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BODY SATISFACTION AND ABILITY TO IDENTIFY WEIGHT STATUS OF  
PRESCHOOL-AGED CHILDREN BY THEIR CAREGIVERS

BY  
ANDREA BROWN

A thesis submitted in partial fulfillment of the requirements for the

Master of Science

Major in Counseling and Human Resource Development

Specialization in Clinical Mental Health Counseling

South Dakota State University

2016

BODY SATISFACTION AND ABILITY TO IDENTIFY WEIGHT STATUS OF  
PRESCHOOL-AGED CHILDREN BY THEIR CAREGIVERS

This thesis is approved as a creditable and independent investigation by a candidate for the Master of Science degree and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply the conclusions reached by the candidate are necessarily the conclusions of the major department.

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## ABSTRACT

BODY SATISFACTION AND ABILITY TO IDENTIFY WEIGHT STATUS OF  
PRESCHOOL-AGED CHILDREN BY THEIR CAREGIVERS

ANDREA BROWN

2016

Rates of childhood obesity have been rising consistently across the nation and internationally. As a result, interventionists have been working to develop ways to combat this and have focused on interventions involving caregivers. Previous research indicates caregivers experience challenges in identifying obesity among their own children, which leads to barriers in addressing and reducing rates of obesity as caregivers remain unaware of any problems. The current study explored caregivers' ability to correctly assign their child to the appropriate weight category and whether their ability was impacted by caregivers' own weight status. Further, it also explored caregivers' level of body satisfaction with their children and if this was impacted by caregivers' own weight status. Data was collected from 293 preschool aged children and their caregivers. Results indicate that caregivers were generally successful in classifying their children to the appropriate weight category when their child was within the normal weight range. In addition, caregivers' ability to do so was impacted by their own weight status. Further, results also indicate most caregivers were satisfied with their children's body size, and the odds of caregiver satisfaction with their child's size are much lower in obese caregivers. The outcomes from the present study add more research into exploring parental body satisfaction with their children, as this appears to be a relatively unexplored

area. It is likely that an increased understanding in this area will be crucial for understanding and developing interventions to assist in both decreasing childhood obesity and increasing rates of healthy self-concepts in children.

## INTRODUCTION

### **Childhood Obesity**

Obesity levels have been rising worldwide over the last thirty years (Glickman, 2012). Seventeen percent of all children and adolescents in the United States are now classified as overweight or obese (CDC, 2013). Sadly, as many as one in three children from low-income families will be overweight by the time they turn five years old (CDC, 2012). The rates of obesity in the United States are at an all-time high (Glickman, 2012), and the number of impacted people continues to increase.

According to Callahan (2013), obesity is determined by the proportion of excess body fat, and defined in terms of body mass index (BMI). Being obese can lead to many health challenges and increases the risk for developing serious health complications, including cardiovascular disease, metabolic diseases, Type 2 diabetes, sleep apnea, and asthma (Daniels, 2006). New research is also showing that being overweight or obese as a child increases the likelihood of developing obesity-related health problems later on in adulthood (Daniels, 2006) even if the diseases are not present during childhood. Given the ever-rising number of children who fall into the obese category in both the United States and the rest of the world, there is potential for a worldwide health crisis in the future as such adolescents mature into adulthood and continue to develop health complications due to their excess weight.

There is not just one single factor that contributes to the development of obesity, but rather various combinations of genetic, behavioral, and environmental factors (Burgess, 2012). While there is inconclusive evidence out there about how each of these factors influence individuals, research seems to agree that there are countless possible



combinations (Burgess, 2012). According to the Centers for Disease Control, the two main factors which influence obesity are behavior and genetics. Behaviors consist of “dietary patterns, physical activity and inactivity, medication use, and other exposures” (CDC, 2013). Further, food choices and access to healthy options, one’s physical activity environment, education, and food marketing have also been identified as having an impact on rates of obesity (CDC, 2013).

Health professionals and the general public have long been aware that being overweight is unhealthy for adults, but until recently, obesity in children has been ignored. Parents and caregivers have previously been under the assumption that obesity is something children will simply grow out of as they age (S. S. Rich, DiMarco, N.M., Huettig, C., Essery, E.V., Anderson, E., & Sanborn, C.F., 2005). However, as research is beginning to show, this is not the case; children who are obese are more likely to be obese as adults as well (Daniels, 2006). Obesity among children is especially troubling because children are more susceptible to weight-related health problems since their bodies are still developing (Daniels, 2006). Many diseases, such as diabetes, sleep apnea, and heart conditions, previously thought to occur only in adulthood are now appearing in children, and at alarming rates (Daniels, 2006).

Along with the many physical health consequences, obesity has also been linked to an increased risk of depression among children and adolescents (Strauss, 1985), although the causal relationship is still unclear (Daniels, 2006). While depression can cause abnormal patterns of eating and lack of physical activity, obesity may cause body dissatisfaction and symptoms of depression (Daniels, 2006). Even though it may be impossible to determine which one causes which, the connection between the two is

indisputable. However, what is clear is that the health-associated quality of life for obese children is much lower than that of average-weight children. According to Daniels, “the health-related quality of life for obese children and adolescents was similar to that of children diagnosed with cancer” (Daniels, 2006). While this is a very bold statement, one must remember the multiple factors involved with determining one’s quality of life and the many dimensions of one’s life which are impacted by weight and weight-related complications. Research suggests that overweight children and adolescents struggle with body dissatisfaction (Daniels, 2006; Schur, 2000), lower self-concepts stemming from dislike of their physical appearance (Strauss, 1985), and poor peer relationships (Daniels, 2006). Additionally, weight was found to be the second most commonly reported attribute that females were teased about during adolescence (T. F. Cash, 1995), following facial appearance/physical attributes.

