

PARENTAL PERCEPTIONS OF BODY WEIGHT IN
TODDLERS AND PRESCHOOL CHILDREN

By

Dawn Marie Garrett

Dissertation

Submitted to the Faculty of the
Graduate School of Vanderbilt University
in partial fulfillment of the requirements for

the degree of

DOCTOR OF PHILOSOPHY

in

Nursing Science

August 2008

Nashville, Tennessee

Approved:

Professor Thomas Cook

Professor Lynda LaMontagne

Professor Mary Jo Gilmer

Professor Mary Dietrich

Professor David Schlundt

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To

My family and friends: Your support, encouragement, and patience have made
this accomplishment possible

ACKNOWLEDGEMENTS

I would like to thank the Vanderbilt University School of Nursing faculty for generously sharing their knowledge and offering guidance and encouragement during the past four years. I have learned so much from each faculty member about nursing science, scholarship, and dedication. The lessons learned in classes and from discussions about nursing practice, research, and policy development will continue to influence my career as a nurse, researcher, and educator.

I recognize the members of my dissertation committee for their patience, guidance, and thoughtful review of my proposal and subsequent dissertation project. To my graduate advisor and dissertation chair, Dr. Thomas Cook, thank you for encouraging me to finish and guiding me throughout my time at Vanderbilt. To Dr. Lynda LaMontagne, thank you for challenging, inspiring, and helping me realize the importance of having a passion for substance. I thank Dr. Mary Dietrich for her patience and willingness to help me with the statistical analyses for my dissertation; your knowledge and help have been invaluable. I thank Dr. Mary Jo Gilmer and Dr. David Schlundt for sharing their time and knowledge during this process.

I thank the faculty and support staff from Western Kentucky University School of Nursing. Your support and encouragement meant so much to me while I was completing my coursework and dissertation. I could not have completed this project if all of you had not been so patient and understanding. A special thank you to Nancy Rascoe, Beverly Siegrist, and Susan Jones who have been my heroines and mentors since I entered my

undergraduate nursing program, and you continue to be. I acknowledge the Western Kentucky University Sigma Theta Tau-Kappa Theta Chapter for funding this dissertation.

I thank all those whom I have the pleasure of working with during data collection for this project. I know that each of the physicians, nurses, and staff with whom I worked at my data collection sites has a passion for helping children and families maintain and improve their health. Each of you has inspired me to be a better nurse.

I also thank my family and friends for their support during this time. A special thank you goes to my mother for encouraging me to continue my education. I recognize my classmates, Terrah, Liz, Ben, Panarut, Donna, and Cindy. Each of you is inspirational, and I feel blessed to have shared this experience with you. Finally, I also thank Andy for his patience and support during the past year; I appreciate your love and encouragement.

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CHAPTER I

INTRODUCTION

Early childhood weight and nutrition status are broad indicators of health that are compounded by many factors, including parental perception of child body weight, diet and exercise patterns, genetic predispositions, environmental factors, the sociocultural climate, and familial interactions (Davison & Birch, 2001; Hodges, 2003; Manios, 2007; Reifsnider, Keller, & Gallagher, 2006b; Tabacchi, Giammanco, La Guardia, & Giammanco, 2007). Feeding difficulties are common in infants, toddlers, and preschool age children, but these problems are typically transitory and usually receive little intervention from healthcare professionals (e.g., Holm-Denoma, Lewinsohn, Gau, Joiner, Striegel-Moore, & Otamendi, 2005). However, toddlers and preschool children are at risk for the development of several nutritional disorders; the most common is obesity, which has become increasingly prevalent in children age two to five years (Vaughn & Waldrop, 2007). Limited research has been focused on how parents perceive body weight or size in their children (Holm-Denoma et al., 2005). Examining parental perceptions of child weight is crucial because successful prevention and treatment of childhood weight problems, especially childhood obesity, has been linked to parental awareness and involvement (Adams, Quinn, & Prince, 2005; Golan & Crow, 2004a, 2004b; Golan, Weizman, Apter, & Fainaru, 1998; Reifsnider et al., 2006b; Vaughn & Waldrop, 2007).

Obesity is an increasing problem in society and a leading cause of mortality (Adams et al., 2005; Allison, Zannolli, & Narayan, 1999; American Heart Association

[AHA], 2004; Hedley, Ogden, Johnson, Carroll, Curtin, & Flegal, 2004; Myers & Vargus, 2000; Tschannen-Moran, Lewis, & Farrell, 2003). Some authors believe that obesity, which is known to be a frequent cause of disease (AHA, 2004), will soon surpass tobacco smoking as the leading preventable cause of morbidity and mortality in the twenty-first century (Zeller & Daniels, 2004). This significant health problem is on the rise throughout the world in all age groups and ethnicities (Allison et al., 1999; Anderson & Butcher, 2006; Hardus, van Vuuren, Crawford, & Worsley, 2003; Manios, 2007; Tschannen-Moran et al., 2003; Zeller & Daniels, 2004). Noting a disturbing trend in obesity rates, healthcare experts have reported that the incidence of childhood obesity in the US has risen to a nearly epidemic level (Koplan, Liverman, & Kraak, 2004). The increasing rate of obesity in children is in sharp contrast to the rate of under nutrition or malnutrition in U.S children, which has decreased to less than 1% (Grigsby & Shashidhar, 2006).

Background

An exponential increase in childhood obesity in all age ranges of American children has occurred in the past few decades (American Academy of Pediatrics [AAP], 2003; Davison & Birch, 2001; Koplan et al., 2004; Hardy, Harrell, & Bell, 2004; Kitzmann & Beech, 2006; Sheehan & Yin, 2006; Tschannen-Moran et al., 2003). According to the Institute of Medicine (IOM), currently more than nine million obese children age six and up are living in the US (Koplan et al., 2004), and additional authors have recently reported the obesity rate in preschool children to be between 10-20 % in studies conducted between 2004-2007 (Rhee, Lago, Arscott-Mills, Mehta, & Davis,

2005; Rio-Navarro, Velazquez-Monroy, Sanchez-Castillo, Lara-Esqueda, Berber, Fanghanel, et al., 2004; Robert Wood Johnson Foundation, 2005; Vaughn & Waldrop, 2007; Whitaker & Orzol, 2006). Obesity in toddlers and preschoolers (e.g., children ages 2-5 years) has risen dramatically in the last decade, and there has been a reported 40% increase in obesity in this age group since 1994 (Robert Wood Johnson Foundation, 2005). Both the AAP (2003) and the AHA (2004) report that obesity has increased sharply in all groups of American children, with minority groups being most affected. Data show that 16.9% and 15.6% of Caucasian boys and girls, aged 6-11, respectively are classified as overweight/obese (AHA, 2008). By contrast, 17.2% of African American boys and 24.8% of African American girls in the same age range are overweight/obese (AHA, 2008). Incidence among Mexican American boys and girls is similar, with 25.6% and 16.6% respectively categorized as overweight/obese (AHA, 2008).

