table 4.....	50
Table 5.....	51
Table 6.....	52
Table 7.....	53
Table 8.....	54
Table 9.....	55
Table 10.....	56
Table 11.....	57
Table 12.....	58
Table 13.....	59

Table 14.....	60
Table 15.....	61
Table 16.....	62
Table 17.....	63
Table 18.....	64
Table 19.....	65
Table 20.....	66
Appendix A (Child Diet Questionnaire).....	67
Appendix B (Child Physical Activity Questionnaire) .....	69
Appendix C (Body Satisfaction Scale).....	72
Appendix D (Body Figures Perception Scale).....	73
Appendix E (Discourse Task Instructions).....	75
Appendix F (Discourse Task Coding Manual).....	82
Theoretical Model.....	85

## Introduction

Roughly 20% of the world's pediatric population is considered obese or overweight (Jones et al., 2011). In 2012, the American population had an obesity rate of 34.9%, and 16.9% of Americans between the ages of 2 and 19 years were obese (Ogden et al., 2012). According to the Centers for Disease Control and Prevention, 27.4% of Virginians report being obese (CDC, 2012). Health risks associated with pediatric obesity include cardiovascular problems, diabetes, and renal failure (Ebbeling et al., 2002). In addition to these physical risks, obese children also face negative socio-emotional outcomes, this includes lower self-esteem, poorer body images, higher rates of depression and eating disorders than non-obese peers (Ebbeling et al., 2002). Thus, pediatric obesity is a risk factor for children's well-being. Parents serve an integral role in maintaining, supporting, and reinforcing children's weight-related health habits, such as diet and physical activity (Chan et al., 2009), and in impacting their perceptions of physical competence (Brustad, 1992). Despite robust evidence for the importance of parental socialization in areas such as academic competence (i.e., Matthews, 2014; Simpkins et al., 2011), the literature on parents' discourse in relation to pediatric obesity is scant.

Pediatric obesity, like many negatively socialized behaviors, is a cyclical process. Unlike common misconceptions, one does not simply grow out of pediatric obesity. Lee and colleagues (2010) assessed weight transitions in children from ages 3-5 to 7-10. When the parent's socioeconomic status (SES) was low, the probability children would remain overweight or obese at time 2 was 90%. For those from relatively more advantaged backgrounds, the probability from time 1 to time 2 of remaining overweight or obese ranged from 50-60% (Lee et al., 2010). With that said, children do not simply grow out of their negative habits or weights, and therefore, researchers and practitioners should address this health problem early in life. Hence, the present

study examines parent-child discourse about weight-related health habit decisions in relation to children's weight-related health habits and to physical and mental health indices related to pediatric obesity.

### **Implicit Theories**

Dweck's (1999) concept of entity and incremental implicit theories is rooted in the context of intelligence and academic achievement, but has been extended to beliefs about morality and the world (Dweck, Chiu & Hong, 1995), children's prosocial behavior (Dunsmore, 2015), and children's perceptions of others (Eberhardt, Dasgupta, & Banaszynski, 2003). Building on this construct, I extend it to parental socialization of health habits in their children. In the remainder of the introduction, I first define entity and incremental implicit theories and briefly summarize literature on their effects on achievement. I then discuss literature on parent-child discourse and explain the importance of discourse as a socialization strategy. I conclude the introduction by describing the outcomes of interest and explaining the potential child sex differences in parent-child discourse and in associations of discourse with child outcomes.

**Origins in the goal orientation literature.** The proposed study utilized Dweck and Leggett's (1988) conceptualization of entity and incremental implicit theories, which has not previously been applied through discourse to parental socialization about health habits. Dweck's implicit theory framework was first explored in reference to goal orientation and approaches to learning goals (Dweck & Leggett, 1988). In this model, researchers sought to further understand the underlying dispositional factors that contribute to one's goal orientation. Dweck and Leggett (1998) explained maladaptive helpless responses and mastery responses as cognition affect behaviors. Maladaptive helplessness referred to a behavioral pattern that avoided challenges, but created diminished performance in the wake of obstacles. A mastery-oriented pattern referred to

a tendency of effective maintenance in the wake of challenges and setbacks. The authors found that some of the brightest students exhibited orientations of maladaptive helplessness, but these children did not persist when faced with obstacles and setbacks. More, though these children were of equal ability to their mastery response counterparts, their performance was lower than those who exhibited mastery behaviors.

Thus, the authors explored the nature of goals as an attempt to explain why children who felt helpless tended to behave in ways that were detrimental to their social, cognitive and affective development. With regard to goals, Dweck & Elliot (1983) explained that goals are self-held motivational frameworks that shape individuals' patterned behavioral responses and reactions. Further, goal orientations are individual dispositions, which influence how one validates and/or develops his or her abilities in an achievement setting (Vandewalle, 1997). Within an academic context, Dweck and Elliot (1983) identified two classes of goals, performance goals and mastery/learning goals.

It should be noted that goal orientations were further updated as individual dispositions, which influence how one validates and/or develops his or her abilities in an achievement setting (Vandewalle, 1997). Goal orientations are categorized in one of four ways: mastery approach, mastery avoidance, performance approach, and performance avoidance. Mastery goals are indicated by one's desire to learn from experience, e.g., studying for a test to understand the material better. Performance goals are primarily associated with the outcome of goal pursuit, e.g., studying for a test to get a good grade (Moreno et al., 2010).

Individuals with performance goals are concerned with how others evaluate them, whereas individuals with mastery orientations desire to increase their overall competence (Dweck, 1998). The term approach describes whether or not an individual seeks to understand

and internalize the material and gain from a particular experience (Dweck, 1998). Avoidance refers to one's desire to avoid the negative consequences associated with not achieving a goal (Dweck, 1998). Overall, approach orientations are regarded as the most beneficial as individuals are more concerned with bettering themselves because of their goal orientation.

After testing learning and performance goals, Leggett and Dweck (1988) found different goals foster different response patterning. Children with a performance orientation were more susceptible to maladaptive helplessness and the negative outcomes associated with those behaviors. When a child had a mastery/learning orientation, then they often experienced competence enhancement that persisted during setbacks. Even still, the authors wanted to understand why individuals in the same situation pursued different goals, thus the development of a more general conceptualization of individuals that was coined as the Implicit Theories framework (Dweck & Leggett, 1988).

The Dweck and Leggett (1988) framework was able to systematically differentiate oneself oriented individuals that behaved differently in contextually similar situations by goal orientation. Specifically, the authors showed that individuals with malleable self-conceptions tended to have mastery goals, whereas individuals oriented with static self-conceptions tended to have performance goals (Dweck & Leggett, 1988; Bandura & Dweck, 1985, Dweck, Tenney, & Dinces, 1982; Leggett, 1985). As a result, the authors posit that individual goals align one's patterned responses, but self-conceptions underlie and explain one's goal behaviors.

Many studies involving goal orientation do not address goal content and why people operate under certain goal orientations. This is important because the content of the goal could explain or direct the resulting behaviors to achieve a desired outcome. Researchers have thus far justified this approach with the claim that goals are directly influenced by environmental cues or

personal factors, but these are general statements that include a wide-range of factors and do not directly address the implications of goal content (Beruchashvili et al., 2014; Fishbach & Dhar, 2005; Chartrand et al., 2008).

Despite the applicability of goal orientations to children's weight-related health habits, the concept has been understudied in this critically important context of pediatric obesity. Parents' goal orientations in regard to weight-related health habits might be difficult to discern through their discourse with their child. For example, a parent with a mastery-approach orientation to physical activity may encourage a child to try their best while playing basketball, yet a parent with a performance-approach orientation may encourage their child to be a good basketball player also perceived favorably by the coach. Parents with mastery-avoidance and performance-avoidance orientations to diet may prefer not to talk with their children about times when poor nutritional choices were made. Dweck and Leggett (1988) describe *implicit theories* as dispositional factors reflecting beliefs about the source of behavior that influence goal orientations. In the next section I describe implicit theories in more detail and review some of the relevant empirical literature on implicit theories.

**Description and selective literature review.** The purpose of this literature review was to first establish implicit theories within academic and intelligence domains. Though I wanted to keep the literature review within the relevant age range for this study, I deviated from this to include articles that were relevant to gain a more holistic understanding of the implicit theories literature. The second objective of this literature review was two-fold; one focus is to discuss the emerging literature on implicit theories and health, but also to briefly address the goal literature that is relevant to health-related domains.

Implicit theories are defined as frameworks that enable one to explain the world (Levy,

Chiu, & Hong, 2006; Plaks, Levy, & Dweck, 2009). Dweck (1999) described two types of implicit theories – entity and incremental beliefs – in application to intelligence. These implicit theories result from people’s fundamental assumptions about self and their experiences in the social world (Molden & Dweck 2006). Entity beliefs are described as more fixed and stable beliefs that do not change as the result of personal development (Dweck 1999; Molden & Dweck 2006). Further, entity theories suggest that people are static and tend to resist change in order to prove themselves or to be perceived favorably (Dweck, 1999). Incremental beliefs reflect views that people are dynamic, malleable, and changeable (Dweck, 1999). People who hold these views tend to value the experience of an opportunity while not particularly focusing on how the outcome may influence how they are perceived (Dweck, 1999). Additionally, incremental theories suggest that people change through personal development and from hard work and effort (Molden & Dweck, 2006). Implicit theories are domain-specific (Dweck, 2011). For example, one may hold entity theories for diet and exercise while having incremental theories in academic contexts.

Evidence links implicit theories to children’s achievement outcomes. Blackwell Trzesniewski, and Dweck (2007) created an intervention designed to increase incremental beliefs in a population of 7<sup>th</sup> grade students, which they found to increase classroom motivation. When compared to the control group, the experimental group scored significantly better in math (Blackwell, et al., 2007). Additionally, the authors found that incremental oriented students held more positive beliefs about effort and were more likely to apply an effort-based strategy in response to failure (Blackwell, et al., 2007). Specifically, students who held incremental theories were more likely to implement and utilize effort based strategies in response to academic setbacks (Blackwell et al., 2007). These students studied more and worked harder to gain

knowledge in order to be more successful in the classroom (Blackwell et al., 2007).

Da Fonseca and colleagues (2010) explored the role of implicit theories on academic performance in a sample of 8 to 11-year-old children with oppositional defiant disorder (ODD). In this study, participants were randomly assigned to either an incremental condition or a control group. The incremental condition emphasized incremental orientations in written form. Participants were presented with an article stating that scientists have discovered that people have certain levels of ability, but that ability levels could change substantially in many ways. Additionally, the written text also informed participants that the type of ability is not determined by birth, but that effort can change one's ability and in this way ability is malleable. First participants' IQs were assessed via the coding subtest in the Wechsler Intelligence Scale for Children – III (WISC-III) because this has been established as being a strong predictor of math achievement in children (Da Fonseca et al., 2010). Then participants in the incremental group were given their manipulations following their completion of the WISC-III, while the control group received no manipulation. Participants were asked to come back later to complete the coding subtest of the WISC-III again. At time 1 the participants did not vary on incremental theory orientation or performance, however, at time 2 participants from the incremental group had increased cognitive performance (IQ) based on the WISC-III (Da Fonseca et al., 2010). These results highlight the protective nature of incremental orientations as well as the positive outcomes associated with incremental theories.

Romero and colleagues (2014) further explored the role of implicit theories in academic and emotional functioning in a sample of middle school-aged children. The sample was comprised of 115 middle school students and the authors collected data at four times points to assess their sample's implicit theories: end of 6<sup>th</sup> grade, middle of 7<sup>th</sup> grade, beginning of 8<sup>th</sup> grade,

and at the end of 8<sup>th</sup> grade. In this sample, 56% of the parents of these children had taken some college courses or earned a college degree and demographically, the sample was similar to the overall demographics of the school (Romero et al., 2014). The majority of the sample (91%) came from high SES backgrounds (Romero et al., 2014). Using an intelligence-theories scale and an emotion-theories scale, Romero and colleagues (2014) found that individuals who rated intelligence as malleable in 6<sup>th</sup> grade had higher grades at all time points than students who thought intelligence was static. Students who rated intelligence as malleable were also more likely to take more challenging math courses during their enrollment at the school. While controlling for student's implicit theories of intelligence, students who believed that emotions were malleable reported less depressive symptoms compared to students who believed emotions were static. Finally, students who began their first year of middle school reporting lower levels of well-being, but who also believed that emotional control could be improved over time, reported higher well-being over time. These findings suggest that implicit theory orientations may also have some emotional benefits in addition to predicting academic success.

Overall, empirical evidence suggests that incremental orientations are linked to more positive and beneficial outcomes. In a sample of undergraduate students, Plaks and colleagues (2007) found links between entity orientation and social anxiety induced by peer-evaluation. During the study participants' anxiety levels were measured before and after they engaged in an intelligence task. Further, all participants received either success or failure feedback regarding their task performance. Results indicated that participants who tended to have incremental orientations experienced less anxiety in reaction to failure than those with entity orientations (Plaks et al., 2007). These further support relations between implicit theories and achievement outcomes.

Incremental theories may be linked to more positive outcomes because individuals with incremental orientations are more likely to seek help in the wake of setbacks. Shively and Ryan (2013) examined the associations between implicit theories, help-seeking, and academic performance. In their study the authors sought to understand the how these three variables related to each other. The sample was comprised of 61 college students (57% female) in a college algebra class. In this study participants were asked to complete questionnaires during the second week of class and again two weeks before the end of the semester. Administered at the end of the semester, the questionnaires were adapted from incremental theory orientations as outlined by Dweck (1999) were designed to assess the participants' incremental theory orientations of general and math intelligence and help seeking. The results suggested that students who possessed more incremental theories of general intelligence at the beginning of the semester reported greater help seeking at the second time point (Shively & Ryan, 2013). Additionally, those who had higher entity viewpoints of math intelligence earned lower course grades (Shively & Ryan, 2013). These results further bolster the importance and benefits of incremental orientations in the wake of challenges. Individuals with malleable self-conceptions may be more willing to seek out help and thereby increase their chances of having positive outcomes.

Rickert, and colleagues (2014) also explored how implicit theories of intelligence were associated with adaptive and maladaptive behaviors. Specifically, the authors wanted to explain how implicit theories contributed to self-handicapping and procrastination. This study explored how entity orientations were associated with the aforementioned maladaptive school behaviors in a sample of 142 ninth grade students (*M* age = 14.95). Participants were asked to complete surveys that included questions about theories of intelligence (Dweck, 1999) and other indicators relevant to the study for 14 consecutive days, but only school day reports were used within this

study. Self-handicapping and procrastination were assessed via two different subscales. The authors found that entity theories of intelligence positively correlated with higher reports in self-handicapping and procrastination. By working from an entity perspective, the authors explored the maladaptive nature of entity orientations in school contexts. Pairing these results with Shively and Ryan (2013), it is tenable to suggest that incremental theorists adopt strategies that are beneficial to success while entity theorists utilize strategies that are detrimental to positive outcomes.

Implicit theory orientations may influence individuals' social inferences as well. Molden, Plaks, and Dweck (2006) asked university students to interpret a confederate's prerecorded behavior as either mundane (i.e., the confederate was discussing her favorite readings) or stressful (i.e., the confederate was discussing a source of embarrassment). Molden, Plaks, and Dweck (2006) found that participants who displayed incremental orientations were more likely to rate the confederate's behavior as mundane, whereas those high in entity beliefs were more likely to rate the video as stressful. This suggests that people with entity theories may interpret social information between two polar axes defined by moral valence (e.g. good/bad), whereas people with incremental theories may interpret social information in more modulated ways.