Given its rising prevalence, it has become more important than ever to work toward prevention and treatment of obesity. Due to the high obesity rates, it is estimated that children from this generation will live shorter and less healthy lives than past generations (Daniels, 2006). Intervention strategies to date have been implemented targeting schools, food labeling and advertising, transportation and urban development, and public policies, but with mixed results (Callahan, 2013). Despite serious efforts, the obesity level has not dramatically declined, suggesting that a complex condition will likely have a complex solution.

### **Weight-based Discrimination**

Being obese is an attribute that is extremely stigmatized in our society. Overweight individuals encounter “both prejudice in the form of negative attitudes and discrimination

in terms of unequal behavior treatment” (Crandall, 1994). As rates of obesity increase, so, too, does the prevalence of body size stigmatization. Even though body size stereotypes are essentially negative attitudes, they are translated into discrimination and manifested in discriminatory actions and reactions (Carr, 2005). Size discrimination is thought to be among the few remaining permitted forms of prejudice found in our country today (Flannery-Schroeder, 1996; Neumark-Sztainer, 1998). Stereotypes against overweight and obese people are widespread and seldom questioned (R. M. Puhl, & Heuer, C.A., 2009). Assumptions about one’s physical attractiveness, personal success and sexual desirability are generally related to weight (Dion, 1972; Neumark-Sztainer, 1998). In a society that teaches its children that being thin is attractive, and being overweight is “disgusting and worthy of ridicule,”(Harrison, 2003) this leaves obese people defenseless against unfair treatment and diminished quality of life due to weight biases (R. M. Puhl, & Heuer, C.A., 2009). With so much focus on physical appearance, size discrimination is thought to be more painful, or at least painful in a different sense than racially motivated discrimination, mainly because racial discrimination is expected (Neumark-Sztainer, 1998). Body size stereotyping is not isolated to one setting; rather it happens anywhere and everywhere. Among overweight teenage girls, the most commonly reported place for weight bias was within the school setting, followed by the home (Neumark-Sztainer, 1998).

Children may experience weight stigmatization in multiple ways. The most common examples of how children experience weight bias include not only obvious tactics, such as teasing, bullying, and physical aggression, but also covert methods such as relational bullying, exclusion, and rumor-spreading (R. M. Puhl, & Latner, J.D., 2007).

Children may be especially susceptible to the consequences of weight stigmatization because childhood is the time when most social relationships start forming (R. M. Puhl, & Latner, J.D., 2007). Future struggles with peer relationships could be intensified by children's early experiences with stereotyped attitudes and treatment.

Concerns with weight affect almost all people in our society. (M. Tiggemann, & Rothblum, E.D., 1988) From those who view themselves as overweight to those who hold negative attitudes toward obesity, our country has become preoccupied with physical appearance. It has been documented in countless studies that most people generally associate more negative personality traits with over- and under-weight body types (Brylinsky, 1994; Collins, 1991; Daniels, 2006; Dion, 1972; Harriger, 2010; D. R. Musher-Eizenman, Holub, S.C., Barnhart Miller, A., Goldstein, S.E., & Edwards-Leeper, L., 2004; S. S. Rich, Essery, E.V., Sanborn, C.F., DiMarco, N.M., Morales, L.K., & LeClere, S.M., 2008; M. Tiggemann, & Anesbury, T., 2000; M. Tiggemann, & Wilson-Barrett, E., 1998). While there has been a tendency to rate obese people as warmer and friendlier among college students (M. Tiggemann, & Rothblum, E.D., 1988), overall, heavy people are seen in an increasingly negative light with more negative personality characteristics (M. Tiggemann, & Anesbury, T., 2000). Children learn that being thin equals being attractive and that being fat means being unhappy, and this is typically learned long before they reach adolescence (Flannery-Schroeder, 1996). Further, young children learn early on about the importance of conforming to societal norms. As children grow older and begin to realize that their own bodies may fall into the very categories for which they hold such negative beliefs, there can be serious repercussions, leading to poor body image and body dissatisfaction.

## **Body Satisfaction**

A concept often impacted by obesity is body satisfaction. Body satisfaction simply means the degree to which one's current body differs from his/her ideal body. It is a multi-faceted idea which is influenced by both biological and psychological factors (K. J. Thompson, Heinberg, L.J., Altabe, M., & Tantleff-Dunn, S., 1999). There seem to be individual characteristics, sociocultural dynamics, and parental factors involved in the development of body satisfaction (Sira, 2010). Body satisfaction begins to form in adolescence and continues to develop into adulthood as individuals utilize social comparisons to determine if their bodies conform to what society deems acceptable and desirable (Blowers, 2003; K. J. Thompson, Heinberg, L.J., Altabe, M., & Tantleff-Dunn, S., 1999).

Body dissatisfaction has been associated with depression, low self-esteem, and eating disorders (Sira, 2010). The concept of body satisfaction has been identified as a crucial aspect of self-esteem and mental health and wellness across the life span (Harter, 1998), as higher rates of body satisfaction seem to indicate higher levels of self-esteem and lower levels of depression and disordered eating. Conversely, individuals with lower levels of body satisfaction may experience lower levels of self-esteem and higher levels of depression and disordered eating. Further, body satisfaction and disordered eating is presently viewed as being a continuum with one end being distorted body perception and eating disorders, and the other end being overeating and obesity (Franco, 1999). Clearly, distorted body perceptions can mean different manifestations for different people depending on individual circumstances. Body satisfaction has "captured the attention of researchers and interventionists because of its potential role in efforts to prevent

childhood overweight and promote healthful nutrition and physical activity” (Austin, 2009). By promoting a healthy level of body satisfaction, it may be easier for individuals to implement positive behaviors which would promote a healthier weight. Studies have shown that individuals who experience weight-based teasing and have lower self-esteem are more likely to engage in unhealthy eating and exercise behaviors, as opposed to practicing healthier behaviors (R. M. Puhl, & Brownell, K.D., 2006; R. M. Puhl, & Latner, J.D., 2007).