The overall rates of diagnosed obesity in preschool children and adolescents have tripled, while the obesity rates have quadrupled in children age 6-11 years during the past three decades (IOM, 2006b). Some authors estimate that the overall diagnosed obesity rates are close to 25% for children in the US (Spruijt-Metz, Lindquist, Birch, Fisher, & Goran, 2002). Given that nearly 25% of the total U.S. population is less than 18 years of age (U.S. Census Bureau, 2006), increases in childhood obesity rates may have a significant impact on the future physical and economic health of our nation (AAP, 2003; Healthy People, n.d.). The current rate of childhood obesity points to an emerging health crisis, not only for individual children and their families but also for the healthcare system, the discipline of nursing, and society.

Multiple intrapersonal, interpersonal, and environmental factors have influenced the dramatic increase in childhood weight problems over the past 40 years (Davison & Birch, 2001; Reifsnider et al., 2006b; Zeller & Daniels, 2004). Much of the research related to childhood nutrition issues has focused on interventions to improve children's diet and exercise patterns (Davison & Birch, 2001). Although this research is beneficial, there is still a need for a full exploration of familial and environmental issues related to perception of body weight in children and its link to the development of nutritional disorders, specifically childhood obesity (Davison & Birch, 2001, Holm-Denoma et al., 2005; Reifsnider, Flores-Vela, Beckman-Mendez, Nguyen, Keller, & Dowdall-Smith, 2006a). Because of the amount of control they have over a child's diet and exercise patterns, especially in early childhood, parents' roles in the development, recognition, and treatment of body weight problems, including obesity, in children cannot be underestimated (Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001; Davison & Birch, 2001; Kitzmann & Beech, 2006). Holm-Denoma et al. (2005) report that more study on parental perceptions of child body shape and weight is important because of the effect these perceptions have on how parents feed their children. The active participation of parents in weight loss and maintenance programs for at risk and/or obese children has been shown to have long-term positive outcomes (Golan et al., 1998; Golan & Crowe, 2004a, 2004b). In addition, Maynard, Galuska, Blanck, and Serdula (2003) report that the implementation of programs targeting children who are at risk for or are already obese is likely to be unsuccessful if parents do not recognize the condition exists and/or the risk it poses to the child's future health. Carnell, Edwards, Croker, Boniface, and Wardle (2005) state that unless parents recognize that a preschool child has

an elevated body weight, the support needed for a child to achieve a healthy body weight may be lacking. This view is disturbing given the body of literature suggesting that parents often have misperceptions of what constitutes a healthy body weight in toddlers and preschool children.

Although recent studies have demonstrated that parents often have an incorrect perception of their child's body weight, especially during the toddler and preschool periods (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000; Campbell, Williams, Hampton, & Wake, 2006; Carnell et al., 2005; Hirschler, Gonzalez, Talgham, & Jadzinsky, 2006; Jackson, Strauss, Lee, & Hunter, 1990; Myers & Vargus, 2000), little is known about factors that may be associated with these perceptions. Parental characteristics that relate to body weight perceptions for their children are phenomena that need to be studied to determine how to develop interventions to prevent and treat alterations in body weight in toddlers and preschool children.

This dissertation study focused on children aged 2-5 years and their parents because weight problems in this group of children are often misidentified and can lead to increased risk of becoming obese adults (O'Brien, Holubkov, & Reis, 2004). Eckstein, Mikhail, Ariza, Thomson, Millard, and Binns (2006) reported that the long-term risk of adult obesity could begin in children as young as three years of age. In addition, the preschool period overlaps with one of two critical periods for the development of obesity in children, that being the ages of 4-6 years because of increased BMI secondary to growth spurts (Hardy et al., 2004). Dietz (1997) described the years immediately following the preschool period as the adiposity rebound stage when BMI accelerates after the natural developmental decline seen in toddlers. The adiposity rebound stage is a

crucial period because it is a time when food and activity related behaviors acquired in the preschool period are expressed (Dietz, 1997). In addition, authors pointed out that intervening in the preschool years provides promise in preventing racial disparities in obesity rates and obesity complications that begin in adolescence and early adulthood (Reilly, 2006; Whitaker & Orzol, 2006). Several authors reported that prevention and treatment efforts in toddler and preschool age children may be effective because they use a timeframe when food and exercise related behaviors may be more amenable to change (Reilly, 2006; Rhee et al., 2005). The final reason for the selection of this population was the dramatic increases in obesity rates in this age group, with 10% -20% of U.S. toddlers and preschoolers identified as obese (Rio Navarro et al., 2004; Robert Wood Johnson Foundation, 2005).

Purpose of the Study

The purpose of this study was to examine the relationships among parental perception of child body weight, sense of parental efficacy, health literacy, and selected demographic factors in parents of toddlers and preschool children.

Significance of Toddler and Preschool Child Body Weight Issues

Significance to Healthcare

The healthcare system is an important link in the chain of response to body weight issues in toddlers and preschool children and particularly overweight and obesity.

Healthcare providers need the opportunity to participate in the development of strategies

to prevent and provide early interventions for child weight problems (AAP, 2003). Healthcare providers must focus on collaborating with parents and other caregivers to promote healthy weight maintenance, positive exercise habits, and nutritious food choices, rather than just encouraging weight loss in young children and adolescents (Gidding, Leibel, Daniels, Rosenbaum, Van Horn, & Mark, 1996; Harbaugh, Jordan-Welch, Bounds, Blom, & Fisher, 2007; Vaughn & Waldrop, 2007).

Several organizations have developed guidelines to aid providers in recognizing and responding to their responsibility to promote healthy early childhood eating and exercise patterns (AAP, 2003; AHA, 2004; Healthy People 2010, n.d.). The Healthy People 2010 (n.d.) initiative identifies overweight and obesity as one of its 10 leading health indicators. The goal related to childhood obesity for the year 2010 is to decrease the number of overweight and obese children to five percent or less (Healthy People 2010, n.d.). The continued increase in overweight/obesity rates in children in recent years makes it unlikely that this goal will be met.