Within the context of the obesity literature, Beruchashvili and Moio (2013) sought to understand the role of planning in dieting and exercising from an implicit theories perspective. In their study, the authors explored if individuals' implicit beliefs and abilities explained how their planning operated within a weight-loss process. The objective was to understand if implicit theory orientation contributed to individuals viewing planning as an obstacle or an aid. In a sample of 25 women enrolled in Weight Watchers, the authors assessed participants' implicit

theory orientations by using a quantitative implicit theories scale. Each participant was given a structured interview to assess their orientations towards planning and the weight-loss process. The interviews lasted for two hours and participants were asked to discuss their previous attempts at losing weight, experience with excess weight, and how they viewed planning within the weight-loss process. Beruchashvili and Moisiso (2013) found that dieters who were entity orientated tended to view dietary planning negatively. Participants cited the rule the based nature of planning required too much effort and that they felt motivationally disengaged due to a perceived loss of personal autonomy (Beruchashvili & Moisiso, 2013). Comparatively, dieters who possessed incremental orientations were more likely to view planning as an enjoyable experience. Further, incremental dieters viewed planning as a way to focus on the principles of weight loss, rather than viewing these principles and rigid rules. Incremental dieters were more inclined to view planning as a way to cultivate their personal autonomy during the weight-loss process.

Burnette and Finkel (2012) also explored the role of implicit theories within the obesity literature. This study highlighted how adjustments in incremental beliefs may help buffer against weight loss setbacks. Burnette and Finkel (2012) aimed to design an intervention to buffer against dietary setbacks while utilizing an implicit theories framework. This study involved 169 participants (80% female) who were attempting to lose weight. At the first time point the authors assessed the participants' implicit theories orientations in relation to dietary related decisions. The intervention was designed to help foster the beliefs that weight was malleable for dieters. Like most goal-oriented behavior, setbacks are common, but there is a tendency for dieters to respond poorly to goal setbacks and perhaps give up on a particular dietary goal. Participants were randomly assigned to one of three conditions: incremental, knowledge, or

control. The incremental condition was designed to help dieters understand that their general weight-loss beliefs and beliefs about their own weight were malleable, and that even within the presence of setbacks, these setbacks were not impossible obstacles to overcome. In the knowledge condition, participants were simply given information on effective weight loss strategies and healthy nutrition. The authors hypothesized that participants in the incremental condition would lose more weight at the second time point than those in the knowledge and control conditions. Their second hypothesis was that changes in incremental beliefs would be the driving mechanisms behind the changes in weight from time one to time two. Their final hypothesis was participants in the knowledge and control conditions would also gain more weight as setbacks became more prevalent and severe (Burnette & Finkel, 2012). Participants in both intervention conditions failed to lose weight, the results did not support the authors' first hypothesis; however, it should be noted that both groups gained less weight by time 2 than participants in the control group. There was support for the authors' second hypothesis, as participants who internalized the invention tended to lose more weight. Conversely, when participants failed to internalize the intervention, they gained weight. Results for the third hypothesis were also supported, as the data indicated incremental oriented weight-loss intervention buffered participants against weight gain related to setbacks (Burnette & Finkel, 2012). Even within a health related domain, incremental orientations may serve as a protective factor against negative outcomes.

**Health outcomes.** Similar to academic performance, maintaining healthy weight-related habits requires persistence when confronted with challenges or setbacks. For those struggling with weight, as with most goal-oriented behavior, setbacks are common and there is a tendency for dieters to struggle with and recover from goal setbacks. This may lead dieters to abandon a

particular diet or exercise regimen. Setbacks may include not meeting a particular weight loss goal for a given timeframe and cheating on diet and exercise routines. Burnette and Finkel (2012) found middle-aged female subjects ( $M = 42$  years) who participated in a weight loss intervention and had attitudes that were more accepting of diet and exercise setbacks (incremental implicit theorists) tended to have better recoveries from setbacks than those with entity implicit theories, which are characterized by rigid beliefs about setbacks that are more likely engender feelings of failure and frustration. This suggests that, similar to the achievement literature and to Molden, Plaks, and Dweck's (2006) research on social perceptions, incremental beliefs may be related to more modulated interpretations of weight-related successes and failures and entity beliefs to more binary (good/bad) interpretations of such outcomes. The more modulated interpretations associated with incremental beliefs may be more beneficial in achieving and maintaining healthy weight.

Though entity implicit theories are linked with performance goals, and incremental implicit theories with mastery goals (Dweck & Leggett, 1988), I focused on entity and incremental themes in parental discourse because these themes represent the source of the behavior but not necessarily the outcome. Messages about the source of their behavior may be more influential for children's outcomes because beliefs about the source of behavior orient goal behavior. Thus, the purpose of this study is to examine whether parental discourse that emphasizes incremental themes about weight-related health decisions is associated with children's healthier diet and physical activity habits, BMI, and body image. Children tend to share similar beliefs with their parents regarding the importance of academic performance and the role of school in their lives (Matthews, 2014). Likewise, parents may influence their children's beliefs and behaviors regarding weight-related health habits such as physical activity

and diet (Bois et al., 2005; Edwardson & Gorely, 2010; Kimiecik & Horn 2012). In the next section, I address parent-child discourse as a socialization strategy that may influence children's weight-related outcomes.

### **Parent-Child Discourse**

Parent-child discourse, involving direct communications between parent and child, is one of the most direct routes for socialization of both cognitive and socio-emotional development (Eisenberg, Cumberland, & Spinrad, 1998; Fivush, Haden, & Reese, 2006). Discourse has been empirically examined according to two separate dimensions, content and style. Content refers to the meaning of the words or phrases used within the conversation. For example, parents who discuss causes and consequences of emotions more in conversations with their children have children with better emotion understanding (Garner, Dunsmore, & Southam-Gerrow, 2008). Style refers to the way in which parents engage with their children in the conversation. For example, parents' use of an elaborative style, such as asking open-ended questions, following topics their child shows interest in, adding novel detail and inviting their child to add new information, has been associated with enhanced memory, language skills, and perspective-taking skills in children (Fivush et al., 2006).

Currently, there is no existing literature exploring how parental discourse may influence children's weight-related outcomes. However, prior evidence on the influence of discourse on children's cognitive and socio-emotional development suggests that it may also be important for weight-related health habits. Parent-child conversations are an avenue through which parents communicate their values and expectations to their children (Nichols, 2002). Goodvin & Rolfson (2014) showed that when parents emphasized entity attributions for success in conversations with their preschool-age children, children made more negative self-evaluative

statements during experimental tasks. Applying these findings to health-related conversations, parents who emphasize entity themes may have children who are more likely to interpret a failure as worse than reality after facing a weight-related setback, whereas parents who emphasize incremental themes may have children who are more accepting of weight-related setbacks. Entity themes may communicate dichotomous thought processes and categorizations regarding diet and physical activity. For example, there may be firm distinctions regarding what practices are healthy and unhealthy and clear categorizations of what is acceptable and unacceptable regarding physical activity and exercise. Parents who use more incremental themes may emphasize strategies and effort, and may communicate nuanced attitudes towards diet and physical activity. Understanding how entity and incremental themes in parent-child discourse about health habits may relate to children's BMI, body image, diet, and physical activity may contribute to an increased understanding of pediatric obesity as well as potentially inform related interventions.

It is noteworthy that I did not propose to measure parents' implicit theories *per se*. For the purposes of this study, discourse served as a mechanism for communicating implicit theories. Though I would expect that parents' discourse to reflect their implicit theories about weight-related health habits, testing a full mediational model is beyond the scope of this study. In any case, parents' beliefs cannot be transmitted directly into their children's minds – they must be communicated in some fashion. If parental discourse emphasizes entity themes, then regardless of the parent's implicit theory, the socialization message is entity-oriented. Thus, parent-child discourse is not regarded as a *measure* of parents' entity or incremental implicit theories, but rather as a socialization venue in which there may be differential emphasis on entity or incremental messages about weight-related health habits.

## **Child Outcomes**

Because of their clear links with obesity, the outcome variables of interest are children's BMI, diet and physical activity, and body image. BMI provides a scale to evaluate one's weight in relation to one's height (CDC, 2011). Though BMI does not directly calculate one's fat composition, this metric is a better diagnostic tool than just weight alone (CDC, 2011). High BMI has been associated with obesity-related health complications that include diabetes, high blood pressure, and sleep apnea (Kirk et al., 2005). For children, BMI is calculated relative to age and sex; thus, there are no child sex differences for the interpretation of BMI.

Children's healthy diet is indexed by greater intake of fruits, vegetables, and protein and lesser intake of sugar-sweetened beverages. Jebb (2007) explains that diets that limiting the intake of amounts of unhealthy carbohydrates, e.g. soft drinks, while consuming the appropriate amounts of healthy foods, e.g. lean meats, fruits, and vegetables, contribute to positive health outcomes. No child sex differences are expected for dietary intake.

In regard to physical activity, greater engagement in physical activity is associated with better cardiovascular health for children. Physically active children tend to have lower rates of obesity and higher self-esteem in comparison to less active children (Määttä, Ray, & Roos, 2014). Also, those who are physically active in childhood are more likely to be active in adulthood, thus decreasing negative weight-related outcomes later in life (Määttä et al., 2014). There is also reason to expect child sex differences in physical activity. Parents tend to report their sons as more physically active than daughters (Bois et al., 2005). When relying on child reports, however, sex differences do not appear (Beets et al., 2007). This suggests that parents may be less aware of the physical activity of their daughters compared to their sons (Beets et al., 2007).

Body image is defined as a psychological construct that includes perceptions of one's body and self-attitudes towards one's body (Fan & Eiser 2009). These attitudes include thoughts, beliefs, feelings and behaviors (Fan & Eiser, 2009). Body image is primarily evaluated in terms of satisfaction and dissatisfaction, but is based on cultural, social and biological factors, which also include sex (Slade, 1994). A study conducted by Brennan and colleagues (2010) found that, in a sample of undergraduate students, women reported more body dissatisfaction than men. Body image discrepancy is defined as the difference between one's ideal self and one's actual self. Less body image discrepancy may help mitigate the risk of eating disorders, including anorexia nervosa, bulimia, and binge eating (Frisén & Anneheden, 2014). Smaller body image discrepancies are also associated with higher self-esteem and general well-being (Frisén & Anneheden, 2014). Because body image reflects children's perceptions, it may be especially likely to reflect children's internalization of parental socialization processes. Perhaps what families value and communicate in terms of body image may be indicated by children's perceptions of self.

### **The Role of Child Sex**

As discussed in the above section, there are child sex differences in some of the outcomes, suggesting the importance of controlling for child sex. Furthermore, parents may hold different values and expectations regarding physical activity and exercise depending on their child's sex. Bois and colleagues (2005) found that parents perceived boys to have higher physical activity levels than girls, and suggested that this could be partly explained by gender stereotyping of exercise as masculine. If this is the case, parents' use of entity and incremental themes in conversations with their child about weight-related health decisions might differ according to child sex. It is also possible associations of parents' discourse with child outcomes

might be moderated by child sex. Societal portrayals of attractive bodies are narrower for girls than boys (Blowers et al., 2003), and body image is lower for women than men (Brennan et al., 2010), which may influence parents' communications. Parents may be more likely to emphasize entity themes with their daughters than their sons, but girls might report lower body image than boys regardless of parents' discourse. Thus, in the current study, child sex differences in parent-child discourse was tested and child sex was considered as a potential moderator of the associations between parent-child discourse and children's weight-related health outcomes (see Figure 1 for a conceptual model).

### **Hypotheses**

1. Child sex differences were expected for body image discrepancies, with boys reporting lower discrepancy in their body images than girls. Additionally, child sex differences were expected for body satisfaction as a whole, with boys reporting more body satisfaction than girls.
2. While controlling for age and child sex, when parents' implicit theories in weight-related health decisions emphasized more incremental themes, children would have better outcomes, indicated by better CDQ Health Diet scores, lower CDQ Unhealthy Diet scores, lower BMI, and less body image discrepancies. Also, while controlling for age and child sex, when parents' implicit theories about weight-related health decisions emphasized more entity themes, children would have poorer outcomes.
3. The effects implicit theories on body image discrepancies will be moderated by sex of the child; the main effect of implicit theories on outcomes will be stronger for boys than girls.

### **Method**

## **Participants**

Data collection took place as part of a larger study. Forty parent-child dyads (children aged 8 – 13 ( $M = 10.35$  years;  $SD = 1.58$ ; 47.5 % female) participated. The sample was mostly homogenous with 92.5% of families reporting that they were European American, 5% Hispanic American, and 2.5% African American. Additionally, the study was comprised of 28 mothers, 11 fathers, and 1 sister who served as a parent. There were 19 daughters and 21 sons. There were 15 mother/daughter dyads, 13 mother/son dyads, 8 father/son dyads, 3 father/daughter dyads, and one sister/sister dyad. The participants came from a community sample, recruited through advertisements and contact with participants from previous studies. The sample was very well educated with 87.5% of participating parents reporting that they had at least graduated college. 59% of families reported an annual household income above \$80,000. Families varied in size from 1 to 7 children, but the average participating family had 3.23 children ( $SD = 1.48$ ). The sample type was controlled for in analyses. For participating in the larger study, parents were paid \$20 and children were paid \$20, plus a \$10 bonus for completing a 7-day activity log and accelerometer data.

## **Procedure**

The current study was part of a larger study. Families were recruited through the Social Development Laboratory's past participant database, an advertisement in the Roanoke Times (a local newspaper), and by participants' voluntarily and unsolicited recruitment of other families. I contacted families showing interest via an e-mail or phone call, and I reviewed the procedural elements of the study; parents were informed of how long the study would take and what the study entailed (i.e., child fasting, finger stick, discourse task, questionnaires, height and weight measurements of the child, and compensation). If families remained interested in participating,

parent-child dyads were scheduled to meet with researchers at the lab or for researchers to travel the home. Upon arrival, informed consent was reviewed along with child assent; both the parent and the child were asked for their signature to verify their voluntary participation in the study. For the larger study, children received a finger stick to collect blood. The next part of the larger study – and the first part of this study – was the discourse task, which is took an average of 30 minutes. If the study was done in a family’s home, families were asked to choose a room where they could be easily videotaped. If participation occurred in lab, families sat on a couch within the Social Development Laboratory’s space and the video camera was setup prior to their arrival. The researchers then reviewed the instructions for the discourse task, and then asked if the participants had any questions.

Following the discourse task was the self-report questionnaire portion of the study. Dyads were separated to fill out the questionnaires. Experimenters summarized the directions of the questionnaires to the parents. Parents were also given the opportunity to ask questions for clarification and further explanations. Researchers summarized directions for the child on his or her questionnaires, but remained with the child in case any questions arose. After completion of the questionnaires, the researcher checked to see that all items were answered. Finally, each child’s height and weight were measured so as to compute BMI. For the larger study, children’s blood pressure was also measured.

**Discourse Task.** Each 30 minutes (approximately) parent-child dyad interview was recorded (See Appendix E). During the interview, each dyad was shown four prompts printed on cards. The first prompt was to always ask both the parent and the child to describe his/her favorite meal The favorite discussion took approximately 5 minutes. Once the favorite meal discussion was over, the participants shown four prompts. Two prompts asked for a description

of an unhealthy diet/exercise choice made in the past week, one prompt for the parent and one prompt for the child. The two other prompts asked for a description of a healthy diet/exercise choice made in the past week, one prompt for the parent and one prompt for the child.

Participants were informed they had 10 minutes for this portion of the study and they were given the opportunity to ask questions. The prompts were placed face down on a table in front of the participants. The experimenter instructed the dyad to draw the cards at random and discuss each healthy/unhealthy choice for approximately two and a half minutes before moving on to the next card. The researcher then left the room during the 10-minute discussion.