The majority of studies have focused on women’s experiences, but this does not mean that men are immune to societal pressures and their impact on their body satisfaction. While the ideal body type for women is thin, the ideal body type for men involves muscularity (Smolak, 2001). Research suggests that at least half of American women endorse negative attitudes about their appearance, and display preoccupation with weight (T. F. Cash, & Henry, P.E. , 1995). Additionally, studies which have utilized a figure array to measure body satisfaction have shown that individuals of most ages, especially females, select ideal figures which are thinner than their current body type (D. R. Musher-Eizenman, Holub, S.C., Edwards-Leeper, L., Persson, A.V., & Goldstein, S.E., 2003). Concerns about weight, physical appearance, and eating habits are the norm in contemporary American society (Flannery-Schroeder, 1996). Female adolescents and women in our society appear to be especially preoccupied with their looks (Smolak, 2001), and are willing to go as far as enduring pain or spending excessive amounts of money all for the sake of beauty (Feldman, 1988). Unfortunately, young children pick up on such attitudes and practices and begin to acquire negative opinions about themselves. It has become common practice for women to make upward social comparisons to what

the media portrays as the ideal body type in order for women to judge their own levels of attractiveness (Evans, 2003). As a result, females may be more apt to be more critical of their own appearances, as well as others', leading to lower levels of body satisfaction. Unfortunately, even children would not be excluded from such critical evaluations. Children pick up on others' covert and overt behaviors toward them and internalize these attitudes. As children's self-esteem reflects their own perceptions of how their parents evaluate them in both specific and general areas (Killeen, 1993), it seems likely that family would be the primary factor influencing children's development of positive body satisfaction. Therefore, children who are exposed to instances where their bodies are perceived negatively by their caregivers, may experience lower levels of body satisfaction both in adolescence and in adulthood.

### **Collins' Figures**

Collins' figures were initially developed as a tool for researchers to gain a better understanding of how adolescents view their own bodies (Collins, 1991). They consist of seven adolescent figures who are identical in clothing and physical features but differ in weight. They are assigned a numerical identity, with number 1 being the thinnest and number 7 depicting the heaviest body size. Researchers have utilized Collins' figures in various studies since their development (Cramer, 1998; Harriger, 2010; D. R. Musher-Eizenman, Holub, S.C., Barnhart Miller, A., Goldstein, S.E., & Edwards-Leeper, L., 2004; D. R. Musher-Eizenman, Holub, S.C., Edwards-Leeper, L., Persson, A.V., & Goldstein, S.E., 2003; M. Tiggemann, & Wilson-Barrett, E., 1998). Additionally, studies have also expanded on the figures by creating adult figures (Rich *et al*, 2008), elderly figures, and figures of very young children (Rand, 2000). Further, Rich and colleagues

modified the pictorial figures for their research study involving Hispanic preschoolers and their caregivers by adding features that were more culturally relevant to their study's sample (Rich *et al.*, 2008).

Using a pictorial figure array is an effective method for studying a wide range of variables, as individuals may be unable or reluctant to answer direct questions about sensitive topics, such as weight and self-perceptions (Wood, 1996). Previous research has found pictorial figures to be reliable in assessing body image and body satisfaction/dissatisfaction in children, adolescents, and adults (Collins, 1991; Rand, 2000; S. S. Rich, Essery, E.V., Sanborn, C.F., DiMarco, N.M., Morales, L.K., & LeClere, S.M., 2008). Also given the sensitive nature of assessing body satisfaction, it makes sense that Collins' figures would be successfully utilized in estimating parental body satisfaction with their children. These figures seem to be a reliable and valid tool to measure this concept (S. S. Rich, Essery, E.V., Sanborn, C.F., DiMarco, N.M., Morales, L.K., & LeClere, S.M., 2008).

### **Weight Classification**

When focusing on solving weight-related concerns in children, the first step in addressing such an issue is identifying the presence of a problem. However, it appears that this first step may be challenging for parents and caregivers. Research has shown that while mothers may be able to recognize weight problems in themselves, they may not necessarily be able to identify such problems in their children (Hudson, 2012). A significant amount of research shows that parents often have misperceptions of their children's weight and are not able to accurately identify their weight category (Baughcum, 2000; Garrett-Wright, 2011; Gauthier, 2016; He, 2007; Huang, 2007;



Hudson, 2012; D. R. Musher-Eizenman, Holub, S.C., Edwards-Leeper, L., Persson, A.V., & Goldstein, S.E., 2003; S. S. Rich, DiMarco, N.M., Huettig, C., Essery, E.V., Anderson, E., & Sanborn, C.F., 2005). Specifically, younger children and more overweight and obese children are less likely to be accurately categorized into the correct weight category by their parents (Huang, 2007). Musher-Eizenman *et al* found that on average, mothers of overweight and obese preschoolers rated their children as being of an average and healthy weight, when in fact, the children would be classified as overweight according to relevant growth charts (Musher-Eizenman *et al*, 2005). This is important, as parents who are under the impression that their child is healthy are going to be less receptive to implementing any changes to reduce their child's weight and improve his/her health.