In addition, the AHA (2004) has developed some general guidelines for providers, including scheduling frequent office visits with children at risk for weight problems, developing treatment programs with parent and caregiver involvement, and encouraging frequent physical activity. The initiative also recommends that providers work to develop new family-based interventions for body weight treatment that avoid recommending dieting and weight loss (AHA, 2004). The guidelines urge providers to promote a healthy lifestyle rather than a weight loss plan (AHA, 2004). The AAP (2003) further recommends that healthcare providers become active in policy formation at local, state, and national levels to advocate for changes to promote healthy lifestyles for children.

These recommendations provide the basis for the professional obligation that healthcare providers have in relation to helping children achieve and maintain a healthy body weight.

Aside from the professional responsibility of providers to promote healthy body weight in toddlers and preschool age children, there are also several practical issues that make action on the part of the healthcare system a necessity. Researchers have established that altered body weight in early childhood persists in many cases into adulthood (Reifsnider et al., 2006a, 2006b; Reilly, Methven, McDowell, Hacking, Alexander, Stewart, et al., 2003; Schwartz & Puhl, 2003; Sheehan & Yin, 2006; Styne, 2001; Tschannen-Moran et al., 2003; Zeller & Daniels, 2004), and Hodges (2003) reports that up to 77% of children with BMIs greater than 95% continue to be obese in adulthood. Anderson and Butcher (2006) reported that over half of obese preschoolers continue to be obese adults when measured at age 25, compared with 12% of obese adults who were at an appropriate weight during their preschool years.

It also has been shown that the co-morbidities related to elevated body weight can begin in early childhood (Anderson & Butcher, 2006; Hodges, 2003; Reifsnider et al., 2006a; Schwartz & Puhl, 2003; Styne, 2001). These health problems include atherosclerosis, hyperlipidemia, hypertension, type II diabetes mellitus, cholelithiasis, hepatic steatohepatitis, ovarian dysfunction, obstructive sleep apnea, orthopaedic deformities, and some cancers (Anderson & Butcher, 2006; Reilly et al., 2003; Styne, 2001). One specific example of the negative impact that elevated body weight has had on U.S. children is the increased risk of type II diabetes in American children born after

2000 (IOM, 2004b). According to the IOM (2004b), 30-40% of U. S. children are at risk for developing type II diabetes.

The increase in chronic illnesses linked to obesity also is predicted to erase the increase in life expectancies that were achieved with the reduction of communicable diseases (IOM, 2004b). In addition, obese children also face psychosocial problems related to body weight that may continue throughout their lifespan (Schwartz & Puhl, 2003). These psychosocial problems can include diminished self-concept, depression, low self-esteem, body image disturbance, and social marginalization (Friedlander, Larkin, Rosen, Palmero, & Redline, 2003; IOM, 2004b; Strauss & Pollack, 2003; Young-Hyman, Schlundt, Herman-Wenderoth, & Bozylinski, 2003). The physical and psychosocial complications of elevated body weight in early childhood can lead to lack of productivity in school and work later in life and increased risk for early mortality (Reilly et al., 2003; Schwartz & Puhl, 2003). According to Sheehan and Yin (2006), life expectancy for those who are obese in childhood and as young adults will be decreased by an average of 5-20 years. Therefore, the healthcare system and its providers have a vital responsibility in addressing this societal problem.

Significance to Nursing Discipline, Science, & Practice

Nurses have a unique professional responsibility to respond to body weight issues in toddlers and preschool children and promote accurate parental perceptions of child body weight. The American Nurses Association's (ANA) (2003) Social Policy Statement specifies that nurses are professionally and ethically responsible to society for their practice including the assessment and diagnosis of both actual and potential health

problems (ANA, 1998, 2003). Standards of practice call for nurses to work in conjunction with clients, families, and communities to provide care in health and illness (ANA, 1998). In caring for clients and families, nurses use skills in education and advocacy to develop health policy to promote health and improve functioning (ANA, 1998, 2003).

These standards apply directly to nurses' roles in preventing and treating alterations in child body weight, including obesity. In practice, nurses frequently have close contact with toddlers and preschool age children and their parents in both primary and acute care settings. The nurse's role is often one of providing education to parents regarding the child's weight status (MacKenzie, 2000; McKey & Huntington, 2004; Sheehan & Yin, 2006). This role makes nursing knowledge related to nutrition, teaching/learning principles, culture, and child development invaluable in shaping the message to parents and other caregivers (Betz, 2000; MacKenzie, 2000; McKey & Huntington, 2004; Sheehan & Yin, 2006).

Nurses are in a strategic position to identify factors within the toddler or preschool child's medical history and environment that may alter the balance between healthy eating and activity patterns and may lead to body weight imbalances. Also, it has been noted that nurses a key link in the creation of healthy environments for children and families through the use of their skills in health promotion, advocacy, and political action (Sheehan & Yin, 2006). In summary, nurses have the knowledge and skills to make a significant contribution in helping society address the issues related to toddler and preschool child body weight.

Significance to Society

The prevalence and serious repercussions of alterations in child body weight, specifically childhood obesity, make it a health problem that society must effectively address. Obesity has a tremendous impact upon society because of the numerous physical and psychological problems that it can cause for both adults and children (Hardus et al., 2003; Reilly et al., 2003; Schwartz & Puhl, 2003; Vaughn & Waldrop, 2007; Zeller & Daniels, 2004). Reilly et al. (2003) reported that the likelihood of an obese child becoming an obese adult is high, and that complications of obesity can begin in early childhood, leading to a reduction in productive years of life and early mortality. Risk for developing adult obesity increases to 70% if a child has an obese parent (Baughcum et al., 2000; Zeller & Daniels, 2004), and Styne (2001) reported that a child with an obese parent has a two to three times greater likelihood of adult obesity. This pattern illustrates the cyclical nature of obesity in families that must be addressed, not only at the family level but also within society (Schwartz & Puhl, 2003).