Upon returning to the room, the researcher instructed the dyad on the “snack-choice task.” In the 5-minute snack choice task, the participants were shown four drinks and four snacks from which to choose. The parent and child were asked to discuss their drink/snack preferences and they were then asked to come to a consensus on the snack and drink that they both could consume. The hydration snack choices included an 8-ounce water bottle, a 12 ounce sports drink, a 12-ounce sugared cola soda, and a 6.75-ounce 100% fruit juice choice. The food snack choices included a 1.5-ounce package of cheddar snack crackers, a 2.4-ounce nutrition bar, a 1.55-ounce chocolate bar, and medium-sized apple. Both the parent and child was asked to record his/her drink and food-choices. In coming to agreement on snack choices, the parent/child dyad did not have to choose the same snack (e.g., a parent could choose water and an apple while a child could choose the hydration drink and a nutrition bar). The researcher again left the room during the discussion of the snack choices. If the participants did not finish their discussion within 5 minutes, they were instructed that it was time to move on to the next portion of the study. Consensus on what each party would have always happened within the 5-

minute time allotment. The discussions as to how each party arrived at their choices was not always completed within the 5-minute window.

*Coding of the discourse interviews.* The portion of the interview that addressing healthy and unhealthy decisions (i.e., the four card task) over the past week were transcribed and subsequently coded for this study (i.e., favorite meal and the snack choice task were not included). Since this study sought to understand how parents' discourse influenced children's health habit decisions, only the parents' utterances were coded for implicit theories. It did not matter to whom the parent was referring during this portion of the interview; any utterances that reflected an incremental or entity theme were counted.

In regards to content, following Gunderson and colleagues (2013), comments that emphasized effort, strategies, and actions (i.e., you really tried to exercise this week) were counted as incremental themes. In keeping with the focus in incremental theories on malleability, greater use of qualifiers was considered to reflect incremental themes. For example, a parent could say "you kind of exercised yesterday," and this statement would be considered incremental due to the use of a qualifier.

Utterances that conveyed dichotomous categorization of an individual were counted as beliefs, e.g., I'm a runner. An utterance could be coded as both an entity and an incremental response. For example, "you did a really good job running" was considered both entity and incremental. This statement includes a dichotomous word and a qualifier, thus being both entity and incremental.

The initial coding scheme was refined based on coding responses from the first five participants. There were two coders, one undergraduate student and one graduate student (me), who both developed and refined the coding scheme. Total utterances were identified based the

total number of subject-verb clauses. To count the total number of utterances, we followed the acronym FANBOYS (i.e., for, and, nor, but, or, yet, so) to determine separate subject-verb clauses within sentences; these were words use to identify subject-verb clauses. For example, “yesterday I had breakfast and I ate dinner” would be coded as two clauses “yesterday I had breakfast” and “and I ate dinner” because there are two separate subject-verb clauses. However, “yesterday I ate an apple, banana, and a hamburger” would be coded as one clause even though “and” is present. Subject-verb clauses were how I calculated total statements, entity statements, and incremental statements. Each coder independently counted the total number of utterances based on subject-verb clauses and coded each subject-verbal clause the presence of incremental/entity themes.

Interrater agreement of  $Kappa > .60$  was considered the threshold for agreement.

Overall *Kappas* were calculated across all 40 transcripts; results were .758 for entity and .685 for incremental. The individual *Kappas* for each dyad ranged from .385 to 1.0 for entity and from .135 to .965 for incremental, but only five of the individual *Kappas* did not reach the .60 cut-off. The coders discussed the areas of disagreement and came to a consensus on the assignment of the final values.

*Operational definitions of implicit theories.* Given that dyads varied greatly in their amounts of utterances, I decided to measure both incremental and entity utterances as ratio; total number of incremental utterances divided by total number of utterances, and total number of entity utterances divided by total number of utterances.

## **Questionnaires**

**Child Diet Questionnaire (Thiagarajah et al., 2008).** This was a 26-item questionnaire designed to assess what the child ate 24 hours prior to their participation in the study (See

Appendix A). The scale ranged from 0 times to 3 times. Children were given instructions to explain that the number of times they should count was related to separate meal times and not second servings of a particular item during one meal. This questionnaire asked about intakes of fruits, vegetables, chips, proteins, sugar-sweetened beverages, and sweet foods. We composited these items into two categories: healthy diet and unhealthy diet. Healthy diet ( $\alpha = .649$ ) which included yogurt, whole grains, fruits, vegetables, and beans. Unhealthy diet ( $\alpha = .600$ ) included fruit juice, fruit punch, ice cream, and candy. The CDQ had an item that mentioned fried protein consumption, but this item was not included because these dietary choices could be considered healthy and/or unhealthy.

**Child Physical Activity Questionnaire (Faulkner et al., 1997).** This measure explored the types of physical activity the child engaged in during the previous week, and how many times over the course of that week the child participated in the listed activities (See Appendix B). As part of the larger questionnaire, each child was asked for the prior week the frequency and duration performing certain physical activities (e.g., running, swimming, etc.). Each child then reported how active they were over the past week by time of day (e.g., how physically active they were in the morning, afternoon, evening, and weekend). Children could respond on a scale that ranged from none to five or more times. Each child was asked to describe his/her level of physical activity, and the responses ranged from no physical activity (0) to high physical activity (4).

The part of the measure used for this study included the portion of the CDQ where each child rated his/her physical activity for each day of the week (i.e., how active they were on Monday, Tuesday, Wednesday, etc.) from none (0) to very often (4). These seven items were

used to form a composite score of physical activity ( $\alpha = .828$ ). The CDQ also assessed sedentary time, but these items were not included within this study.

**Body Areas Satisfaction Scale (BASS; Cash, 2000).** This 9-item questionnaire measures a child's satisfaction/dissatisfaction within eight distinct body areas (e.g., face, height, weight, and hair) as well as overall appearance (See Appendix C). Each child was asked to indicate his/her satisfaction or dissatisfaction on a 1 to 5 scale of very dissatisfied (1) to very satisfied (5) for each body part; ratings were averaged to produce a composite measure of body image ( $\alpha = .802$ ).

**Body Figure Perceptions Scale (BFPS; Collins, 1990).** This is a pictorial measure designed to assess each child's perception of: 1.) his/her current body image, 2.) his/her ideal child body type and 3.) his/her ideal adult body type (See Appendix D). Each child was presented with 7 pictures of same-sexed body types. The images ranged from very small to full-figured body types. Each picture was numbered from 1, which referred to the smallest or left most picture, to 7, which referred to the largest or right most picture. Each child was instructed to choose *any* number between one and seven that reflected his/her body image perceptions, i.e., a child could choose a decimal value between two anchors to reflect that he/she was identifying a body type somewhere in-between the two body representations. The Body Figures Perception Scale produces two deviation scores, current self-discrepancy and future self-discrepancy. The current self-discrepancy score was computed by subtracting the child's current ideal body image from his/her current self-image. The future self-discrepancy score was computed by subtracting each child's adult ideal body image from the his/her current self-image. The closer each discrepancy score was to zero, the more positive the child's body image score (cf. Michael et al., 2014).

**BMI (Body Mass Index).** Each child's height, weight, birthdate and sex were used as inputs into an on-line BMI percentile calculator (Centers for Disease Control, 2014).

## Results

### Hypothesis Testing

To assess hypothesis 1, I ran an independent samples *t*-test to test for significant mean level differences in body image discrepancy scores and body satisfaction between boys and girls.

For the second hypothesis, I used a stepwise regression. At step one, child age and child sex was entered to control for both age and sex.

At step two, the proportion of entity statements and the proportion of incremental statements were entered to assess the unique predictive capacity of parents' implicit theories on the children's outcome variables of interest. The omnibus *F* and  $\beta$  coefficients for entity and incremental statements were examined to assess hypothesis 2 (incremental themes would be tied to better health related outcomes while emphasis on entity themes would predict more negative outcomes).

At step three, the interaction terms of child sex with parents' use of entity themes and parents' use of incremental themes were entered to assess the interaction of gender and implicit theories. This also addressed hypothesis 3 (moderation by child sex).

### Analyses

**Hypothesis 1.** For hypothesis 1, I used an independent samples *t*-test to assess the mean-level differences between boys and girls for the following outcomes variables: body satisfaction and body image discrepancies. Before proceeding with analysis, the data were explored for potential violations in the underlying assumptions of an independent samples *t*-test (e.g., distribution normality, and equal variances in both samples). There were no significant

differences between boys and girls with regard to any of these variables (See Table 5 for independent *t*-tests by child sex).

**Hypothesis 2.** For hypothesis 2, I hypothesized that parents who communicated more incremental themes would have children with better weight related outcomes than parents who highlighted entity themes. I first examined the bivariate correlations (see Table 4). There were no significant  $\beta$  coefficients or changes in  $R^2$ .

I next ran hierarchical stepwise regressions for each outcome of interest. I entered child sex and child age on step one. For step two, I entered centered scores for parents' use of incremental themes and parents' use of entity themes. Table 6 summarizes results. While controlling for child age and child sex, there were no significant associations of entity and incremental themes with child weight-related outcomes.

**Hypothesis 3.** For hypothesis 3, I hypothesized that child sex would moderate the influence of parents' use of entity and incremental themes on child weight related outcomes. On Step 3, I entered the centered interaction terms for child sex and entity themes, and for child sex and incremental themes. As Table 6 shows, there were no significant interactions predicting children's weight-related outcomes.

### **Supplemental Analyses**

Beyond the original analyses, I explored the data based on children's weight status. I split the sample of children into two groups: underweight/healthy weight and overweight/obese using BMI percentiles to determine group membership following the CDC's (2012) criterion.

I repeated the hierarchical regression analyses, adding children's weight status as a moderator variable. Again, entity and incremental proportions were centered prior to analyses. Child age and weight status, were entered in step 1, parents use of entity and incremental themes

were entered in step 2, and the interaction terms for parents' use of entity and incremental theories and children's weight status were entered in step 3 (See Tables 14-20). Given the small total sample size, the Type I error rate was set at  $p = .10$ . For unhealthy diet scores, there was a crossover interaction ( $B = -5.316$ ,  $p < .047$ ,  $R^2 = .139$ ) between parents' uses of entity statements and weight status (See Figure 1). For obese/overweight children, fewer utterances of entity statements predicted higher unhealthy diet scores ( $r = -0.70$ ), whereas this relationship was not observed for underweight/normal weight children ( $r = 0.07$ ). There was also a crossover interaction (See Figure 2) between parents' entity utterances and weight status for body areas satisfaction scores ( $B = -6.342$ ,  $p < .070$ ,  $R^2 = .102$ ). For overweight/obese children, fewer entity utterances predicted higher body satisfaction scores ( $r = -0.59$ ), whereas this relationship was not observed for underweight/normal weight children ( $r = 0.08$ )

For current self-discrepancy, crossover interaction (See Figure 3) was found between weight status and parent's use of entity statements ( $B = 9.562$ ,  $p < .083$ ,  $R^2 = .220$ ). For underweight/normal weight children, fewer entity statements predicted less body image discrepancies ( $r = 0.72$ ), whereas this relationship was not observed for obese/overweight children ( $r = 0.50$ ). There was also main effect for parents use of entity statements on current self-discrepancies ( $B = -5.012$ ,  $p < .054$ ,  $R^2 = .259$ ), but as seen in Figure 3, this main effect was caused by the effect of weight status for only parents uttering a higher proportion of entity statements. Finally, in underweight/normal weight children, there was a main effect for parents' uses of entity themes for children's future discrepancy scores ( $B = -3.267$ ,  $p < .096$ ,  $R^2 = .271$ ). For underweight/normal weight children, less entity utterances predicted positive future self-discrepancy scores while greater entity utterances predicted more negative future self-discrepancy scores

Overall, the theoretical model that included weight status as a moderator predicted a number of child outcomes including unhealthy diet scores, body satisfaction scores, current self-discrepancy scores, and future self-discrepancy scores. The results all occurred in the expected direction and this model is better suited for analyses within the context of this study.

### **Discussion**

The hypotheses for the current study were not supported when using the total sample. There were no mean level differences in body image discrepancies or body satisfaction between boys and girls, parents' communications of implicit theories during a health related discussion did not significantly predict changes in the dependent variables, and the interactions between parents' communications of implicit theories and child sex were not significant predictors of the outcome variables. As with any study where hypotheses are not supported, concerns over methodological issues receive primary attention. However, results of the supplemental analyses indicated that moderation by child sex is less important than moderation by weight status.

Perhaps the influence parents' communications may be internalized as a function of children's perceptions of self. Meaning that given children's self-perceptions, parents' communications may affect children differently. As a result, children may perceive parents' conversations about health habits as function of his or her weight status. Typically, entity statements predicted poorer outcomes for overweight/obese children, while there were typically no effects for underweight/healthy weight children. This may be indicative of the fact that how children internalize their parents' messages is a function of children's self-perceptions. These differences in outcomes as a function of weight status may be associated with the psychological risks of being overweight/obese (e.g., low self-esteem and poor body image). Though this study

did not assess any clinical risk factors for children, these predispositions could potentially explain the results of the supplemental analyses.

For overweight/obese children, entity utterances could be casual dynamic in that entity statements lead to poorer outcomes. For example, parents who typically use dichotomous categorizations or labels may have children who have poor outcomes. The reverse could also be true, that poor outcomes lead to greater use of entity statements. That is, children who have poorer health outcomes may cause their parents to use more entity themes in weight-related discussions. These results may also indicate a reciprocal causal relationship between entity utterances and outcomes. That is, both poor outcomes and entity statements cause each other. I think these results reflect that poor outcomes cause greater use of entity statements. This is because since these effects were not largely seen within underweight/healthy weight children, that something about overweight/obese children drives parents' communications. Perhaps parents want to communicate in a way that increases action in their children when they are already performing poorly within a health domain. Perhaps these communications reflect parents' desires to change their children's behaviors and to motivate children to improve.

### **Limitations**

It is clear there are strong relationships between parents' entity utterances and health outcomes for overweight/obese children. As to normal/underweight children, it is possible that the relationship does not exist *or* the effects are present but relatively weaker. If the latter is the case, the implication is that methodological limitations prevented detection of relationships for normal/underweight children. One potential limitation was the failure to control dyad type as an extraneous source of variance. The analyses did not account for dyad type (i.e., mother/son; mother/daughter; father/son; father/daughter). Potentially, the structure of the dyad impacts

interactions because it is likely that fathers and mothers differentially relate to same sex versus different sex children in ways that are unrelated to implicit theories. The dyad type effects were not partialled out of the error variance in the analyses, thereby potentially decreasing the likelihood of detecting effects.

There was also heavy reliance on self-report data from the children. In particular, several measures were retrospective. Physical activity was measured by asking the children to estimate their level of physical activity over the past week. Similarly, the child diet questionnaire asked children to recall the consumption of several different food groupings over the past week. This retrospective approach is susceptible to inaccuracies in memory (Bernstein, Erdfelder, Meltzoff, Peria, & Loftus, 2011; Bernstein, Atance, Meltzoff, & Loftus, 2007). This means that child participants may have errantly reported their diet and exercise habits.

The discourse analysis was a rich measure of parents' thoughts, but this strategy was inherently risky in terms of eliciting implicit theory themes. Though the research assistants were well trained, it was a challenging task to develop the implicit theory protocol (e.g., coding of labels, use of qualifiers, absolute statements, etc.), as indicated by the fact that the coding protocol was changed many times before the final coding began. At an even a more fundamental level, the use unstructured conversations made it more difficult to accurately measure parents' true beliefs in incremental/entity implicit theories. The discussions were not structured beyond instructing parents and children to discuss their decisions. By not structuring the process to elicit implicit theory ideations, the result is the reliance of the successful coding of subtle nuances of language. The primary rationale for the discourse approach was derived from Gunderson et al. (2013) who explored the role of parental praise and children's motivation. Gunderson and colleagues (2013) investigated typical family behaviors in normal day-to-day activities over

longer periods of time; whereas, I relied on a relative short conversation bases on four specific prompts. The not only did the discourse task fail to elicit implicit theory imagery directly, these short interactions may not represent typical discussions relating to health habit decisions.