Although a great deal of research supports the idea that most parents do not accurately identify the weight status of their children, there are no definitive answers on why such misperceptions exist (Hudson, 2012). Research findings have been mixed, but support the notion that several factors may be influencing parents' perceptions. Parents simply may not be convinced that there are health risks related to their children being overweight and/or obese (Brewis, 2003; Contento, 2003; Crawford, 2004; S. S. Rich, DiMarco, N.M., Huettig, C., Essery, E.V., Anderson, E., & Sanborn, C.F., 2005; L. S. Thompson, & Story, M., 2003). Unfortunately parents typically only become concerned about their child's excess weight when it coincides with serious weight-related health consequences (L. S. Thompson, & Story, M., 2003), such as diabetes, asthma, sleep apnea, and others. Oftentimes, parents are under the assumption that their preschool-aged children will "outgrow" being overweight or obese, or that their children are simply "big-boned" (S. S. Rich, DiMarco, N.M., Huettig, C., Essery, E.V., Anderson, E., &

Sanborn, C.F., 2005). As noted earlier, this assumption is inaccurate, as children who are obese are more likely to be obese as adults as well (Daniels, 2006). Further, other studies showed that parents operate under the belief that growth charts and BMI percentiles are biased and don't take individual differences, such as ethnicity and frame size into consideration when classifying children's weight (L. S. Thompson, & Story, M., 2003). Parents may be hesitant to recognize that their child is overweight, as this may lead to perceptions of stigmatizing and blaming behaviors from not only health care professionals (Edmunds, 2005), but also teachers, family members and the general public. Additionally, it has been suggested that parents may be unwilling to identify overweight and obesity in their children, as recognizing this would also mean acknowledging their own unhealthy weight status (Townes, 2009).

The research findings for the influence of parental weight status are mixed. Some research findings suggest that overweight and obese mothers are less likely to accurately recognize their child's overweight status than are normal-weight mothers (Baughcum, 2000; Chapparo, 2011; He, 2007; Hudson, 2012), while others suggest that parents of normal weight were less likely to accurately identify the appropriate weight category for their children than were overweight and obese parents (Gauthier, 2016). Further research into the impact caregivers' own weight status has on their ability to correctly identify their children's weight status is necessary in order to develop appropriate interventions that target family-wide changes to promote healthy weight and body satisfaction in both children and their caregivers.

## **Rationale**

Research has implicated the home environment and the influence of family on weight-related outcomes for children (Davison, 2001; Golan, 2006). Further exploration of parents' perceptions of their children's weight and health status is critical, as development of successful prevention and interventions for childhood obesity are related to parental awareness of the problem and involvement in treatment (Adams, 2005; S. S. Rich, DiMarco, N.M., Huettig, C., Essery, E.V., Anderson, E., & Sanborn, C.F., 2005). Unless parents are able to distinguish that their preschool-aged children have high body weights, the support needed to enable those children to reach healthy body weights may be absent (Carnell, 2005). While there is a growing body of available research regarding caregivers' perceptions of their children's weight, there seems to be virtually no research into looking at caregivers' level of body satisfaction with their preschool-aged children, and how this impacts their perceptions. The current study aims to contribute additional support to an important and growing body of research exploring parental ability to accurately classify their preschool-aged children's weight status.

Research involving parental identification of accurate weight status among very young children is limited. The first purpose of the current study is to describe the ability of caregivers to identify the correct weight category of their three- to five-year-old child using Collins' figures. Based on the mixed findings on the influence of parental factors, the second purpose of the study is to determine if the weight status of the caregiver impacts the ability of the caregiver to identify the correct weight category of their three- to five-year old child. The third and fourth aims of the current study are to describe caregivers' body size satisfaction of their three- to five-year old child, and to determine if

caregiver weight status impacts caregiver satisfaction of their three- to five-year old child's body size. There seems to be limited research available exploring parents' attitudes and level of satisfaction toward their children's body sizes. Additional research would serve to enable professionals working to address childhood obesity, as understanding the factors which may influence caregivers' perceptions will make the development of effective strategies to address and prevent childhood obesity more successful.

The first hypothesis in this study is that caregivers will not be able to accurately describe and classify the correct weight category of their children. This seems to be supported by previous research, which shows that parents overwhelmingly underestimate their children's weight status, especially in very young children. Given the age of the children involved in this study, it seems probable that caregivers would experience challenges in accurately identifying overweight and obesity in their children. Secondly, it is hypothesized that caregivers' weight status will influence their ability to accurately classify their preschool-aged children's weight status. Specifically, it is predicted that as caregiver BMI increases, the accurateness of classification will decrease. While the research supporting this hypothesis is somewhat mixed, there appears to be more evidence showing that caregivers with higher BMI tend to be less accurate in classifying their children into the correct weight category. The third hypothesis of this study is that, overall caregivers will be satisfied with their preschoolers' body size. There is extremely limited research available which has studied caregivers' level of body satisfaction with their preschool-aged children. However, it seems reasonable that caregivers would not have high levels of dissatisfaction for their children, given that their perceptions seem to

lead them to believing their children are of a healthy weight. The fourth hypothesis of this study is that caregiver weight status will influence their level of satisfaction with their preschoolers' body sizes. Again, the research in this area appears to be very minimal, but it makes sense that there would be a connection. As research has shown, body satisfaction tends to decrease as an individual's BMI increases, and caregivers who are critical of and dissatisfied with their own bodies may also be more critical of and dissatisfied with their children's bodies.