The enormous cost of treating obesity and obesity-related morbidities such as type II diabetes and cardiovascular disease is also a major societal concern (Allison et al., 1999; Schwartz & Puhl, 2003; Sheehan & Yin, 2006; Tschannen-Moran et al., 2003). Allison et al. (1999) reported that approximately 5.7% of direct healthcare costs in the US during the late 1990s were related to obesity and its co-morbidities. More recently, the Robert Wood Johnson Foundation (2005) estimated that 12% of healthcare costs in the US are related to obesity. Other authors estimated that the total cost of obesity and its co-morbidities would approach \$100 billion per year during the coming decade (Schwartz & Puhl, 2003; Sheehan & Yin, 2006; Tschannen-Moran et al., 2003; Zeller &

Daniels, 2004). In this time of managed care and cost containment, it seems reasonable that societal policies address the expense of obesity in adults and children through prevention and development of family-based interventions (Kitzmann & Beech, 2006; Schwartz & Puhl, 2003; Tschannen-Moran et al., 2003).

Society also must be concerned with the apparent racial and ethnic disparities observed in body weight trends in children (Whitaker & Orzol, 2006; Yancey & Kumanyika, 2007). Although obesity in all children has nearly quadrupled in the last four decades, the sharpest increases have been observed in minority groups, including African Americans (especially females), Hispanic Americans (especially males), and Native Americans (Crawford, Story, Wang, Ritchie, & Sabry, 2001). This severe increase is even more disturbing given that children in these racial and ethnic groups are known to be at higher risks for obesity-related co-morbidities such as hypertension, diabetes mellitus type II, and cardiovascular disease (Crawford et al., 2001). Societal problems that affect caregivers, such as disparity in access to preventive care, lower educational levels, and poverty, also have been linked to body weight problems in children from diverse racial and ethnic groups (Armstrong, Dorosty, Reilly, & Emmett, 2003; Crawford et al., 2001; Schwartz & Puhl, 2003; Tschannen-Moran et al., 2003). These trends are further justification for the need for action to prevent and treat child weight problems, such as obesity, at a societal level.

Body weight issues are clearly a health issue that affects not only children but also their families, the healthcare system including nursing, and society. The exponential increase in the number of obese children in the last few decades, despite greater knowledge regarding the benefits of proper nutrition and exercise, points to the complex

and multifactorial nature of child weight issues. Thus, the question arises about how healthcare professionals, especially nurses, can help families stem the rising tide of childhood obesity and promote healthy body weights in preschool children. Examination of parental perceptions of child body weight has been a focus of recent research related to promoting healthy body weights in children, but more study is needed on parental factors that influence perception of toddler and preschool child body weight before interventions can be developed to improve the accuracy of parental perceptions.

Theoretical Framework

Because parents are considered to be central to the development of health behaviors and values in their children, the Revised Health Belief Model (Roden, 2004a, 2004b) was selected as the theoretical framework for this study (see Figure 1). Roden's (2004a) Revised Health Belief Model is designed to aid nurses in incorporating 'positive' health messages into their care of families and children to increase the effectiveness of health promotion activities. The model is oriented for use with young families and incorporates the concepts of perceived behavioral control and behavioral intention from Ajzen's (n.d.) Theory of Planned Behavior, as well as concepts from the original Health Belief Model. Specific areas of the Revised Health Belief Model examined in this dissertation study included the propositions among perceived notion of health, perceived behavioral control, and selected modifying factors (see Figure 1 and Figure 2).

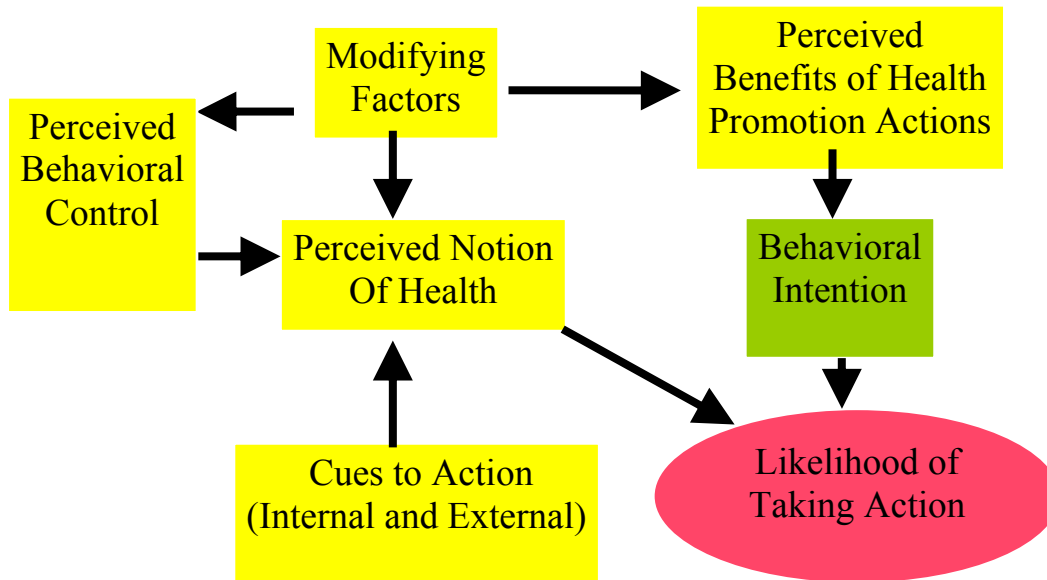


Figure 1. Roden's (2004a, 2004b) Revised Health Belief Model.

The Revised Health Belief Model blends concepts from the Theory of Planned Behavior and the Health Belief Model.