The cross sectional design was a limitation. Since this was a single time point, we did not track their activities and diets over time, so this study may not capture participants' typical habits.

### **Future Directions**

Every novel study undergoes methodological refinements. Based on the aforementioned issues, there are several recommendations for future research. Obviously, a larger sample size would reduce the potential Type I errors. Multi-level modeling (MLM) analysis is also recommended to control the variance accounted for by dyad type. In MLM, at level 1, the variance attributable dyad type (i.e., mother/daughter, mother/son, father/daughter, father/son) is estimated. The dyad type variance is removed prior to testing the level 2, between dyad variables, i.e., implicit theory ideation in the current study.

The study was cross-sectional and a longitudinal design affords greater opportunities to detect effects. Further, because most of the data were collected over the summer the findings may not generalize to when students are in school. Academically, most grade-school children take a break from school over the summer and this may have influenced our participant's behaviors. Recent work by Wang and colleagues (2015) supports this possibility, as they found that children generally had worse eating habits over summer break. Over the summer, children generally have more sedentary time and more time dedicated to physical activity (Wang et al., 2015). The data from these findings may reflect children's summer diet and physical activity habits and not their typical habits.

The study would also benefit from utilizing devices that assess physical activity levels (e.g., accelerometers) would lessen the reliance on self-report data and decrease potential social desirability bias. Accelerometers are devices that track one's physical activity, as long as the person wears it. This is a device that would not allow on participant reports as they only have to wear it attached to their clothes. This device tracks their physical activity and exertion, which would give a better assessment of participants' physical activity over a set interval of time.

Adapting the design of the discourse task to be a structured interview to prompt parents to use implicit theories themes will likely allow for more accurate assessments parents' implicit theories. At the beginning of the interviews, researchers could orient parents to implicit theories and what constitutes incremental and entity statements which would prime parents to use these statements within the discussion task. Parents would be prompted to be aware of these themes during their conversations about weight-related decisions and future studies could assess if this would elicit significant effects.

## **Conclusion**

Though addressing the current methodological issues in future studies would aid in understanding how parents communicate during health-related discussions, focusing on the effects of child sex may not be the best model for research in this domain. The supplemental analyses revealed that weight status is likely more relevant as a moderator of relationships between parents' implicit theory utterances and health outcomes. Though the directionality of causation needs to be explored further, perhaps understanding how parents' communications change organically during a weight loss progress may elucidate the antecedents of causation. Even still, I believe that poor outcomes drive parents' communications because these same effects are not seen within underweight/normal weight children. This could be evidence of

something unique about overweight/obese children that changes parents' communications. Additionally, diagnostic measures could also help determine which qualities lead to parents' communications. Even still, the results of the supplemental analyses may indicate how important it is for future studies to target intervention populations in order to truly understand how socialization influences children's weight-related outcomes. Future research should be aware of the impact of children's weight status and continue to drive children's weight-related research while remaining cognizant of these potential influences.

## References

- Barbarin, O., & Jean-Baptiste, E. (2013). The relation of dialogic, control, and racial socialization practices to early academic and social competence: Effects of gender, ethnicity, and family socioeconomic status. *American Journal of Orthopsychiatry*, *83*, 207-217. doi: 10.1111/ajop.12025
- Beets, M. W., Vogel, R., Chapman, S., Pitetti, K. H., & Cardinal, B. J. (2007). Parent's social support for children's outdoor physical activity: Do weekdays and weekends matter? *Sex Roles*, *56*, 125-131.
- Beruchashvili, M., & Moisiso, R. (2013). Is planning an aid or an obstacle? Examining the role of consumers' lay theories in weight loss. *Journal of Consumer Affairs*, *47*, 404-431. doi:10.1111/joca.12014
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, *78*, 246-263. doi: 10.1111/j.1467-8624.2007.00995.x
- Blaine, R. E., Pbert, L., Geller, A. C., Power, E. M., & Mitchell, K. (2015) Parent preferences for telephone coaching to prevent and manage childhood obesity. *Postgrad medical Journal*, *91*, 206-211.
- Blowers, L. C., Loxton, N. J., Grady-Flessner, M., Occhipinti, S., & Dawe, S. (2003). The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. *Eating Behaviors*, *4*, 229-244. doi: 10.1016/S1471-0153(03)00018-7
- Bois, J. E., Sarrazin, P. G., Brustad, R. J., Trouilloud, D. O., & Cury, F. (2005). Elementary school children's perceived competence and physical activity involvement: The influence

- of parents' role modeling behaviors and perceptions of their child's competence. *Psychology of Sport and Exercise*, 6, 381-397. doi: 10.1016/j.psychsport.2004.03.003
- Brennan, M. A., Lalonde, C. E., & Bain J. L. (2010). Body image perceptions: Do gender differences exist? *Psi Chi Journal of Undergraduate Research*, 15, 130-138.
- Bernstein, D. M., Atance, C., Meltzoff, A. N., & Loftus, G. R. (2007). Hindsight bias and developing theories of mind. *Child Development*, 78, 1374-1394.
- Bernstein, D. M., Erdfelder, E., Meltzoff, A. N., Perina, W., & Loftus, G. R. (2011). Hindsight bias from 3 to 95 years of age. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37, 378-391.
- Brodersen, N. H., Steptoe, A., Boniface, D. R., & Wardle, J. (2007). Trends in physical activity and sedentary behavior in adolescence: Ethnic and socioeconomic differences. *British Journal of Sports Medicine*, 41, 140-144.
- Brustad, R. J. (1992). Integrating socialization influences into the study of children's motivation in sport. *Journal of Sport & Exercise Psychology*, 14, 59-77.
- Burnette, J. L., & Finkel, E. J. (2012). Buffering against weight gain following dieting setbacks: An implicit theory intervention. *Journal of Experimental Social Psychology*, 48, 721-725. doi: 10.1016/j.jesp.2011.12.020
- Centers for Disease Control, Behavioral Risk Factor Surveillance System. (2012). Prevalence of self-reported obesity among U.S. adults. Retrieved, June, 12, 2014 from <http://www.cdc.gov/obesity/downloads/dnpao-state-obesity-prevalence-map-2012.pdf>
- Cash, T. F., Fleming, E. C., Alindogan, J., Steadman, L., & Whitehead, A. (2002). Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eating*

- Disorders: The Journal of Treatment & Prevention*, 10, 103-113.  
doi:10.1080/10640260290081678
- Chan, K., Prendergast, G., Grønhøj, A., & Bech-Larsen, T. (2009). Communicating healthy eating to adolescents. *Journal of Consumer Marketing*, 26, 6-14. doi: 10.1108/07363760910927000
- Collins, M. E., (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders*, 10, 199-208
- Cooper, A. R., Goodman, A., Page, A. S., Sherar, L. B. Esliger, D. W., van Sluijs, E., Andersen, L. B., ... Ekelund, U. (2015). Objectively measured physical activity and sedentary time in youth: The international children's accelerometry database (ICAD). *International Journal of Behavioral Nutrition and Physical Activity*, 12.
- Da Fonseca, D., Cury, F., Santos, A., Sarrazin, P., Poinso, F., & Deruelle, C. (2010). How to increase academic performance in children with oppositional defiant disorder? An implicit theory effect. *Journal of Behavior Therapy and Experimental Psychiatry*, 41, 234-237. doi:10.1016/j.jbtep.2010.01.008
- Dunsmore, J. C. (2015). Effects of person- and process-focused feedback on prosocial behavior in middle childhood. *Social Development*, 24, 57-75. doi: 10.1111/sode.12082
- Dweck, C. S. (1999). *Self-Theories: Their role in motivation, personality and development*. Philadelphia, PA: Psychology Press.
- Dweck, C., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, 6, 267-285.
- Ebbeling, C. B., Pawlak, D. B., & Ludwig, D. S. (2002). Childhood obesity: public-health crisis, common sense cure. *The Lancet*, 360, 473-482, doi: 10.1016/S0140-6736(02)09678-2

- Eberhardt, J. L., Dasgupta, N., & Banaszynski, T. L. (2003). Believing is seeing: The effects of racial labels and implicit beliefs on face perception. *Personality and Social Psychology Bulletin*, *29*, 360-370. doi: 10.1177/0146167202250215
- Edwardson, C. L., & Gorely, T. (2010). Parental influences on different types and intensities of physical activity in youth: A systematic review. *Psychology of Sport and Exercise*, *11*, 522-535. doi: 10.1016/j.psychsport.2010.05.001
- Eisenberg, N., Cumberland, A., & Spinrad T.L. (1998). Parental socialization of emotion. *Psychology Inquiry*, *9*, 241-273.
- Fan, S., & Eiser, C. (2009). Body image of children and adolescents with cancer: A systematic review. *Body Image*, *6*, 247-256. doi: 10.1016/j.bodyim.2009.06.002
- Faulkner, R. A., Kowalski, & K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the physical activity questionnaire for older children. *Medicine and Science in Sports and Exercise*, *29*. 1344-1349.
- Fivush, R., Haden, C.A., & Reese, A. (2006). Elaborating on elaborations: Role of maternal reminiscing style in cognitive and socioemotional development. *Child Development* *77*, 1568-1588. doi: 10.1111/j.1467-8624.2006.00960.x
- Frisén, A., & Anneheden, L. (2014). Changes in 10-year-old children's body esteem: A time-lag study between 2000 and 2010. *Scandinavian Journal of Psychology*, *55*, 123-129. doi: 10.1111/sjop.12110
- Garner, P. W., Dunsmore, J. C., & Southam-Gerrow, M. (2008). Mother-child conversations about emotions: Linkages to child aggression and prosocial behavior. *Social Development*, *17*, 259-277.
- Goodvin, R., & Rolfson, J. (2014). Mothers' attributions in reminiscing conversations about

- children's successes and failures: Connections with children's self-evaluations. *Merrill-Palmer Quarterly* 60, 24-52.
- Hastings, C., Mosteller, F., Tukey, J. W., Winsor, C.P. (1947). Low moments for small samples: A comparative study of order statistics. *Annals of Mathematical Statistics*, 18, 413-426.
- Hedrick, V. E., Comber, D. L., Ferguson, K. E., Estabrooks, P. A., Savla, J., Dietrich, A. M., & Davy, B. M. (2013). A rapid beverage intake questionnaire can detect changes in beverage intake. *Eating Behaviors*, 14, 90-94. doi: 10.1016/j.eatbeh.2012.10.011
- Jebb, S.A. (2007). Dietary determinants of obesity. *Obesity Reviews*, 8, 93-97.
- Jones, R. A., Sinn, N., Campbell, K. J., Hesketh, K., Denney-Wilson, E., Morgan, P. J., Lubans, D. R., Magarey, A. (2011). The importance of long-term follow-up in child and adolescent obesity prevention interventions. *International Journal of Pediatric Obesity*, 6, 178-181. doi: 10.3109/17477166.2011.575155
- Kimiecik, J., & Horn, T. (2012). Examining the relationship between family context and children's physical activity beliefs: The role of parenting style. *Psychology of Sport and Exercise*, 13, 10-18. doi: 10.1016/j.psychsport.2011.08.004
- Kirk, S., Zeller, M., Claytor, R., Santangelo, M., Khoury, P. R., & Daniels, S. R. (2005). The relationship of health outcomes to improvement in BMI in children and adolescents. *Obesity Research*, 13, 876-882. doi: 10.1038/oby.2005.101
- Levy, S. R., Chiu, C., & Hong, Y. (2006). Lay theories and intergroup relations. *Group Processes and Intergroup Relations*, 9, 5-24.
- Määttä, S., Ray, C., & Roos, E. (2014). Associations of parental influence and 10–11-year-old children's physical activity: Are they mediated by children's perceived competence and

- attraction to physical activity? *Scandinavian Journal of Public Health*, 42, 45-51. doi: 10.1177/1403494813504506
- Matthews, J. S. (2014). Multiple pathways to identification: Exploring the multidimensionality of academic identity formation in ethnic minority boys. *Cultural Diversity and Ethnic Minority Psychology*, 20, 143-155 doi: 10.1037/a0034707
- Markland, D. & Ingledew, D.K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. *British Journal of Health Psychology*, 2, 361-376
- Michael, S. L., Wentzel, K., Elliott, M. N., Dittus, P. J., Kanouse, D. E., Wallander, J. L., & Schuster, M. A. (2014). Parental and peer factors associated with body image discrepancy among fifth-grade boys and girls. *Journal of Youth and Adolescence*, 43, 15-29. doi: 10.1007/s10964-012-9899-8
- Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalizing, internalizing, and academic competence from middle childhood to early adolescence. *Development and Psychopathology*, 22, 635-653. doi: 10.1017/S0954579410000337
- Molden, D. C., & Dweck, C. S. (2006). Finding 'meaning' in psychology: A lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, 61, 192-203. doi:10.1037/0003-066X.61.3.192
- Molden, D. C., Plaks, J. E., & Dweck, C. S. (2006). 'Meaningful' social inferences: Effects of implicit theories on inferential processes. *Journal of Experimental Social Psychology*, 42, 738-752. doi:10.1016/j.jesp.2005.11.005
- Nader, P. R., Bradley, R. H., Houts, R. M., McRitchie, S. L. & O'Brien, M. (2008). Moderate-to-Vigorous physical activity from ages 9 to 15 years. *The Journal of the American Medical*

*Association, 300, 295-305.*

Nichols, S. (2002). Parents' construction of their children as gendered, literate subjects: A critical discourse analysis. *Journal of Early Childhood Literacy, 2*, 123-144.

Ogden, C.L., Carroll, M.D, Kit, B.K, & Flegal, K.M. (2012). Prevalence of childhood and adult obesity in the United States, 2011-2012. *The Journal of the American Medical Association, 311*, 806-814. doi: 10.1001/jama.2014.732.

Plaks, J. E., & Chasteen, A. L. (2013). Entity versus incremental theories predict older adults' memory performance. *Psychology and Aging, 28*, 948-957. doi: 10.1037/a0034348

Plaks, J. E., Levy, S. R., & Dweck C. S. (2009). Lay theories of personality: Cornerstones of meaning in social cognition. *Social and Personality Psychology Compass 3*, 1069-1081. doi: 10.1111/j.1751-9004.2009.00222.x

Plaks, J. E., & Stecher, K. (2007). Unexpected improvement, decline, and stasis: A prediction confidence perspective on achievement success and failure. *Journal of Personality and Social Psychology, 93*, 667-684. doi: 10.1037/0022-3514.93.4.667

Rickert, N. P., Meras, I. L., & Witkow, M. R. (2014). Theories of intelligence and students' daily self-handicapping behaviors. *Learning and Individual Differences, 36*1-8. doi:10.1016/j.lindif.2014.08.002

Romero, C., Master, A., Paunesku, D., Dweck, C. S., & Gross, J. J. (2014). Academic and emotional functioning in middle school: The role of implicit theories. *Emotion, 14*(2), 227-234. doi:10.1037/a0035490

Simpkins, S. D., Fredricks, J. A., & Eccles, J. S. (2012). Charting the Eccles' expectancy-value model from mothers' beliefs in childhood to youths' activities in adolescence. *Developmental Psychology, 48*, 1019-1032. doi: 10.1037/a0027468

- Slade, P. D., (1994). What is body image? *Behavior Research and Theory*, 32, 497-502.
- Steffen, L. M., Jacobs, D. R., Murtaugh, M. A., Moran, A., Steinberger, J., Hong, C., Sinaiko, & A. R. (2003). Whole grain intake is associated with lower body mass and greater insulin sensitivity among adolescents. *American Journal of Epidemiology*, 158, 243-250.
- Thiagarajah, K., Fly, A. D., Hoelscher, D. M., Bai, Y., Lo, K., Leone, A., & Shertzer, J. A. (2008). Validating the food behavior questions from the elementary school SPAN questionnaire. *Journal of Nutrition Education and Behavior*, 40, 305-310.
- Trinh, L., Wong, B., Faulkner, G. E. (2015). The independent and interactive associations of screen time and physical activity on mental health, school connectedness and academic achievement among a population-based sample of youth. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 24, 17-24.
- Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine & Science in Sports & Exercise*, 40, 181-188.
- Verloigne, M., Van Lippevelde, W., Maes, L., Yildirim, M., Chinapaw, M., Manios., Y., Androustos, O, ... De Bourdeaudhuij, I. (2012). Levels of physical activity and sedentary time among 10- to 12-year-old boys and girls across 5 European countries using accelerometers: An observational study within the ENERGY-project. *International Journal of Behavioral Nutrition and Physical Activity*, 9.
- Wang, Y. C., Vine, S., Hsiao, A., Rundle, A., & Goldsmith, J. (2015). Weight-related behaviors when children are in school versus on summer breaks: Does income matter? *Journal of School Health*, 85, 458-466.