## METHODS

For the current study, children between the ages of three and five, along with a caregiver, were recruited from a total of 14 different preschool centers in South Dakota, Nebraska, and Minnesota. The total number of participants in the study was 581 (288 parents and 293 children between the ages of 3 and 5), recruited through a convenience sample. IRB approval was attained, and parental consent was obtained prior to participation.

Demographic information was collected from each caregiver-child dyad via paper survey. Specific information which was obtained included the following: child's date of birth, sex of both child and caregiver, caregiver's relationship to child, and caregiver's educational status.

Caregiver body satisfaction with child was assessed by presenting caregivers with Collins' figures for children, numbered 1 to 7 (Collins, 1991). Permission to use Collins' figures in the present study was granted by the author. Please refer to Appendices B and C for the layout of the utilized Collins' figures. Adult participants in the present study were given the set of Collins' figures that corresponded to their child's sex. They were

first asked to circle the one figure which most closely resembled what they think their child looks like (current). Adult participants were then presented with a second set of figures and were asked to circle one figure which they would most like their child to resemble (ideal). Body satisfaction with child was calculated as the difference between current and ideal figures. Negative numbers indicated dissatisfaction in wanting their child to be heavier and positive numbers indicated dissatisfaction in wanting their child to be thinner. A score of zero indicated no dissatisfaction. Further, the higher the number the more dissatisfied the participant was with his/her child's current body type.

Caregivers' identification of their child's weight category was determined by comparing the "current" body figure selected in the body satisfaction questionnaire with the child's actual calculated BMI percentile. For the purposes of this study, figures 1 and 2 correlated with the underweight category, 3-5 correlated with the normal weight category, and 6 and 7 correlated with both overweight and obese categories.

Height for each caregiver and child was measured without shoes using a portable stadiometer. Weight was measured with participants wearing light clothing using a digital scale. Measurements were taken twice for each participant to ensure accuracy of information. This information was then used to calculate the body mass index (BMI) for each participant using CDC guidelines: dividing weight in kilograms by height in meters squared. Caregiver weight was categorized using CDC's BMI categories for adults: normal weight (BMI of 18.5-24.9), overweight (BMI of 25.0-29.9), and obese (BMI 30.0 and higher) (CDC, 2015a). Child weight was categorized using CDC's BMI categories for children: normal weight (5<sup>th</sup> percentile-less than 85<sup>th</sup> percentile), overweight (85<sup>th</sup> percentile-less than 95<sup>th</sup> percentile), and obese (equal to or greater than 95<sup>th</sup> percentile)

(CDC, 2015b). The amount of time required for each caregiver-child dyad was approximately 15 minutes, and each dyad was compensated for their time and participation in the study.

## RESULTS

Using the above described calculations for weight classification, participants were classified into the appropriate categories. Demographics for the study population are provided in Table 1.

	Child	Caregiver
Age, y	3y: 140 (47.8)	34.2 ± 6.5
Child, n (%)	4y: 118 (40.3)	
Caregiver mean ± SD	5y: 35 (12.0)	
Sex, n (%)		
Female	156 (53.2)	238 (83)
Male	137 (46.8)	50 (17)
BMI Category, n (%)		
Underweight	11 (3.8)	-
Normal weight	233 (79.5)	113 (38.6)
Overweight	26 (8.9)	71 (24.2)
Obese	23 (7.9)	109 (37.2)

Table 1. Child and Caregiver Demographics (n=293 child/caregiver dyads)

Of the caregivers in the study, 79.84% were able to correctly identify their child's weight category; 20.16% were not able to. Of the children who were in the underweight category, 72.7% were incorrectly classified, while 83.67% of the children in the overweight/obese categories were incorrectly classified. All normal weight children were correctly identified.

Among normal-weight caregivers in the study, 15 (14%) incorrectly classified their child's weight status, while 91 (86%) correctly did. Of the overweight caregivers, 12 (18%) incorrectly classified their child, while 54 (82%) correctly did. Among parents

in the obese category, 22 (31%) incorrectly classified their child while 49 (69%) correctly did.

Among the 293 caregiver-child dyads, there were 239 that had complete data for assessing body satisfaction with their child. Of these caregivers, 75.31% were satisfied with their child's body size; 6.28% of caregivers were dissatisfied in the direction of wanting their child to be smaller; 18.41% of caregivers were dissatisfied in the direction of wanting their child to be heavier.

Among the normal weight caregivers in the study (n=113), 38 (33.63%) were dissatisfied with their child's body size, while 75 (66.37%) were satisfied. Of the overweight caregivers (n=71), 17 (23.94%) were dissatisfied with their child's body size, while 54 (76.06%) were satisfied. Among the parents in the obese category (n=109), 58 (53.21%) were dissatisfied with their child's body size, while 51 (46.79%) were satisfied.

## DISCUSSION

The current study aimed to examine caregivers' ability to accurately identify and classify their preschool-aged children's weight status, and to determine the impact caregivers' own weight status has on caregivers' level of body satisfaction with their children. The first objective of this study was to examine the ability of caregivers to identify the correct weight category of their 3-5-year-old child using Collins' figures, with the hypothesis being that most caregivers would not be accurate in assigning their child to the appropriate category.

The findings indicate that the majority of adult participants in the study were successful at classifying their preschool-aged child into accurate weight categories. This is an important outcome as there have been several studies (Garrett-Wright, 2011);



Baughcum, 2000; Gauthier, 2016; He, 2007; Huang, 2007; Hudson, 2012; D. R. Musher-Eizenman, Holub, S.C., Edwards-Leeper, L., Persson, A.V., & Goldstein, S.E., 2003) which have found that parents are oftentimes inaccurate when it comes to assigning their child to the appropriate weight category. Further, studies have also shown that parents experience more difficulty with correctly classifying their child's weight status when their child is very young (Huang, 2007). As this study shows, caregivers are generally able to identify their preschool-aged child's weight status, which may mean that parents are becoming more aware of the different weight categories and the implications they may have for their child's current and future health.