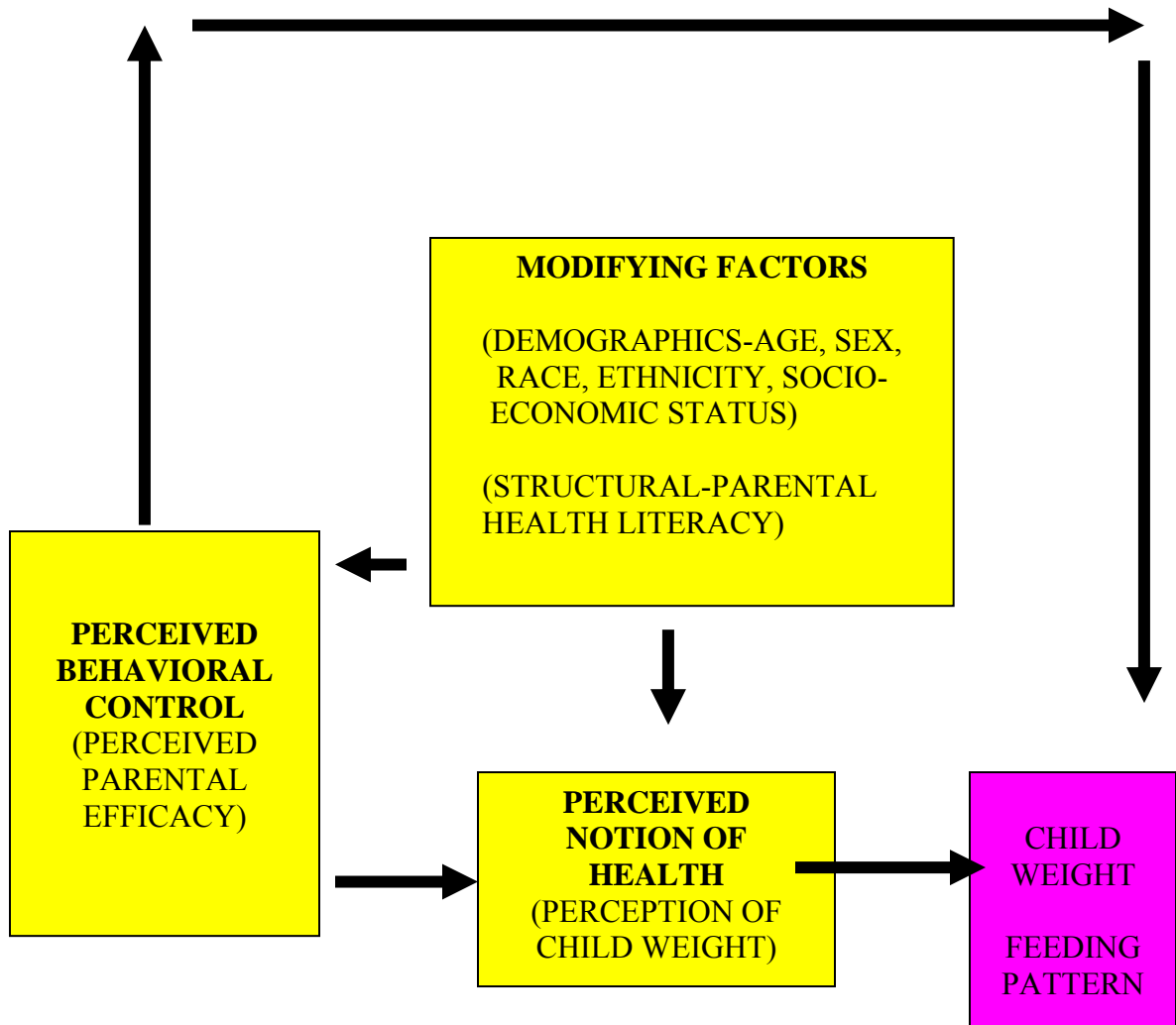


Figure 2. Revised Health Belief Model Adapted for Current Study

The concepts in bold font are from Roden’s Revised Health Belief Model. The concepts in regular font are the variables examined in this study.

Assumptions and Research Questions

Assumptions

Several assumptions were derived from Roden's Revised Health Belief Model about parental perceptions of toddlers' and preschool children's body weight. These assumptions formed the basis for conceptualizing the questions posed in this dissertation study (see Figure 1 and Figure 2).

1. One's perceived notion of health, as described in Roden's model, could be measured by ascertaining how parents of toddlers and preschool children perceive their child's body weight.
2. Perception of the toddler or preschool child's body weight is associated with the child's actual bodyweight and the feeding patterns.
3. Perceived behavioral control affects a parent's perception of the child's body weight and could be measured by assessing perceived parental efficacy levels.
4. Parents who perceive their child as having an overweight problem would express concern to providers about their child's weight.
5. The parents' perception of their children's body weight and perceived behavioral control would be influenced by their level of health literacy.

Research Questions

Research questions for this study were the following:

- 1) What is the parent's perception of the toddler's or preschool child's body weight?
- 2) What factors are associated with the accuracy of a parent's perception of his or her child's body weight?

Subquestions based on question number two were the following:

- a) What is the relationship between perceived parental efficacy levels and the accuracy of parent's perception of the child's body weight?
- b) What is the relationship between the parent's health literacy level and the accuracy of perception of the child's body weight?
- c) What is the relationship between perceived parental efficacy levels and the parent's concern about the child's body weight?
- d) What is the relationship between the parent's health literacy level and the parent's concern about the child's body weight?
- e) What is the relationship between the parent's health literacy level and level of perceived parental efficacy?
- f) What is the relationship between the accuracy of a parent's perception of the child's body weight and level of concern about the child's body weight?

CHAPTER II

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The purpose of this chapter is to discuss the theoretical and empirical context for studying parental perceptions of body weight in toddlers and preschool children. This chapter is comprised of three main sections. The first section provides a critical analysis of conceptual and theoretical approaches previously used in studying this topic and discussion of why the Revised Health Belief Model was selected as the theoretical framework that was used in this dissertation study. The second section is a critical analysis of relevant methodological literature, including strengths, weaknesses, and a summary of findings from current literature. Finally, a discussion of how this dissertation study addresses current gaps in the literature is presented and then hypotheses are stated.

Critical Analysis of Conceptual and Theoretical Approaches

In examining the extant literature on parental perception of child weight status and weight problems such as obesity, it was apparent that a consistent theoretical approach to the phenomenon does not exist. Two main conceptual and theoretical problems were identified in the studies reviewed on the phenomenon. Problems were related to conceptual definitions of the terms obesity and perception and with the development of a theoretical context in which to place the research on parental perceptions of childhood obesity.

To undertake a study on how parents perceive their child's weight, it is crucial to articulate conceptual definitions for the terms perception and obesity. Every study reviewed either directly or indirectly implied that the purpose of the research was to assess parent or caregiver perceptions of child weight status, yet none of the studies defined the concept of perception. Perception involves taking in information via one's senses and processing that information to produce understanding of a situation (Fortinash & Holoday Worret, 2003; Merriam-Webster Online, n.d.; Webster, 1993). In studies reviewed (e.g., Baughcum, Burklow, Deeks, Powers, & Whitaker, 1998; Etelson, Brand, Patrick & Shirali, 2003; Fisher, Fraser, & Alexander, 2006; Hirschler et al., 2006; Reifsnider et al., 2006a; Sherry, McDivitt, Birch, Cook, Sanders, Prish, et al., 2004) the concept of perception was operationalized in various ways. Thus, the concept perception has not been consistently operationalized. A clear definition of this concept is needed to further explore the phenomenon of parental perceptions of child overweight.