Figure 1. Scatterplot of Parents' Entity Statements and Children's Healthy Diet Scores

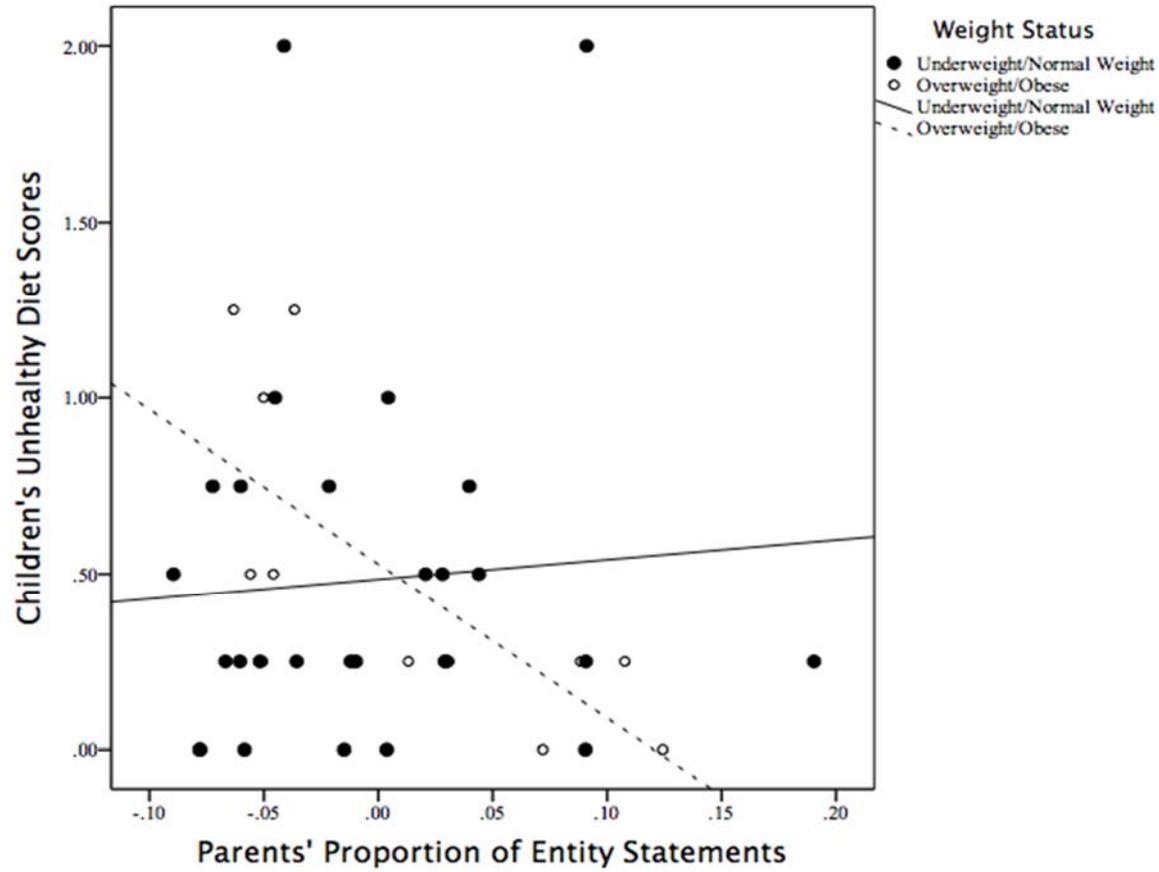


Figure 2. Scatterplot of Parents' Entity Statements and Children's BASS Scores

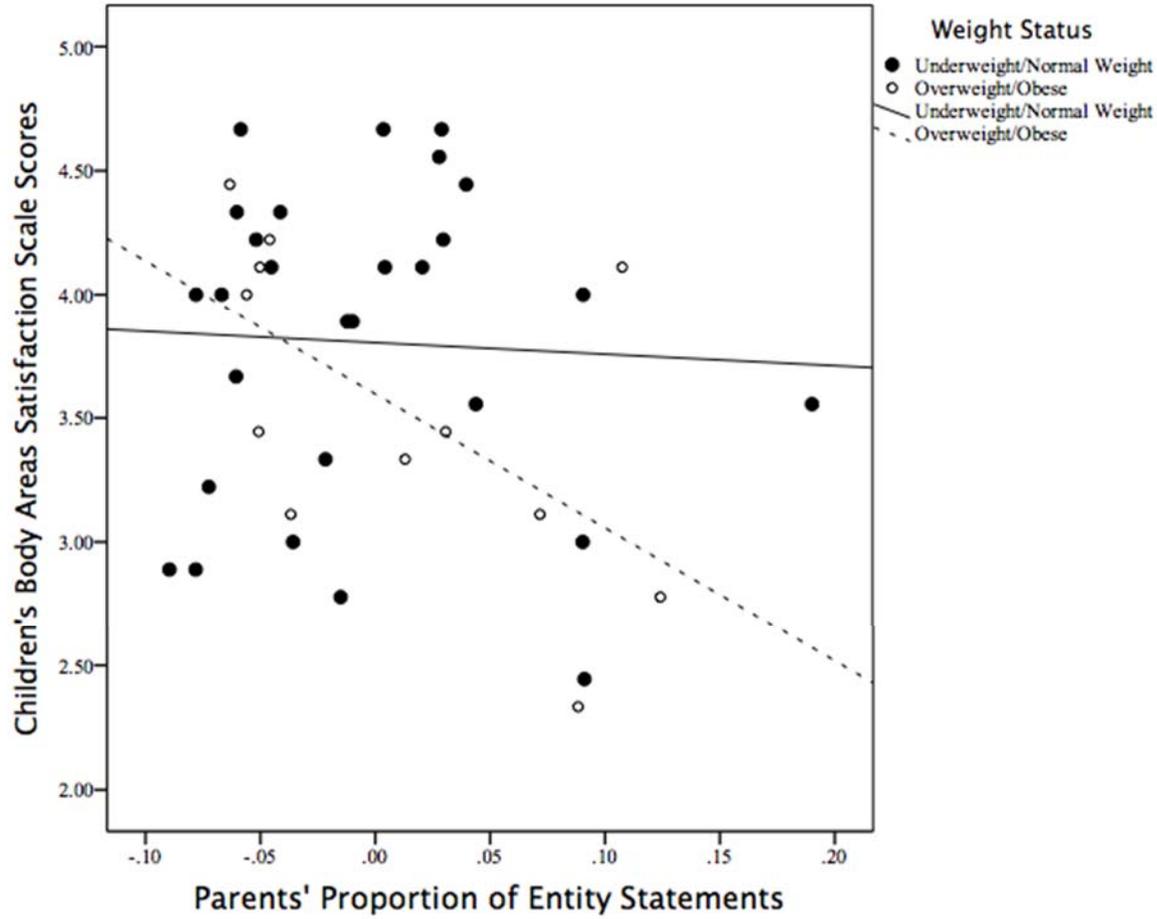


Figure 3. Scatterplot of Parents' Entity Statements and Children's Current Self-Discrepancy Scores

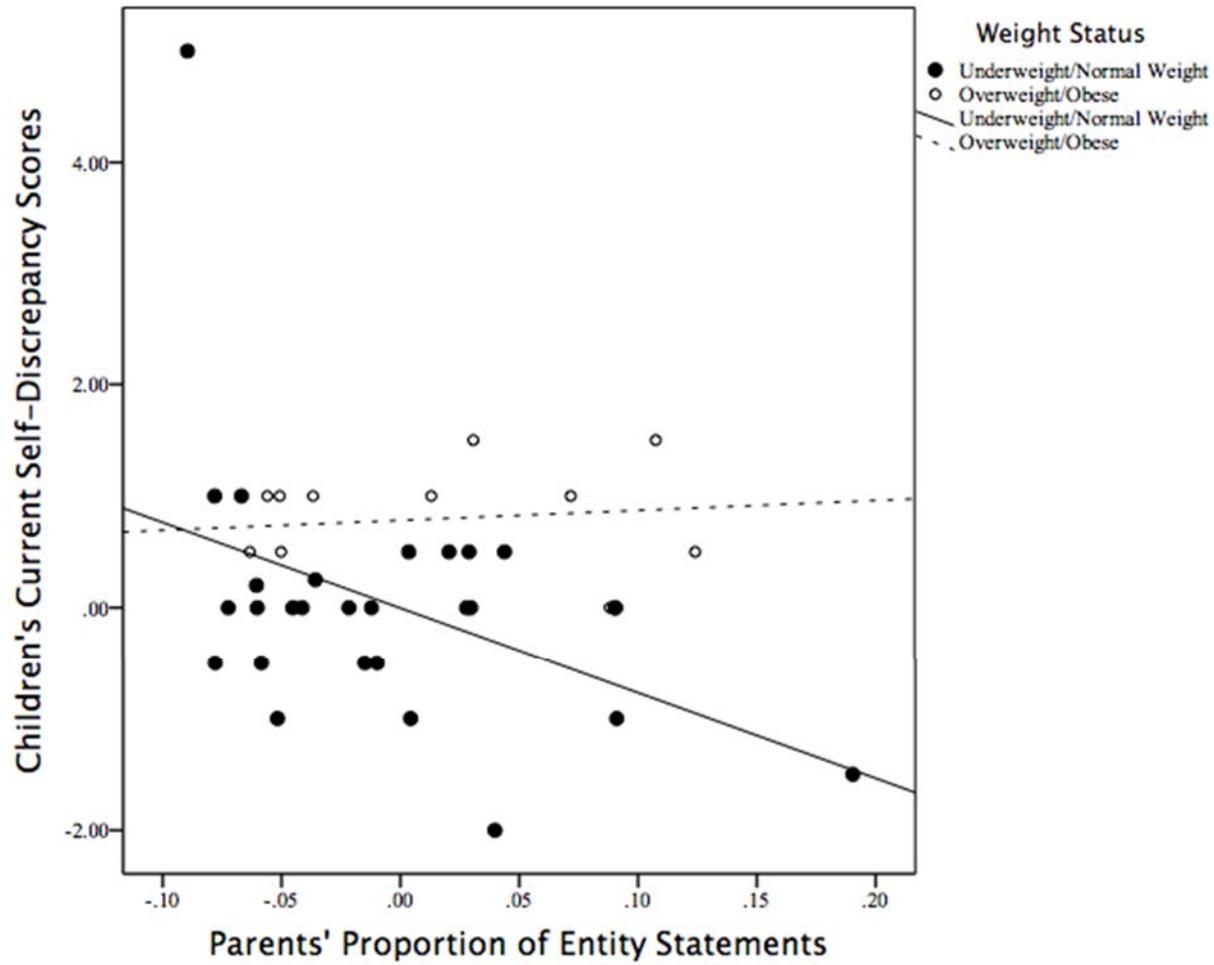


Figure 4. Scatterplot of Parents' Entity Statements and Children's Future Self-Discrepancy Scores

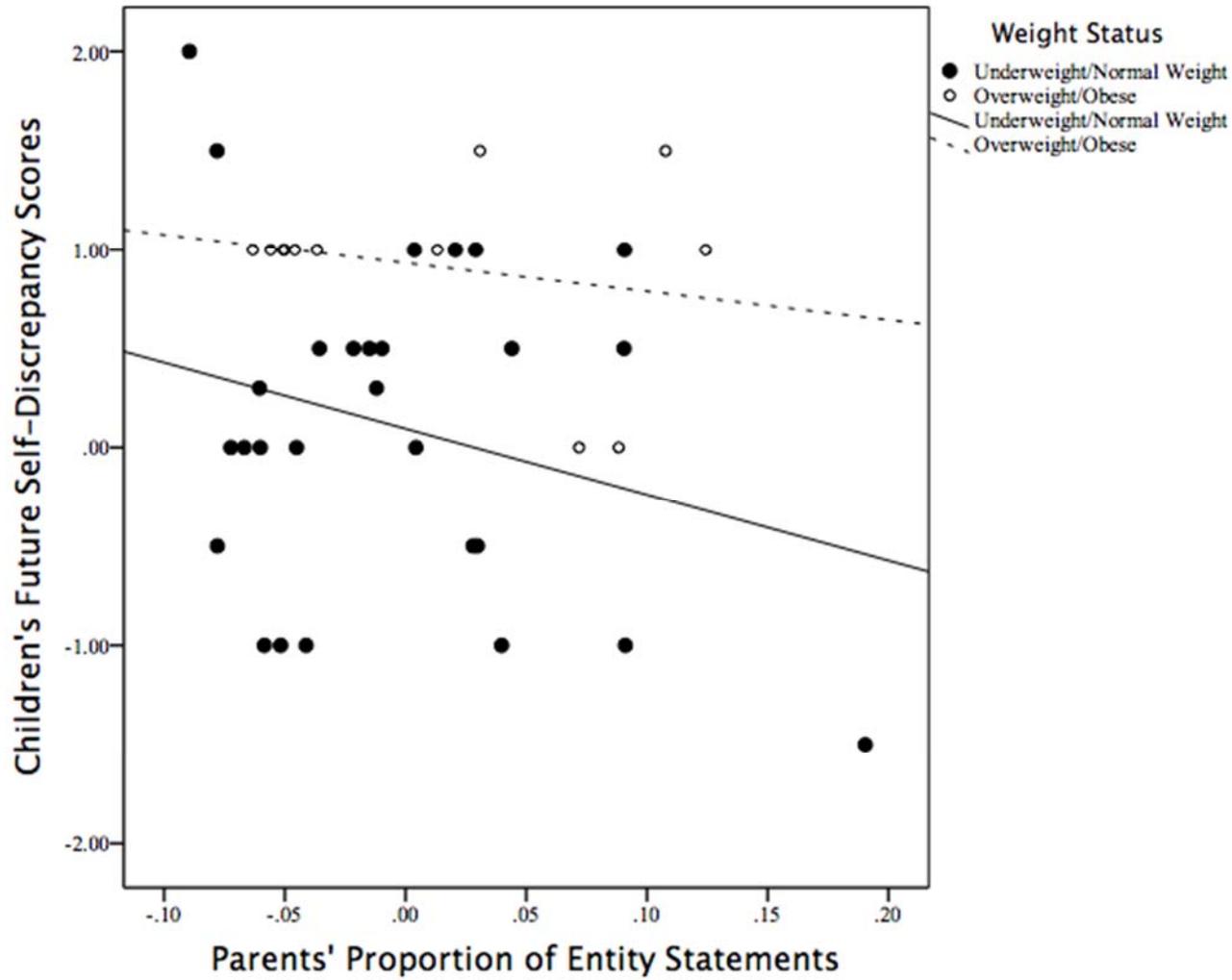


Table 1

## Descriptive Statistics for Variables of Interest

	Minimum	Maximum	Mean	Std. Deviation	Skewness (Error)	Kurtosis (Error)
Age	8.00	13.00	10.308	1.575	-.157 (.378)	-1.394 (.741)
BMI Percentile	1.00	97.00	57.875	34.040	-.385 (.374)	-1.456 (.733)
CDQ Healthy Diet	.00	2.00	.595	.459	1.134 (.374)	1.214 (.733)
CDQ Unhealthy Diet	.00	2.00	.481	.495	1.634 (.374)	2.767 (.733)
CPAQ Physical Activity	.57	4.00	2.125	.843	.423 (.374)	-.181 (.733)
BASS Score	2.33	4.67	3.725	.647	-.416 (.374)	-.863 (.733)
Current Self Discrepancy	-2.00	5.00	.261	1.085	1.864 (.374)	8.771 (.733)
Future Self Discrepancy	-1.50	2.00	.353	.839	-.393 (.374)	-.538 (.733)
Entity Proportion	.0278	.308	.117	.067	.862 (.374)	.192 (.733)
Incremental Proportion	.00	.278	.108	.067	.515 (.374)	-.461 (.733)