It is important to note, though, that all of the children in this study that were within the normal weight category were correctly classified. However, the majority of children in the underweight and overweight/obese categories were not accurately assigned to the correct categories. This study found that caregivers' accuracy decreased as their child's weight strayed either way from the normal range. In other words, caregivers were more likely to classify their child as being of a healthy weight, regardless of their child's actual weight or size. This is consistent with previous research findings (Musher-Eizenman *et al*, 2005; Huang, 2007), and seems to support the idea that there are more factors which impact caregivers' perceptions of their child's size than the child's actual weight. It is important to understand how these factors work together in forming such perceptions in order to develop effective interventions for promoting healthy weight among children and their caregivers by addressing body size perceptions and levels of body satisfaction.

We hypothesized that caregivers' weight status would influence their ability to accurately identify their preschool-aged children's weight status, in that as BMI increased accuracy would decrease. The results indicate that there was no difference between normal weight caregivers' and overweight caregivers' ability to identify appropriate weight category. However, obese caregivers had lower odds of being accurate in assigning their child to the correct weight category as compared to normal weight caregivers. This is an important finding as there have been studies which are consistent with this (Baughcum, 2000; Chapparo, 2011; He, 2007; Hudson, 2012), as well as others which have not found this to be true (Gauthier, 2016). If this same trend holds true for other obese caregivers outside of the current study sample, this would mean that there are countless caregivers out there who are less successful at identifying their child's weight category. Caregivers who are not able to correctly identify their child as being in a weight category which may have health consequences (both under-weight and obese categories) may miss potential health complications developing among their children. If caregivers were better able to correctly classify their children into appropriate categories, they could be better able to implement interventions to improve health in their children.

We also hypothesized that overall the majority of caregivers would be satisfied with their child's body size, and the findings support this assumption. The majority of caregivers were satisfied; however, there are lower levels of caregiver satisfaction among children who are both underweight and overweight/obese when compared to normal weight children. Among the caregivers who were dissatisfied, more caregivers indicated wishes for their child to be heavier than to be smaller. Interestingly, only 3.8% of the children in this study were classified as underweight, but 18.4% of caregivers expressed

desire for their child to be bigger/heavier. Of the children whose caregivers expressed wishes for their child to be heavier, 35 were normal weight children and 2 were overweight/obese. Another important outcome to note is that while only 6.3% of the caregivers indicated they wished for their child to be smaller, children in the overweight and obese categories made up 16.7% of the children in the study. Among the caregivers who indicated dissatisfaction in the direction of wanting their child to be smaller, there were 4 caregivers whose children would already be categorized as being of a normal weight. These findings seem to illustrate that caregivers' perception of and satisfaction with their child's size seems to be influenced by more than just the child's weight. While the majority of caregivers in this study were satisfied with their child's body size, it could still be concerning that there were quite a few caregivers whose concerns about their child's size were unfounded or based on faulty assumptions.

It is also worth noting that there appears to be a growing interest in examining what is defined as a "good enough" body size, meaning that an individual can desire to be thinner or heavier but can still find their current body size to be acceptable. While the body dissatisfaction still exists, it does not appear to impact the individual's body image as it would when individuals' bodies are outside the range of what is considered acceptable. Future studies should be conducted in order to explore whether children fall within the range of what is considered acceptable by their caregivers and how this may impact the perceptions of their children's bodies.

The final hypothesis in the present study was that caregiver weight status/BMI would have an impact on level of dissatisfaction with child body size, in that as the caregiver's BMI increased, their level of satisfaction with their child's body size will

decrease. The results reflect that the odds of caregiver satisfaction with their child's size are much lower in obese caregivers compared with normal weight caregivers. Caregiver BMI is a predictor of satisfaction with their child's size, regardless of the child's BMI. Obese caregivers may be more critical of and sensitive to their children's size due to past experiences of weight-based discrimination or due to the level of dissatisfaction they may have for their own bodies. While not every overweight or obese parent is going to be dissatisfied with his or her body, previous research has shown that levels of satisfaction with self tend to decrease as BMI increases (Daniels, 2006; Schur, 2000). The outcome that satisfaction with children's bodies is impacted as well is vital given the growing occurrence of obesity in adults and caregivers throughout the world. If this finding is indicative of a trend within the population of obese parents, this would mean that there are countless children who may be impacted by their parents' experiences and perceptions of what an acceptable size is. As children grow and begin to understand the implications of their caregivers' opinions about their bodies, this may have a negative impact on children's developing self-esteem and body satisfaction, which may lead to countless negative outcomes, such as disordered eating and depressive symptoms (Daniels, 2006; Schur, 2000).

The current study used a large sample of caregiver-child dyads from various geographical locations in the Midwest United States. While the findings from the present study are compelling and serve to further the research base in this relatively unexplored area, there are some limitations to acknowledge. Given that this study recruited participants through a convenience sample, the findings may not be generalizable to other groups unlike the current study sample. Also, as this research was part of a larger study

examining health and physical activity levels, this may have affected which caregivers ultimately consented to participate.