As with perception, the concept of obesity itself is inconsistently defined in the literature. In the studies analyzed, the words overweight and obesity were often used interchangeably and there were varying cutoff points for determining when children were overweight or obese. Even national health agencies within the US use different terminology related to weight status for children, with the Centers for Disease Control (CDC) preferring the term "overweight" (n.d.) and the Institute of Medicine (IOM) using the term "obesity" (2004a, 2004b). The standard for defining pediatric overweight/obesity as a BMI greater than the 95th percentile for age and gender and at risk for obesity/overweight as a BMI of between the 85th and 95th percentiles were used in several studies (e.g., Adams et al, 2005; Eckstein et al., 2006; Maynard et al., 2003; May,

Donohue, Scanlon, Sherry, Dalenius, Faulkner, et al., 2007). Other studies used the 90th percentile on weight for height charts as a cutoff point for overweight (e.g., Baughcum et al., 2000; Jain, Sherman, Chamberlin, Carter, Powers, & Whitaker, 2001; Myers & Vargus, 2000). Five studies conducted outside the US used the International Obesity Taskforce (IOT) cutoff points, which were not specified in the articles, to delineate obesity (Campbell et al., 2006; Carnell et al., 2005; Crawford, Timperio, Telford, & Salmon, 2006; Fisher et al., 2006; Genovesi, Giussani, Faini, Vigorita, Pieruzzi, Strepparava, & et al., 2005). The development of the IOT cutoff points for overweight and obesity are described in Cole, Bellizzi, Flegal, and Dietz's (2000) article, and these cutoff points roughly project the child's likelihood at age 18 of meeting the adult cutoff points for obesity (Hall & Cole, 2006). In three other studies, no definition for obesity in children was given (Crawford, Gosliner, Anderson, Strode, Becerra-Jones, Samuels, et al., 2004; Jackson, McDonald, Mannix, Faga, & Firtko, 2005; Keller, Miner, & Wigglesworth, 2004).

The inconsistencies in the definitions are related, in part, to the location and timeframe for the studies. Studies published later focused on a wider range of children, and tended to use the CDC (n.d.) standards for defining childhood obesity, which use BMI percentiles for age and gender to determine weight status (Adams et al., 2005; Etelson et al., 2003; Maynard et al., 2003), compared with earlier studies that were primarily conducted in Women, Infant, and Children (WIC) clinics that used weight and height ratios (Baughcum et al., 1998; Baughcum et al., 2000; Jackson et al., 1990; Jain et al., 2001; Myers & Vargus, 2000). Although the definitions are inconsistent, they are similar enough that some comparisons can be made across studies. The use of BMI

ranges as proposed by the AHA (2004) and CDC (n.d.) is a valid way to define obesity because it allows for variance in height that occurs related to growth spurts, heredity, age, and gender. One way to strengthen the evidence developed in relation to childhood obesity and perceptions is to provide consistent definitions of all concepts under study, including obesity and perception.

A second problem related to the literature reviewed was the lack of a consistent theoretical framework to guide the development of research questions and help explain findings. Over half of the studies reviewed offered no explicit or implicit references to any theoretical framework (e.g., Campbell et al., 2006; Carnell et al., 2005; Fisher et al., 2006; Myers & Vargus, 2000). Other studies made explicit or implicit reference to various cognitive theories that have been used in health research, including the Health Belief Model (Crawford et al, 2004), Ecological Systems Theory (e.g., Genovesi et al, 2005; He & Evans, 2007; Young Hyman, Herman, Scott, & Schlundt, 2000), and Social Cognitive Theory (e.g., Baughcum et al., 1998; Jain et al, 2001). Additionally, one qualitative study referenced the use of a feminist approach to data collection and analysis (Jackson et al., 2005). Because there was not a consistent theoretical approach to studying the phenomenon of parental perceptions of childhood weight status, the review included a determination of which theory or model might hold promise in addressing the many factors that influence how a child's parent perceives his or her child's weight.

Self-Efficacy Theory

Self-efficacy has been found to be a major resource for effective behavioral change. Several of the theories endorse the concept of self-efficacy as a resource for

change, whether it is explicitly or implicitly stated. Self-efficacy is related to the confidence to take and control one's own actions (Janz, Champion, & Strecher, 2002), and Baranowski, Cullen, Nicklas, Thompson, and Baranowski (2003) identified self-efficacy as an important component in changing and controlling weight-related health behaviors. These researchers assert, as does Bandura (2004), that what a person thinks he or she can achieve is often the key to goal attainment, regardless of other resources. Self-efficacy has been an important component of Social Cognitive Theory from its inception, but has been explicitly discussed in relation to the Health Belief Model in the past two decades only (Rosenstock, Strecher, & Becker, 1988). Roden's (2004a, 2004b) Revised Health Belief Model adapted for this study also includes perceived parental efficacy and modifying factors such as health literacy as factors that may influence parental perceptions of child overweight.

Health Literacy

According to Roden (2004a), modifying factors can be loosely grouped into three categories: demographic variables, sociopsychological variables, and structural variables. Roden (2004a) defines structural variables as having a knowledge component. In the Revised Health Belief Model (2004a), structural variables are analogous with one's knowledge about disease and prior contact with disease and the healthcare system. Health literacy will be measured to ascertain parental knowledge levels about health, disease, and healthcare, which Roden considers to be a structural variable in the Revised Health Belief Model. Health literacy involves acquiring and utilizing information in health related situations to make decisions regarding needed care and services (U.S. Department

of Health and Human Services, 2000). For purposes of this study health literacy was measured using the Test of Functional Health Literacy in Adults-Short Form [S-ToFHLA].

Review of Methodological Approaches to Parental Perception of Child Body Weight

The progression of childhood weight problems and subsequent obesity over the past four decades has made it a central area of focus for researchers in a variety of fields, including nursing, medicine, psychology, nutrition, and sociology. Many of these studies focus on the genetic, socioeconomic, and treatment factors that affect a child's weight or on behavioral interventions to teach children proper nutrition and exercise habits. Also, much of this previous research has been conducted with school age children and adolescents, with few studies targeted at children younger than five (Vaughn & Waldrop, 2007). In addition, these studies often do not address the accuracy of the parents' perceptions of child weight and the impact of these perceptions on the development and treatment of obesity. Articles focusing on parental perceptions of child weight were obtained using various search strategies, including database retrieval, consultation with a reference librarian, and ancestry searches. Databases (e.g., CINAHL, PsycINFO, PubMed, ERIC, Dissertation Abstracts Online) and ancestry searches were conducted to find studies conducted on parental perceptions of child body weight from 1960 to the present.