Table 2

## Bivariate Correlations for Full Sample

	1	2	3	4	5	6	7	8	9	10
1. Age (years)	--									
2. BMI Percentile	0.089	--								
3. CDQ Healthy Diet	-0.043	0.069	--							
4. CDQ Unhealthy Diet	-0.095	-0.05	0.231	--						
5. CPAQ Physical Activity	-0.044	-0.26	0.309	.346*	--					
6. BASS Score	-0.087	-0.259	0.185	0.059	0.168	--				
7. Current Self Discrepancy	0.144	.552**	-0.087	-0.127	-0.2	-0.229	--			
8. Future Self Discrepancy	0.022	.673**	0.001	-0.232	-0.279	-0.188	.740**	--		
9. Entity Proportion	0.053	-0.005	-0.158	-0.138	0.037	-0.231	-0.262	-0.165	--	
10. Incremental Proportion	0.205	-0.051	-0.035	0.139	0.073	-0.199	-0.049	0.12	0.287	--

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 3

## Bivariate Correlations Split by Child Sex

	1	2	3	4	5	6	7	8	9	10
1. Age (years)	--	-0.036	-0.208	0.094	-.525*	-0.013	0.158	-0.169	-0.185	0.099
2. BMI Percentile	0.154	--	0.083	0.244	-0.389	-0.265	.645**	.640**	-0.075	-0.236
3. CDQ Healthy Diet	0.114	0.071	--	0.359	.529*	0.282	0.125	0.127	0.156	0.062
4. CDQ Unhealthy Diet	-0.141	-0.215	0.154	--	-0.015	0.205	-0.255	-0.209	-0.216	-0.049
5. CPAQ Physical Activity	0.128	-0.213	0.224	.501*	--	0.189	-0.28	-0.236	0.065	-0.103
6. BASS Score	0.026	-0.238	0.109	-0.069	0.203	--	-0.369	-0.404	0.227	-0.213
7. Current Self Discrepancy	0.167	.529*	-0.192	-0.086	-0.17	-0.205	--	.789**	-0.136	0.094
8. Future Self Discrepancy	0.243	.771**	-0.092	-0.299	-0.286	-0.213	.736**	--	-0.078	0.077
9. Entity Proportion	0.099	0.008	-0.287	-0.077	0.012	-0.353	-0.302	-0.148	--	-0.094
10. Incremental Proportion	0.341	0.113	-0.112	0.249	0.171	-0.231	-0.131	0.138	.520*	--

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Girls are on the upper diagonal and boys are on the lower diagonal

Table 4

Independent Samples *t*-test to Assess Child Sex Differences for Body Image and Parental Themes

	Girls		Boys		<i>t</i> -test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Body Score	3.929	.523	3.545	.703	1.974
Current Self Discrepancy	-.303	.819	.224	1.299	.227
Future Self Discrepancy	.542	.667	.181	.953	1.375

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; discrepancy scores were (ideal self - current self)

Table 5

## Regression Analyses for Children's BMI Percentile

Children's BMI Percentile	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.004
Child Age	1.534	3.780	.070	
Child Sex	4.506	11.792	.066	
Step 2				.004
Child Age	1.871	4.004	.085	
Child Sex	3.931	12.526	.058	
Proportion of Entity Statements	-.561	93.003	-.001	
Proportion of Incremental Statements	-32.452	94.661	-.063	
Step 3				.033
Child Age	1.145	41.044	.052	
Child Sex	5.307	4.118	.078	
Proportion of Entity Statements	-105.032	12.790	-.205	
Proportion of Incremental Statements	-329.986	384.627	-.642	
Entity Statements * Child Sex	38.338	304.269	.134	
Incremental Statements * Child Sex	197.434	195.886	.628	

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 6

## Regression Analyses for Children's Healthy Diet Scores

Children's Healthy Diet	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.007
Child Age	-.006	.051	-.019	
Child Sex	-.078	.159	-.084	
Step 2				.023
Child Age	-.005	.053	-.018	
Child Sex	-.053	.167	-.058	
Proportion of Entity Statements	-1.049	1.240	-.152	
Proportion of Incremental Statements	-.028	1.261	-.004	
Step 3				.037
Child Age	-.001	.055	-.002	
Child Sex	-.071	.170	-.077	
Proportion of Entity Statements	4.551	5.115	.661	
Proportion of Incremental Statements	.272	4.046	.039	
Entity Statements * Child Sex	-3.268	2.910	-.852	
Incremental Statements * Child Sex	.052	2.605	.012	

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 7

## Regression Analyses for Children's Unhealthy Diet Scores

Children's Unhealthy Diet	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.018
Child Age	-.018	.054	-.056	
Child Sex	-.137	.170	-.139	
Step 2				.047
Child Age	-.033	.056	-.103	
Child Sex	-.079	.166	-.079	
Proportion of Entity Statements	-1.341	1.308	-.181	
Proportion of Incremental Statements	1.460	1.330	.196	
Step 3				.073
Child Age	-.048	.057	-.151	
Child Sex	-.051	.176	-.052	
Proportion of Entity Statements	-2.565	5.278	-.345	
Proportion of Incremental Statements	-5.096	4.175	-.684	
Entity Statements * Child Sex	.211	3.003	.051	
Incremental Statements * Child Sex	4.400	2.688	.966	

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 8

## Regression Analyses for Children's Physical Activity Scores

Children's Physical Activity	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.014
Child Age	-.042	.092	-.079	
Child Sex	.206	.286	.124	
Step 2				.018
Child Age	-.060	.096	-.112	
Child Sex	.238	.301	.143	
Proportion of Entity Statements	-.036	2.239	-.003	
Proportion of Incremental Statements	1.730	2.277	.139	
Step 3				.023
Child Age	-.068	.100	-.129	
Child Sex	.246	.309	.148	
Proportion of Entity Statements	3.724	9.302	.299	
Proportion of Incremental Statements	-3.503	7.358	-.281	
Entity Statements * Child Sex	-2.615	5.292	-.377	
Incremental Statements * Child Sex	3.729	4.737	.489	

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 9

## Regression Analyses for Children's Body Areas Satisfaction Scores

Body Areas Satisfaction Score	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.112
Child Age	.005	.067	.011	
Child Sex	-.446	.208	.349	
Step 2				.085
Child Age	.028	.067	.069	
Child Sex	-.458	.210	-.359	
Proportion of Entity Statements	-1.193	1.563	-.125	
Proportion of Incremental Statements	-2.270	1.589	-.236	
Step 3				.038
Child Age	.030	.069	.073	
Child Sex	-.474	.213	-.371	
Proportion of Entity Statements	6.184	6.412	.646	
Proportion of Incremental Statements	-4.128	5.072	-.430	
Entity Statements * Child Sex	-4.478	3.648	-.840	
Incremental Statements * Child Sex	1.600	3.265	.272	

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 10

## Regression Analyses for Children's Current Self Discrepancy Scores

Current Self Discrepancy	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.007
Child Age	.117	.120	.168	
Child Sex	-.185	.373	-.085	
Step 2				.068
Child Age	.120	.122	.172	
Child Sex	-.087	.383	-.040	
Proportion of Entity Statements	-4.252	2.842	-.260	
Proportion of Incremental Statements	-.246	2.890	-.015	
Step 3				.009
Child Age	.129	.127	.186	
Child Sex	-.114	.395	-.052	
Proportion of Entity Statements	1.971	11.887	.121	
Proportion of Incremental Statements	1.975	9.404	.121	
Entity Statements * Child Sex	-3.485	6.762	-.383	
Incremental Statements * Child Sex	-1.225	6.054	-.122	

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 11

## Regression Analyses for Children's Future Self Discrepancy Scores

Future Self Discrepancy	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.054
Child Age	.049	.091	.090	
Child Sex	-.406	.284	-.241	
Step 2				.035
Child Age	.029	.095	.054	
Child Sex	-.320	.297	-.190	
Proportion of Entity Statements	-2.187	2.205	-.173	
Proportion of Incremental Statements	1.895	2.243	.150	
Step 3				.018
Child Age	.022	.098	.042	
Child Sex	-.316	.305	-.188	
Proportion of Entity Statements	1.807	9.179	.143	
Proportion of Incremental Statements	-2.556	7.261	-.202	
Entity Statements * Child Sex	-2.692	5.222	-.383	
Incremental Statements * Child Sex	3.208	4.675	.414	

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 12

## Bivariate Correlations Split by Children's Weight Status

	1	2	3	4	5	6	7	8	9	10
1. Age (years)	--	0.081	0.082	-0.249	-0.047	-0.205	0.353	-0.033	-0.007	0.476
2. BMI Percentile	.429*	--	-0.527	-0.278	-0.353	-0.386	0.013	0.057	0.511	0.403
3. CDQ Healthy Diet	-0.083	0.031	--	0.295	0.28	0.42	0.112	0.151	-0.525	0.035
4. CDQ Unhealthy Diet	-0.051	-0.066	0.213	--	0.099	0.471	-0.175	0.209	-.698*	0.142
5. CPAQ Physical Activity	-0.083	-0.24	.385*	.405*	--	0.401	-0.154	-0.213	-0.022	-0.377
6. BASS Score	-0.123	-0.194	0.086	-0.084	0.087	--	0.112	0.56	-.590*	-0.139
7. Current Self Discrepancy	0.235	.498**	-0.213	-0.132	-0.169	-0.241	--	0.503	0.127	0.171
8. Future Self Discrepancy	0.193	.599**	-0.127	-0.351	-0.251	-0.273	0.724**	--	-0.218	0.157
9. Entity Proportion	0.118	-0.165	0.062	0.07	0.075	-0.047	-.421*	-0.257	--	-0.181
10. Incremental Proportion	0.141	-0.195	-0.091	0.14	0.188	-0.205	-0.123	0.08	.464*	--

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , Overweight/obese children on the top diagonal and underweight/healthy weight children on the bottom diagonal

Table 13

Independent Samples *t*-test to Assess Child Weight Status Differences for Body Image and Parental Themes

	Underweight/Healthy Weight		Overweight/Obese		<i>t</i> -test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
BASS Score	3.805	.641	3.537	.648	1.210
Current Self Discrepancy	.034	1.19133	.792	.498	-2.113
Future Self Discrepancy	.111	.498	.917	.469	-3.070*

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; discrepancy scores were (ideal self - current self)

Table 14

## Regression Analyses for Children's BMI Percentile Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.558***
Child Age	5.939	2.499	.271*	
Weight Status	56.321	8.418	.764***	
Step 2				.030
Child Age	6.836	2.550	.312*	
Child Weight Status	58.294	8.462	.790***	
Proportion of Entity Statements	-30.130	58.956	-.059	
Proportion of Incremental Statements	-78.936	60.380	-.154	
Step 3				.004
Child Age	6.749	2.655	.308*	
Child Weight Status	57.526	8.852	.780***	
Proportion of Entity Statements	-122.457	190.069	-.239	
Proportion of Incremental Statements	-98.777	192.474	-.192	
Entity Statements * Weight Status	69.903	130.785	.192	
Incremental Statements * Weight Status	23.975	141.888	.062 <sup>+</sup>	

Notes: <sup>+</sup>  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 15

## Regression Analyses for Children's Healthy Diet Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.010
Child Age	-.006	.050	-.021	
Weight Status	.091	.169	.092	
Step 2				.031
Child Age	-.002	.052	-.006	
Child Weight Status	.113	.174	.114	
Proportion of Entity Statements	-1.205	1.209	-.175	
Proportion of Incremental Statements	-.031	1.238	-.005	
Step 3				.117
Child Age	-.002	.051	-.007	
Child Weight Status	.149	.171	.150	
Proportion of Entity Statements	6.106	3.671	.887	
Proportion of Incremental Statements	-1.317	3.718	-.191	
Entity Statements * Weight Status	-5.316	2.526	-1.088*	
Incremental Statements * Weight Status	.373	2.741	.072	

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 16

## Regression Analyses for Children's Healthy Diet Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.010
Child Age	-.033	.054	-.104	
Weight Status	-.038	.183	-.036	
Step 2				.060
Child Age	-.044	.056	-.138	
Child Weight Status	-.042	.184	-.039	
Proportion of Entity Statements	-1.443	1.284	-.194	
Proportion of Incremental Statements	1.603	1.315	.215	
Step 3				.070
Child Age	-.042	.056	-.132	
Child Weight Status	-.005	.186	-.004	
Proportion of Entity Statements	4.522	4.000	.609	
Proportion of Incremental Statements	1.496	4.051	.201	
Entity Statements * Weight Status	-4.410	2.753	-.837	
Incremental Statements * Weight Status	-.445	2.986	-.080	

Notes: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 17

## Regression Analyses for Children's Physical Activity Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.019
Child Age	-.041	.090	-.076	
Weight Status	-.244	.304	-.136	
Step 2				.020
Child Age	-.058	.095	-.110	
Child Weight Status	-.283	.314	-.158	
Proportion of Entity Statements	.526	2.187	.042	
Proportion of Incremental Statements	1.585	2.240	.127	
Step 3				.044
Child Age	-.038	.097	-.071	
Child Weight Status	-.213	.322	-.119	
Proportion of Entity Statements	.488	6.923	.039	
Proportion of Incremental Statements	9.532	7.011	.764	
Entity Statements * Weight Status	-.583	4.764	-.066	
Incremental Statements * Weight Status	-6.315	5.168	-.673	

Notes: \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 18

## Regression Analyses for Children's Body Areas Satisfaction Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.067
Child Age	-.060	.068	-.147	
Weight Status	-.347	.228	-.252	
Step 2				.067
Child Age	-.040	.069	-.098	
Child Weight Status	-.290	.229	-.211	
Proportion of Entity Statements	-1.761	1.597	-.184	
Proportion of Incremental Statements	-1.406	1.635	-.146	
Step 3				.086
Child Age	-.040	.069	-.098	
Child Weight Status	-.246	.229	.179	
Proportion of Entity Statements	6.941	4.911	.725	
Proportion of Incremental Statements	-2.743	4.973	-.286	
Entity Statements * Weight Status	-6.342	3.379	-.933 <sup>+</sup>	
Incremental Statements * Weight Status	.290	3.666	.040	

Notes: <sup>+</sup>  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 19

## Regression Analyses for Children's Current Self Discrepancy Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.158*
Child Age	.164	.110	.235	
Weight Status	.898	.370	.382*	
Step 2				.103
Child Age	.190	.109	.272 <sup>+</sup>	
Child Weight Status	1.001	.351	.426**	
Proportion of Entity Statements	-5.012	.2515	-.307 <sup>+</sup>	
Proportion of Incremental Statements	-.821	2.576	-.050	
Step 3				.069
Child Age	.194	.108	.278 <sup>+</sup>	
Child Weight Status	.949	.362	.404*	
Proportion of Entity Statements	-.18311	7.763	-1.122*	
Proportion of Incremental Statements	2.919	7.861	.178	
Entity Statements * Weight Status	.9562	5.341	.825 <sup>+</sup>	
Incremental Statements * Weight Status	-1.792	5.795	-.146	

Notes: <sup>+</sup>  $p < .1$ , \*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 20

## Regression Analyses for Children's Future Self Discrepancy Scores and Weight Status

	<i>B</i>	SE ( <i>B</i> )	$\beta$	$\Delta R^2$
Step 1				.222*
Child Age	.074	.082	.138	
Weight Status	.880	.275	.484***	
Step 2				.065
Child Age	.069	.083	.127	
Child Weight Status	.906	.274	.499**	
Proportion of Entity Statements	-3.267	1.911	-.259 <sup>+</sup>	
Proportion of Incremental Statements	1.721	1.957	.136	
Step 3				.025
Child Age	.078	.085	.145	
Child Sex	.912	.283	.502**	
Proportion of Entity Statements	-8.520	6.083	-.675	
Proportion of Incremental Statements	6.215	6.159	.491	
Entity Statements * Weight Status	3.545	4.185	.396	
Incremental Statements * Weight Status	-3.106	4.541	-.326	

Notes: <sup>+</sup>  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

## Appendix A

### CHILD DIET QUESTIONNAIRE

We are interested in learning about the foods you normally eat. There are no right or wrong answers. Please answer the following questions about what you ate *yesterday*. For all of these questions, answers can be no, yes for one time, yes for two times, or yes for three or more times.