The results of the current study seem to indicate that caregivers are mostly successful at identifying the correct weight classification for their preschool-aged child when their child is within the range of normal weight. Further, caregivers' ability to correctly classify their children into the appropriate weight category seems to be affected by their own weight status. Perhaps the most notable finding in this study is that caregivers' BMI is a predictor of satisfaction with their child's size, regardless of the child's BMI. As previously noted, this could mean that children are given implicit messages about their bodies during the time in their development when they begin to form concepts about themselves and the world. If children receive the message that their caregivers are dissatisfied with their children's bodies, their self-esteem and self-image are negatively impacted, which may lead to future disordered eating and/or depressive symptoms. As this appears to be an area which has had little research attention, this finding offers a persuasive argument for further analysis.

While the outcomes from the present study add more research into exploring parental body satisfaction with their children, there still seems to be a significant amount of research needed as this area may be crucial for understanding and developing interventions to assist in both decreasing childhood obesity and increasing rates of healthy self-concepts in children. Further research exploring caregivers' beliefs about their own and their children's weight status and how these impact childrearing behaviors is warranted in order to further understand any correlations between body satisfaction and parenting practices, as both of these appear to influence children's development of

positive self-image. Future research studies should also continue to explore caregivers' body satisfaction with children of both preschool-age and of older ages to explore whether the findings are consistent with caregivers of adolescents and teenagers.

Prevention and intervention strategies based on future research exploring the above noted factors can be developed to decrease childhood obesity and promote healthy body images and levels of body satisfaction.

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South Dakota State University

Office of Research/Human Subjects Committee  
SAD Room 124  
Box 2201 SDSU  
Brookings, SD 57007

To: Mary Bowne\*, Department of Teaching, Learning & Leadership  
Date: August 14, 2014  
Project Title: iGrow readers  
Approval #: IRB-1408008-EXM

The committee approved your project using expedited procedures as described in 45 CFR 46.110. The activity was deemed to be no greater than minimal risk, and the following expedited categories from 63 FR 60364-60367 were found to be applicable to your activity:

(4) Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves;

and

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

If there are any unanticipated problems involving risks to subjects or others, or changes in the procedures during the study, contact the SDSU Research Compliance Coordinator. At the end of the project please inform the committee that your project is complete.

One-year approval of your project will be dated starting 8/14/14. If you require additional time to complete your project, please submit a request for extension before 8/13/15. Protocol changes must be approved by the Committee prior to implementation. Forms may be found on the Human Subjects web page. If there are any unanticipated problems involving risks to

subjects or others, please contact the SDSU Research Compliance Coordinator. At the end of the project please inform the committee that your project is complete.