Few articles were found on this phenomenon, with the two earliest studies being conducted in the 1990s (Baughcum et al., 1998; Jackson et al., 1990). Because so few articles were found on this topic, all studies published in English, from both the US and

abroad, were included in the review. The articles based on international studies also were included to show the diverse populations that are affected by the phenomenon of childhood obesity. In all, 26 studies have been published on this phenomenon since 2000. In addition, it was noted that many of the studies conducted were on older children and did not address the parental perception of the child's weight until they had reached school age. Although the increasing number of studies on this topic signals a new appreciation for the role of parental perceptions in the development and treatment of weight problems, especially obesity, in children, there is a large gap in the literature and many unanswered questions about the relationship between parental perceptions of child weight status and the prevention of early childhood obesity.

Adult Perceptions of Body Weight

Based on a review of literature it is clear that the inability of parents to correctly perceive their child's weight is a phenomenon that is mirrored in adult misperceptions of their own weight and body mass. Currently, more than half of the adult population in the US is classified as overweight or obese, but less than one-fourth of adults perceive their weight to be problematic or a health risk (Chang & Chistakis, 2001, 2003; Kuchler & Variyam, 2003). This is a concern to health professionals because of the established link between self-perception of weight and behaviors to control weight, including diet and exercise habits (Chang & Christakis, 2003). Several authors have reported that various behaviors and emotions are elicited by one's self-perception of weight and body size, and these behaviors and emotions can lead to either positive or negative changes in weight

and overall health outcomes (Chang & Chistakis, 2001, 2003; Kuchler & Variyam, 2003; Paeratakul, White, Williamson, Ryan, & Bray; 2002).

Adult misperceptions of weight are generally classified as either overestimations or underestimations of body weight. It has been reported that many adults, especially females, have a body mass that healthcare professionals would classify as appropriate or underweight. Often these individuals consider themselves to be overweight, leading to unhealthy attempts to lose weight (e.g., Chang & Christakis, 2001, 2003; Fitzgibbon, Blackman, & Avellone, 2000; Malinauskus, Raedeke, Aeby, Smith, & Dallas, 2006). Conversely, many overweight individuals consider themselves to be of average or normal weight, which discourages action towards developing healthy diet and exercise patterns (e.g., Chang & Christakis, 2001, 2003; Kuchler & Variyam, 2003; Paeratakul et al., 2002). These patterns are mirrored in studies conducted with parents and children in which the child's weight is misperceived and subsequently needed health behaviors are not initiated (Birch et al., 2001; Carnell et al., 2005; Myers & Vargus, 2000).

In summary, several authors have documented that a large number of adults in the US have inaccurate perceptions of their own weight. These misperceptions also may be common in the way adults, as parents, view weight in their children. In a large, national health survey, nearly one-third of parents misclassified their child's weight (Maynard et al., 2003). Other authors have examined parents' perceptions of their own weight and that of their children and found that those parents misidentify both their own weight and that of their children (e.g., Genovesi et al., 2005; Jackson et al., 1990). The considerable increases in overall obesity rates in the US and around the world make the development of accurate weight perceptions for adults and children a priority for healthcare

professionals working on prevention and treatment strategies related to obesity and other nutrition related disorders (Paeratakul et al., 2002). Promoting accurate weight perceptions involves tailoring education about the impact of body weight on health for individuals and families (Brener, Eaton, Lowry, & McManus, 2004; Gillum & Sempos, 2005; Kuchler & Variyam, 2003) and increasing the public's awareness of what constitutes underweight and overweight status in both adults and children (Brener et al., 2004). Without accurate perceptions of weight and understanding of the risks, parents will be unable to make positive changes to develop healthy eating and exercise patterns for themselves and their children (Adams et al., 2005; Eckstein et al., 2006).

Research on Parental Perceptions of Child Body Weight

The purpose of this section is to review the methodological approaches that have been used in the study of the phenomenon of parental perceptions of body weight in children. As reported previously, a total of 28 studies were found on this specific phenomenon of interest. Several additional studies were found that included data on healthcare providers' perceptions of children's weight, but these studies were excluded to maintain the focus on parental perceptions of child body weight. All studies reviewed were written in English, used qualitative (exploratory) or correlational research designs, and focused on parents and children ranging from infancy to adolescence in a variety of community settings. Nineteen studies were conducted in the US, and nine international studies also were included to show the global nature of the phenomenon of parental misperception of child body weight (e.g., Campbell et al., 2006; Carnell et al., 2005; Genovesi et al., 2005; Hirschler et al., 2006; Jackson et al., 2005; Jeffery, Voss, Metcalf,

Alba, & Wilkin, 2005). The following sections will provide a synthesis of the qualitative studies followed by a synthesis of the quantitative studies. Strengths, weaknesses, and limitations for both sets of studies also will be addressed, and generalizability issues will be discussed.

Qualitative Studies Synthesis

Five studies used qualitative phenomenological methods to examine parental perception of their child's weight (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004). In each of these qualitative studies, the researchers used focus groups and semi-structured interviews to obtain data. Outcomes variables addressed in these five studies included maternal attitudes, beliefs, and concerns about childhood obesity, child feeding practices, and mothers' perceptions of their child's weight. The target population for four of the studies was mothers of preschool aged children, and samples were obtained by purposive and/or convenience methods (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004).

Subjects included mothers of children aged birth to five years who were participating in Women, Infants, and Children (WIC) supplemental food programs. Researchers recruited subjects from four states (Kentucky, Georgia, Ohio, and California), using residents from both rural and urban areas. Sample sizes for these studies ranged from 18 to 101, which are relatively large sample sizes considering the nature of data collection and analysis necessary in qualitative research. Jackson et al.'s (2005) study differed from the other qualitative studies by focusing on mothers of obese

children from age 14 months to 15 years, and because the researchers used media to recruit mothers who already perceived their children to be obese.