	No	Yes, 1 time	Yes, 2 times	Yes, 3 times
1. Yesterday, did you eat hamburger meat, hot dogs, sausage, steak, bacon, or ribs?	0	1	2	3
2. Yesterday, did you eat any fried meat with a crust like fried chicken, chicken nuggets, chicken fried steak, fried pork chops, or fried fish?	0	1	2	3
3. Yesterday, did you eat any peanuts or peanut butter?	0	1	2	3
4. Yesterday, did you eat cheese by itself or on your food? Count cheese on pizza or in dishes such as tacos, sandwiches, cheeseburgers, or macaroni and cheese.	0	1	2	3
5. Yesterday, did you drink any kind of milk? Count chocolate or other flavored milk, milk on cereal, or drinks made with milk.	0	1	2	3
6. Yesterday, did you eat yogurt or cottage cheese or drink a yogurt drink? <b>Do not count frozen yogurt.</b>	0	1	2	3
7. Yesterday, did you eat rice, macaroni, spaghetti or pasta noodles?	0	1	2	3
8. Yesterday, did you eat any <b>white</b> bread, buns, bagels, tortillas, or rolls?	0	1	2	3
9. Yesterday, did you eat any <b>whole wheat or dark</b> bread, buns, bagels, tortillas, or rolls?	0	1	2	3
10. Yesterday, did you eat any hot or cold cereal?	0	1	2	3
11. Yesterday, did you eat French fries or chips? Chips are potato chips, tortilla chips, Cheetos, corn chips, or other snack chips.	0	1	2	3
12. Yesterday did you eat any vegetables? Vegetables are all cooked and uncooked vegetables, salads, and boiled, baked, and mashed potatoes. <b>Do not count French fries or chips.</b>	0	1	2	3
13. Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans? <b>Do not count green beans.</b>	0	1	2	3
14. Yesterday, did you eat fruit? <b>Do not count fruit juice.</b>	0	1	2	3

15. Yesterday, did you drink fruit juice? Fruit juice is a drink, which is 100% juice like orange juice, grape juice, or apples juice. <b>Do not count Kool-Aid, sports drinks, or other fruit flavored drinks.</b>	0	1	2	3
16. Yesterday, did you drink any punch, Kool-Aid, sports drinks, or other fruit-flavored drinks? <b>Do not count fruit juice.</b>	0	1	2	3
17. Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0	1	2	3
18. Yesterday, did you drink any <b>diet</b> sodas or soft drinks?	0	1	2	3
19. Yesterday, did you eat frozen dessert? A frozen dessert is a cold, sweet food like ice cream, frozen yogurt, an ice cream bar, or a Popsicle.	0	1	2	3
20. Yesterday, did you eat any sweet rolls, doughnuts, cookies, brownies, pies, or cakes?	0	1	2	3
21. Yesterday, did you eat any candy? This includes chocolate candy.	0	1	2	3
22. Yesterday, how many meals did you eat? Meals include breakfast, lunch, and dinner or supper.	0	1	2	3
23. Yesterday, did you have a snack? A snack is a food or drink that you eat or drink before, after, or between meals.	0	1	2	3
24. Yesterday, did you eat food from any type of restaurant? Restaurants include fast food, sit down restaurants, pizza places, and cafeterias.	0	1	2	3

For these last two questions about what you ate yesterday, answers are yes or no.

	Yes	No
25. Yesterday, did you eat breakfast?	Y	N
26. Yesterday, did you take a vitamin pill?	Y	N

## Appendix B

### CHILD PHYSICAL ACTIVITY QUESTIONNAIRE

We are trying to find out about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

1. Physical Activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times and on average, how long?

Activity	No	1-2	3-4	5-6	7 or more	How long?
Skipping	0	1-2	3-4	5-6	7+	
Rowing/ Canoeing	0	1-2	3-4	5-6	7+	
In-line Skating	0	1-2	3-4	5-6	7+	
Tag	0	1-2	3-4	5-6	7+	
Walking for Exercise	0	1-2	3-4	5-6	7+	
Bicycling	0	1-2	3-4	5-6	7+	
Jogging or Running	0	1-2	3-4	5-6	7+	
Aerobics	0	1-2	3-4	5-6	7+	
Swimming	0	1-2	3-4	5-6	7+	
Baseball, Softball	0	1-2	3-4	5-6	7+	
Dance	0	1-2	3-4	5-6	7+	
Football	0	1-2	3-4	5-6	7+	
Badminton	0	1-2	3-4	5-6	7+	
Skateboarding	0	1-2	3-4	5-6	7+	
Soccer	0	1-2	3-4	5-6	7+	
Street hockey	0	1-2	3-4	5-6	7+	
Volleyball	0	1-2	3-4	5-6	7+	
Floor hockey	0	1-2	3-4	5-6	7+	
Basketball	0	1-2	3-4	5-6	7+	
Ice skating	0	1-2	3-4	5-6	7+	
Cross-country skiing	0	1-2	3-4	5-6	7+	
Ice hockey/ ringette	0	1-2	3-4	5-6	7+	
Hard work outdoors (mowing, raking, etc.)	0	1-2	3-4	5-6	7+	
Playing outdoors	0	1-2	3-4	5-6	7+	
Other:	0	1-2	3-4	5-6	7+	
	0	1-2	3-4	5-6	7+	
	0	1-2	3-4	5-6	7+	

The next set of questions asks about *when* you did physical activities last week.

	None	1 time	2 or 3 times	4 times	5+ times
2. In the last 7 days, on how many days <i>in the morning</i> , did you do sports, dance, or play games in which you were very active?	0	1	2-3	4	5+
3. In the last 7 days, on how many days <i>in the afternoon</i> , did you do sports, dance, or play games in which you were very active?	0	1	2-3	4	5+
4. In the last 7 days, on how many days <i>in the evening</i> , did you do sports, dance, or play games in which you were very active?	0	1	2-3	4	5+
5. <i>On the last weekend</i> , on how many times did you do sports, dance, or play games in which you were very active?	0	1	2-3	4	5+

6. Which one of the following describes you best for the last 7 days?

- \_\_\_\_\_ A. All or most of my free time was spent doing things that involve little physical effort
- \_\_\_\_\_ B. I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, aerobics)
- \_\_\_\_\_ C. I often (3-4 times last week) did physical things in my free time
- \_\_\_\_\_ D. I quite often (5-6 times last week) did physical things in my free time
- \_\_\_\_\_ E. I very often (7 or more times last week) did physical things in my free time

7. How often did you participate in physical activity (like playing sports, games, and doing dance, or any other physical activity last week?

	None	Little bit	Medium	Often	Very Often
<b>Monday</b>	None	Little bit	Medium	Often	Very often
<b>Tuesday</b>	None	Little bit	Medium	Often	Very often
<b>Wednesday</b>	None	Little bit	Medium	Often	Very often
<b>Thursday</b>	None	Little bit	Medium	Often	Very often
<b>Friday</b>	None	Little bit	Medium	Often	Very often
<b>Saturday</b>	None	Little bit	Medium	Often	Very often
<b>Sunday</b>	None	Little bit	Medium	Often	Very often

8. Were you sick last week or did anything prevent you from doing your normal physical activities?

Yes \_\_\_\_\_ (if yes, what prevented you?  
 \_\_\_\_\_ )

No \_\_\_\_\_

9. How many hours, Monday through Friday, do you spend doing the following? (total for the week):

	<b>None</b>	<b>1-5h</b>	<b>6-10h</b>	<b>11-15h</b>	<b>16-20h</b>	<b>&lt;20h</b>
<b>Watching T.V.</b>	none	1-5	6-10	11-15	16-20	20+
<b>Watching DVDs or videos</b>	none	1-5	6-10	11-15	16-20	20+
<b>Reading/ Homework</b>	none	1-5	6-10	11-15	16-20	20+
<b>Nintendo, PlayStation, computer games</b>	none	1-5	6-10	11-15	16-20	20+
<b>Internet Computers</b>	none	1-5	6-10	11-15	16-20	20+

10. How many hours, Saturday and Sunday, do you spend doing the following? (total for the weekend):

	<b>None</b>	<b>1-5h</b>	<b>6-10h</b>	<b>11-15h</b>	<b>16-20h</b>	<b>&lt;20h</b>
<b>Watching T.V.</b>	none	1-5	6-10	11-15	16-20	20+
<b>Watching DVDs or videos</b>	none	1-5	6-10	11-15	16-20	20+
<b>Reading/ Homework</b>	none	1-5	6-10	11-15	16-20	20+
<b>Nintendo, PlayStation, computer games</b>	none	1-5	6-10	11-15	16-20	20+
<b>Internet Computers</b>	none	1-5	6-10	11-15	16-20	20+

## Appendix C

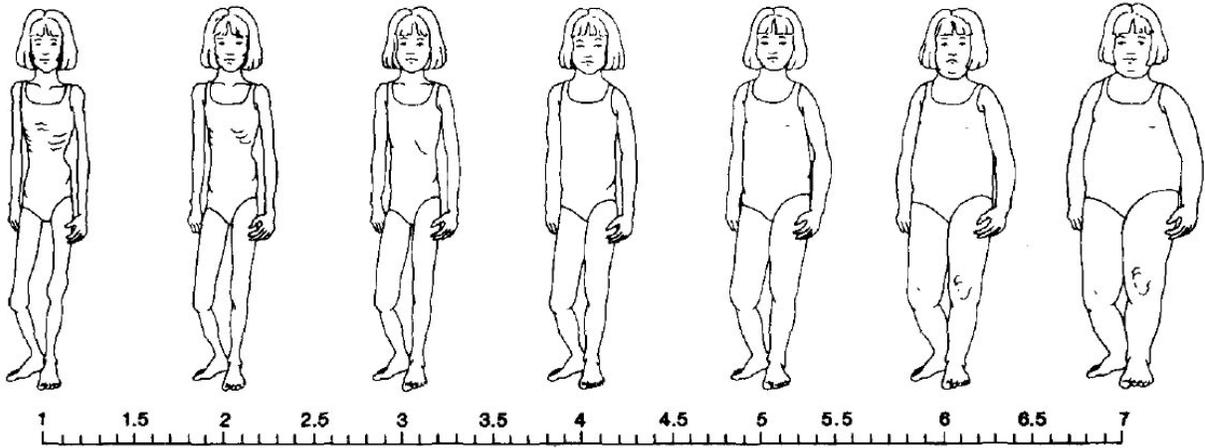
### BODY AREAS SATISFACTION SCALE

Please use the following 1 to 5 scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body.

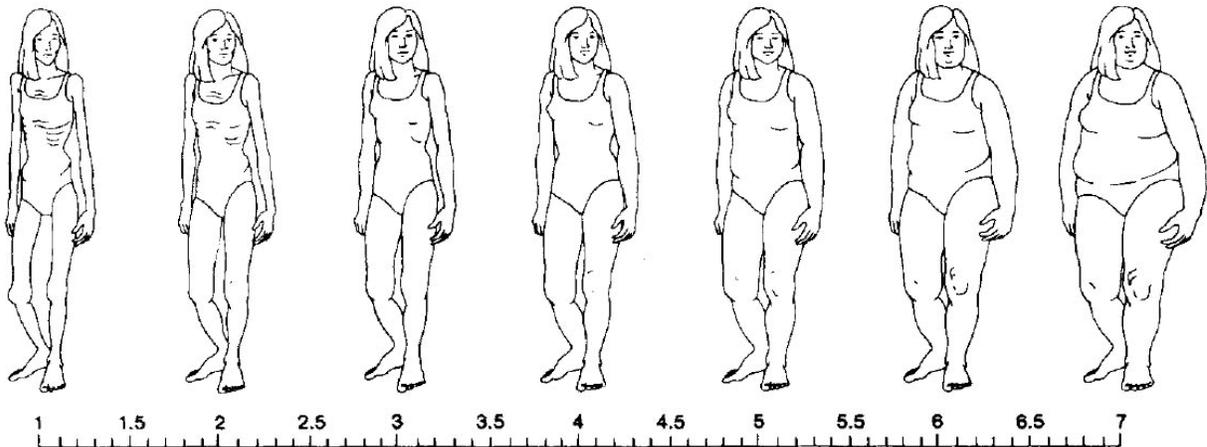
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>Very Dissatisfied</b>	<b>Mostly Dissatisfied</b>	<b>Neither Satisfied Nor Dissatisfied</b>	<b>Mostly Satisfied</b>	<b>Very Satisfied</b>
1. Face (facial features, complexion)	1	2	3	4	5
2. Hair (color, thickness, texture)	1	2	3	4	5
3. Lower torso (buttocks, hips, thighs, legs)	1	2	3	4	5
4. Mid torso (waist, stomach)	1	2	3	4	5
5. Upper torso (chest or breasts, shoulders, arms)	1	2	3	4	5
6. Muscle tone	1	2	3	4	5
7. Weight	1	2	3	4	5
8. Height	1	2	3	4	5
9. Overall appearance	1	2	3	4	5