Sincerely,

*Norm*

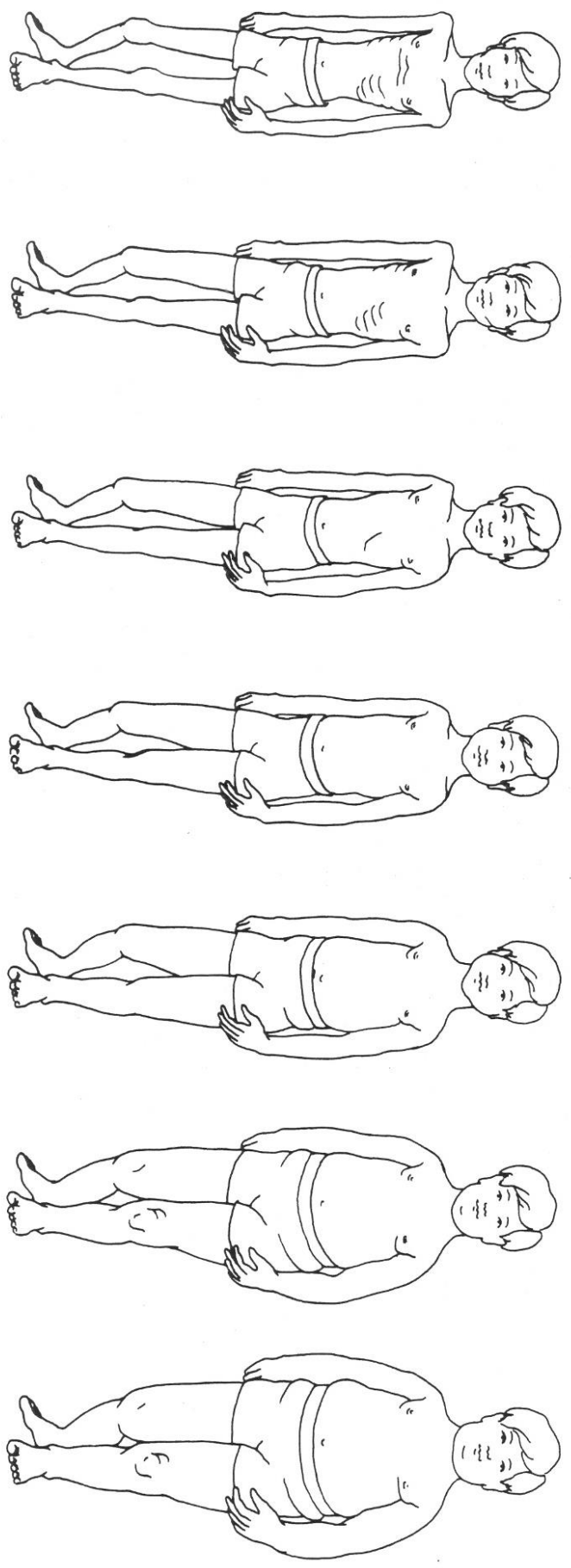
Norman O. Braaten

SDSU Research Compliance Coordinator

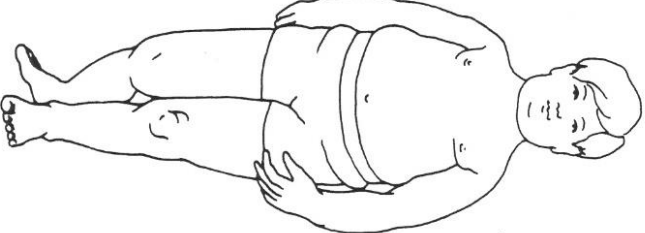
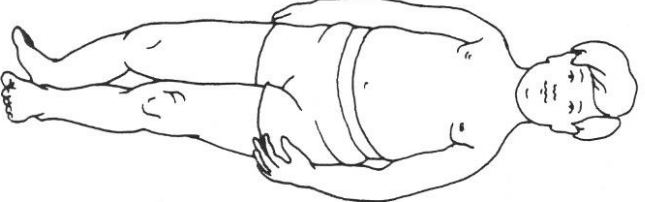
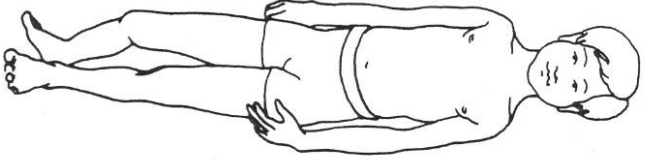
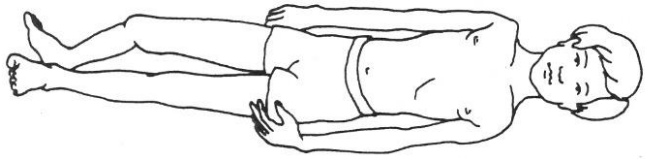
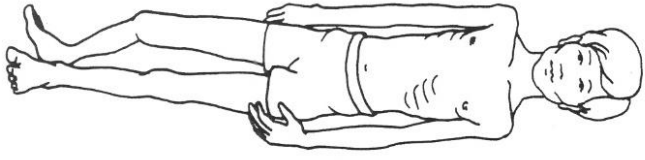
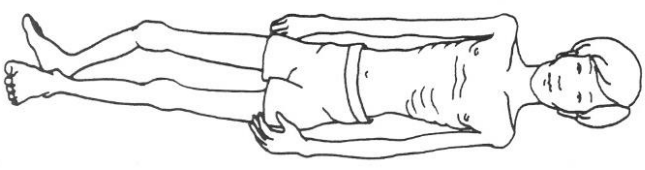
**\*Additional investigators:** Suzanne Stluka, Jessica Meendering, Kendra Kattelman, Howard Wey, Tara Shafrath, Rebecca Swartz, Emily Huber, Mollie Loes, Andrea Brown, Robert Juenemann, Corey Selland, Erin Eggert



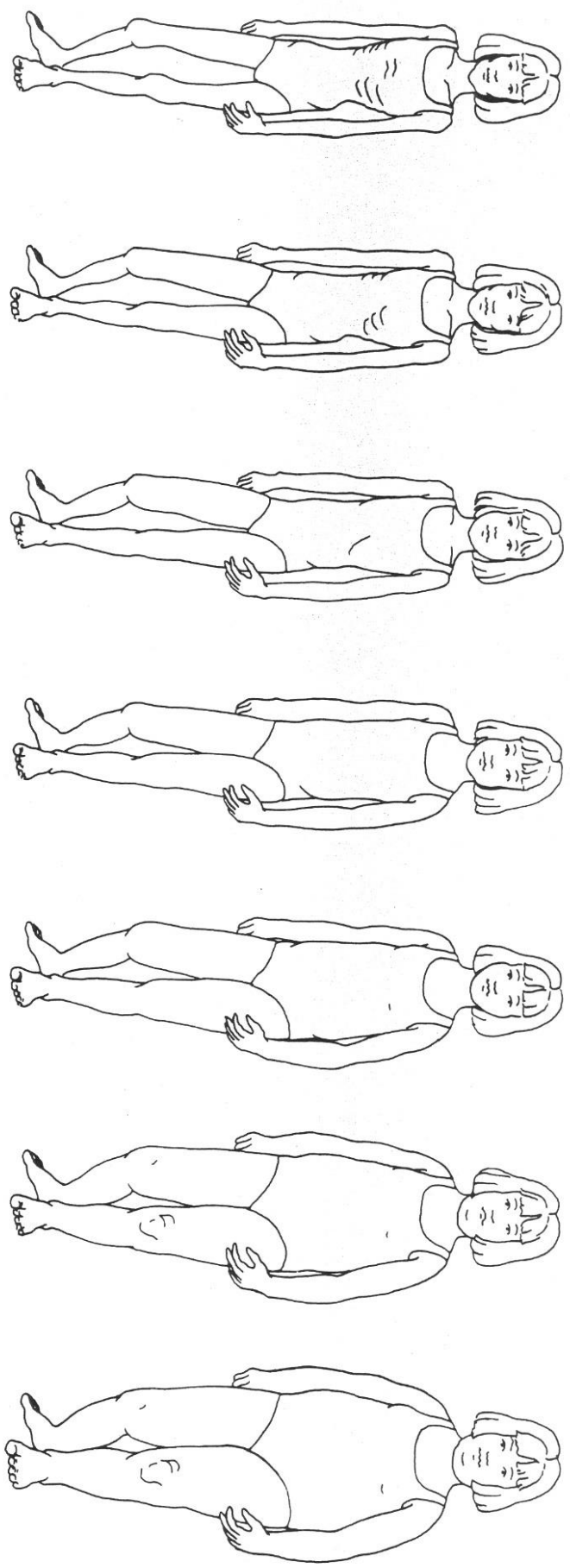
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