Appendix D

**BODY FIGURE PERCEPTIONS SCALE - GIRLS**

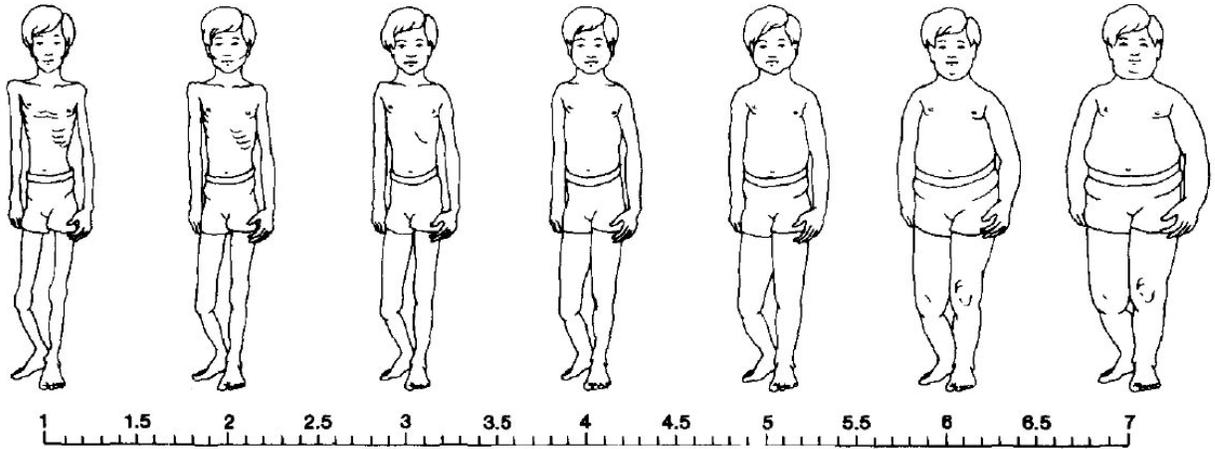


1. Which picture looks the most like you look?
2. Which picture shows the way you want to look?

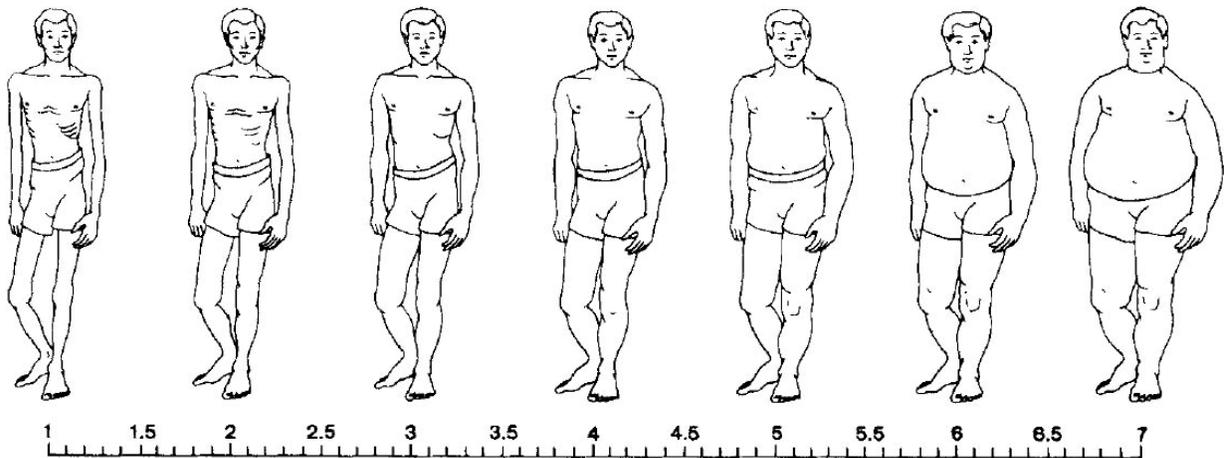


3. Which picture shows the way you want to look when you grow up?

## BODY FIGURE PERCEPTIONS SCALE - BOYS



1. Which picture looks the most like you look?
2. Which picture shows the way you want to look?



3. Which picture shows the way you want to look when you grow up?

## Appendix E

### Discourse Task Instructions

- 1) Pull up the little round table and settle the parent and child so they can be videotaped well
- 2) Pull the little chair up to the table, opposite the parent and child, and sit down so you are at eye level with them and about the same distance from each; alternate eye contact with parent and child throughout to check comprehension
- 3) Say the following:
  - a) “Different families have different ways of talking with and working with each other, and the next couple things we’re going to do will help us understand how *you* talk with and work with each other.”
  - b) “Our goal with this first activity is just to get you warmed up and hear how you talk about your favorite meals with each other.” Show them the cue card, and say the following: “We would like for each of you to describe your favorite meal. Please talk about why this particular meal is your favorite. You may also describe what you like and dislike about your favorite meal. This can be a separate meal for each of you, or it can also be the same meal if you choose. Please feel free to ask each other questions or make comments just like you usually would if you were talking with each other at home. I’ll just sit over here, and I’ll give you about 5 minutes for each of you to describe your favorite meal.”
  - c) Sit in the corner of the room; try to stay out of the parent’s and child’s line of sight; keep time
    - i) If the conversation stalls before 3 minutes are up, you can prompt them to continue by saying “Is there anything else that makes these meals your favorites?”
    - ii) If the conversation is still going strong at 5 ½ minutes, gently tell the family “I’m sorry to stop you! It’s time for us to move on to our next activity.”
- 4) “For this next conversation we’d like to get a sense of how you talk with each other about the decisions you face about healthy diet and physical activity in your day to day life. To help things move along, we have four cards to get you started. I’m going to show you all four cards now, and then you’ll pick one at a time to talk about.”
- 5) Show them the four cards, and say the following:
  - a) “This first card asks you [point to the parent] to talk about a time this week when you made a choice about diet or exercise that you think was NOT healthy. Today is [day], so that would mean something that happened between last [day] and today. It doesn’t have to be the hugest, most unhealthy thing ever, any little time this week would be fine. For example, this could be something like getting fast food rather than cooking dinner at home, or having a soda instead of water, or skipping the gym, or sitting inside watching TV rather than playing the kids outside, or taking the elevator instead of the stairs – any little choice about diet or exercise that you think was NOT healthy.”
  - b) “We’d like you to describe the choice – who was there, what the choices were and what choice you made, when and where this happened, how you made your decision, and especially why you made it.”

- c) “We want to see how you really talk about things with each other at home, so, [child], when your [mom/dad] is describing a situation, you get to ask questions or make comments just like you usually would, and your [mom/dad] gets to do the same when you’re talking about something.”
  - d) “This next card is similar, except it’s for you, [child], to talk about a time this week when you made a choice about diet or exercise that you think was NOT healthy. Just like before, any little time this week is fine, and you both get to talk with each other about the situations you choose just like you usually would at home.”
  - e) “These last two cards are about a time this week when you made HEALTHY choices about diet or exercise. This card is for a time for you, [parent], and this one is for a time for you, [child]. Again, any little time this week is fine. For example, you might talk about choosing to have water instead of soda, or eating your vegetables first and your cookie last, or going for a walk after dinner instead of going straight to the computer, or throwing Frisbee while you hang out together. And, again, you both get to talk with each other about the situations you choose – asking questions and making comments -- just like you usually would at home.”
- 6) Make a show of shuffling the cards so they’re randomized, and say:
- a) “I’m mixing the cards up because that makes it more interesting.”
  - b) “You’ll have up to 10 minutes total to have this conversation. I’ll keep time outside the room. That’s a little more than 2 minutes for each card, which is plenty of time for most families to talk about something for each card and not feel too rushed. If you want to spend more time on some things and less time on others, that’s okay. If you finish before I come back, please go back to any of the cards and talk about something more.”
  - c) “Do you have any questions about what I’m asking you to do?”
- 7) Hold out the four cards, fanned out face down, and say:
- a) “Okay, who wants to pick the first card?”
  - b) “Great, [person], remember, you’ll describe something, and [other person] can ask questions or make comments just like when you’re talking at home.”
  - c) “Once you’re done with this card, you can pick one of the other three, and so on, until you finish the last one.”
- 8) Place the laminated instruction sheet in the middle of the table and say: “I’ll leave this here just in case – it’s just brief reminders of what we’d like you to do. Have fun!”
- 9) Start timing, then hustle into the Control Room to observe the session. If the parent and child run out of things to talk about, you can move onto the next task any time between 7 ½ and 10 minutes.

- 10) Say the following: “Okay, for our next activity, we’d like you to choose a snack together. You get to actually eat and drink what you choose.”
- 11) Pull out box with snack choices, 2 each of:
  - a) Food: candy bar, energy bar, goldfish packet, apple
  - b) Drinks: Coca-Cola, G2, 100% fruit juice box, bottle of water
- 12) Distribute choices randomly on the table; give parent and child each a piece of paper and pencil, and say:
  - a) “We’d like each of you first to write down your own choice. After you do that, we’d like you to talk with each other and come to an agreement on what each of you is going to have for your snack and *why* that’s your choice.”
  - b) “After you’ve come to an agreement, please feel free to help yourself to your choices.”
- 13) Put up laminated instruction card and say:
  - a) “Again, please write down your own choice first.”
  - b) “Then, please come to an agreement with each other about what each of you is going to have for your snack and why. You’ll have up to 5 minutes to make that decision together.”
  - c) “Do you have any questions about what I’m asking you to do?”
- 14) Start timing, then hustle into the Control Room to observe the session. Once the parent and child make their decision and have had some time for their snack, you can move onto the next task. If the parent and child have not made a decision after 6 minutes, return to the room to attempt to help move things along.

Instruction sheet to print out on cardstock and laminate:

- **For each choice, please describe:**

Who was there

What the choice was

When this took place

Where this took place

How you made the choice, and

Why you made the choice

- **Please talk with each other about each situation like you usually would at home.**
- **You have up to 10 minutes total for all the cards.**
- **If you finish before I return, go back to any card and talk about something more.**

Cards to print out on cardstock and laminate:

**Favorite Meal Descriptions  
(both Parent and Child)**

- **Why is this meal your favorite?**
- **What do you like/dislike about it?**

**For the PARENT:**

**Describe a time this week when you made a choice about diet or physical activity that was NOT healthy.**

**For the PARENT:**

**Describe a time this week when you made a choice about diet or physical activity that was HEALTHY.**

---

**For the CHILD:**

**Describe a time this week when you made a choice about diet or physical activity that was NOT healthy.**

**For the CHILD:**

**Describe a time this week when you made a choice about diet or physical activity that was HEALTHY.**

Instruction sheet to print out on cardstock and laminate:

- **First write down your own snack choice.**
- **After you've both made a snack choice, please talk with each other like you usually would at home to come to an agreement on what each of you is going to have for your snack and why.**
- **You have up to 5 minutes to make your decision.**
- **Feel free to eat your snack after you've agreed on your decision!**

## Appendix F

### Discourse Task Coding Manual

#### **Instructions:**

1. Log on to Dedoose.com.
2. Read through the entire transcript.
3. For each conversation turn, break down the sentences according to how they were transcribed.
  - a. Only code after the card choice task has begun
  - b. Code the parents only.
4. Categorize each sentence as On-Task or Off-Task
  - a. If Off-Task move to next sentence
    - Anything that is unrelated to the task of discussing healthy and unhealthy decisions (i.e., “I need to use the restroom” or “your shirt is pretty” or “Sit up”).
    - Talking about instructions for the task is not Off-Task, instructions count as On-Task.
  - b. If On-Task, proceed to step 5
5. Categorize each sentence into the categories:
  - a. Note that you can have multiple codes that apply for any given statement. In those situations, all codes should be recorded on Dedoose.
  - b. Entity
    - Comments or questions that label a person, food, diet, exercise, objects or choices in a dichotomized, unqualified, absolute manner or in a way that implies stability is considered entity (i.e., “you’re a runner,” “that vegetable is good for you,” “that’s a good jump rope,” or “I always exercise”).
    - Any statements that are considered anti-incremental are coded as entity (i.e., arguing that something is dichotomous).
    - Use of copular verbs plus predicate (i.e., “you’re good at that.”)
      - Copular Verbs plus predicate explanation: These are statements where a verb links the subject to a complement that references the subject.
  - c. Incremental
    - Comments or questions that emphasize efforts and strategies (i.e., “you worked really hard on your run yesterday” or “I try to choose water instead of soda”)

- Doesn't need to be the word strategy, but a word that is very similar to the word strategy.
- Comments where food, diet, exercise, and/or choices aren't dichotomized, dimensional, or conditional should be coded as incremental codes.
- Any discussion of effort and strategies should also be coded as incremental.
- Anti-entity statements (i.e., arguing against a label) should be coded as incremental.
- Use of qualifiers (i.e. "that was a pretty/really/kind of/etc. unhealthy decision.")
- Qualifiers were defined by <http://writingcenter.unc.edu/handouts/qualifiers/>

d. Approval/Disapproval

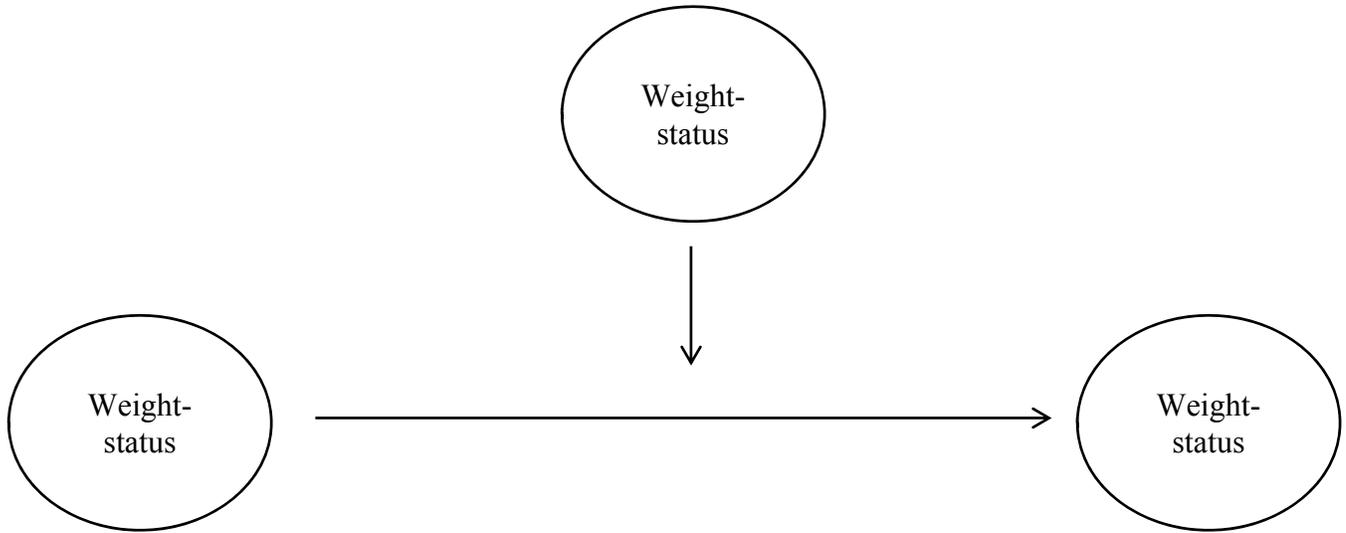
- Sentences that express approval (i.e., "I like it" or "great!") or disapproval (i.e., "whoops") of the child's health decision are in this category.

6. Repeat steps 3 through 5 until you reach the end of the transcript section you're coding.

**General Notes:**

- We are only coding the parent's communications.
- When conjunctions occur which join two separate clauses, they will be treated as two separate sentences (i.e., "Last night I went for a nice run and I ate a fattening dinner." would count as two sentences – "Last night I went for a nice run" and "I ate a fattening dinner"). However, when a conjunction is used to link the same clause, then the sentence is kept as one (i.e., "I want to eat pizza and cake" would count as one sentence).
- Coding starts and stops at the "[ ]" or brackets on the transcript. We are only coding the unhealthy and healthy decision discussion cards.
- Parent's repetition of child phrases will be counted as On-Task, but should not be evaluated as Entity, Incremental, or Approval/Disapproval/Neither.
- If the parent is just repeating what the card says, then it's always on-task, but the themes should not be evaluated in the same senses as independent statements.

- Even though statements are formed as a question, it should be clear whether or not they fall within Entity or Incremental, otherwise err on the side of caution to avoid complications.
- Remember that labeling something as entity does not make it devoid of an incremental code. For example, “Which is funny ‘cause I usually am a stair-taker,” would be counted as both entity and incremental. Usually serves as a qualifier while the use of stair-taker is a label. When a qualifier precedes a labeling noun, then it should be counted as both entity and incremental.
- Comments that emphasize strategies need to be very explicit and need to use a word very similar to strategy (e.g. plan).
- If [Inaudible] begins a sentence, it will be treated as a separate sentence and ALWAYS coded as Off-Task.
- If [inaudible] occurs within a subject-verb clause and context can be established, then code it normally.
- If [inaudible] occurs within a subject-verb clause and context cannot be established, then code as off-task.
- Though non-verbal behaviors were noted in transcribing (e.g., laughing or smiling) these behaviors were not coded.



*Figure 1.* Conceptual model of the anticipated moderation effect of child sex on the association between parents' discourse and child outcomes.