Similarities in theoretical approaches and data analysis were found among four of the qualitative studies. An element shared between several of the qualitative studies was the omission of a clearly and explicitly defined theoretical framework. Despite this finding, four of the studies were similar in referring implicitly to the use of Social Cognitive Theory as a guiding framework (Baughcum et al., 1998; Crawford et al., 2004, Jain et al., 2001; Sherry et al., 2004). The only study that contained an explicit theoretical framework was Jackson et al.'s (2005) study, and the authors reported that data collection and analysis were based on Cook and Fonow's feminist approach. Data analysis in each study was consistent with the traditional qualitative methods of transcribing subject comments, researcher coding of interviews/focus group data, and reviewing/collapsing coding structures to find common themes.

The phenomenological design, sampling strategies, and data analysis approaches used in these studies were appropriate because of the type of rich descriptive narrative data the researchers wanted to collect related to mothers' perceptions of child body weight. These five studies provide a picture of how mothers view their child's body weight, and the study results cannot be transferred to all populations. It may, however, be possible to transfer these key themes found in these studies to other similar populations and use them in the development of future quantitative work on this phenomenon.

In the qualitative studies reviewed, the researchers reported analyzing data and collapsing it into different themes all related to the phenomenon of mothers' perceptions of their child's body weight. Upon examination of the qualitative studies, between three

and 15 themes were identified in each one (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004). In each study the themes were organized and grouped in slightly different ways, including domains, functional patterns, and discussion topics. After conducting a synthesis of the findings and collapsing the researchers' reported themes, three main issues or themes were under consideration in all of the studies. These themes were the definition of childhood weight problems, the etiology of childhood weight problems, and barriers to managing childhood weight problems (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004).

In considering the definition of weight problems in childhood, there was no clear-cut definition given by mothers across all five of the qualitative studies. It was apparent that none of the caregivers subscribed to the medical definition of childhood obesity as suggested by the researchers. Latino and African American caregivers seemed to give more credence to a child's functional ability as a measure of whether obesity existed (Crawford et al., 2004; Jain et al., 2001). In these two particular studies, children who could participate in activities, looked and felt good, and had good relationships with peers were not considered obese, even if they fell within the criteria for a medical diagnosis of obesity. Three themes from Crawford et al.'s (2004) study pointed to the criteria discussed above as being more important than a numerical figure to denote body weight problems in a child. Similarly, two of the 10 themes discussed in Jain et al.'s (2001) study supported the maternal view of obesity being based on child form and function instead of numerical ranges. It also was common within this theme to have parental descriptions of children in terms other than obese. These terms included phrases such as

‘big for age,’ ‘big boned,’ ‘thick,’ and ‘solid’ (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004). Another common finding in these studies was that mothers in these studies did not want to define obesity in a numerical sense and had a strong desire to avoid labeling their child with this health problem. Mothers often were more concerned about their child being underweight rather than overweight/obese (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004).

The second theme addressed what mothers believed were the etiologies of obesity in children. The most common view expressed was that obesity in a child is caused by genetics and that children will typically be comparative in size to their parents and grandparents (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004). Another common finding was the reported use of food as a reward for specific behaviors, and in several studies this practice was thought to contribute to childhood weight problems. It was interesting to note that lack of activity or sedentary activity was not reported as a possible cause of childhood obesity by parents and caregivers.

The final theme noted was related to the barriers that existed in managing weight problems in a child. A common finding was that management of obesity was more difficult when caregivers had conflicting ideas about appropriate eating patterns (Baughcum et al., 1998; Jain et al., 2001; Sherry et al., 2004). All of these studies used mothers as subjects who expressed that fathers, grandparents, and other caregivers often opposed the mother in trying to manage a child’s eating pattern. It also was noted that some mothers who participated were concerned about knowing when a child had eaten

enough and sometimes felt that their child did not get adequate nutrition (Baughcum et al., 1998; Jain et al., 2001). Mothers seemed very concerned about finding a balance in their child's dietary intake regardless of child satiety cues. Because of this feeling, mothers in these two studies reported the practice of continuing to feed children who had stated they were full. Finally, under this theme there were several references to the need for better and more easily understandable education related to what obesity means and its consequences (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004). Crawford et al. (2004) found that mothers specifically would like more specific education on how to make changes in their child's dietary intake and more age specific anticipatory guidance. Other authors mentioned that parents need more education on how to determine when children are full, what it means for a child to be at a healthy weight, and how to work with other family members and caregivers on developing good eating habits in children (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004).

Quantitative Studies Synthesis

Twenty-three quantitative studies were reviewed on the phenomenon of parental perception of child body weight. All 23 studies discussed in this section used descriptive and correlational techniques and used cross-sectional designs. The main weakness with the designs chosen is the inability to infer causality between variables studied. Outcome variables measured in these studies included parent and child physiologic data, parental perceptions of child weight, parental knowledge of proper nutrition, parental level of concern regarding child weight, familial health history, and demographic data. As with

most of the qualitative literature, the quantitative studies lacked explicit theoretical frameworks, and implicit references to a theoretical perspective could be ascertained in only three of the 23 studies. Data for these studies were collected primarily using surveys and/or questionnaires developed by the researchers. Little or insufficient information was provided on instrument validity and reliability in most of the studies.

The consistent finding of greatest concern across these descriptive and correlational studies is the inability of a parent or caregiver to identify a child as overweight/obese or to perceive an elevated BMI as a serious problem. Noteworthy, Baughcum et al. (2000) found that 79% of mothers of overweight children did not recognize that their child had a weight problem. Adams and colleagues (2005) also noted that parents in their study were able to recognize when their child was overweight only 15.1% of the time. Campbell et al. (2006) reported that only 18% of mothers correctly identified a weight problem in their overweight or obese child. Similarly, only 17.1% of parents in Carnell et al.'s (2005) study identified that their child had a weight problem despite 25.7% of all child subjects meeting IOT standards for being considered overweight (18.4%) or obese (7.3%). Crawford and colleagues (2006) found that only 11% of overweight 5-6 year olds were correctly identified as weighing too much by their parents. Nearly one-third of parents of overweight children in Fisher et al.'s (2006) study underestimated their child's weight classification. Genovesi et al. (2005) found that "28% of mothers underestimated" (p. 747) their child's weight. Despite Gray, Byrd, Cossman, Chromiak, Cheek, and Jackson's (2007) study having a sample that contained 41.4% of at risk or overweight children, only 12.4 % were described by their parents as having a

weight problem. In Etelson et al.'s (2003) study, 89.5% of parents did not recognize that their child was overweight.

Only about one-fourth of parents in Hirschler et al.'s (2006) and Jeffery et al.'s (2006) studies recognized weight problems in their overweight or obese child. Keller et al. (2004) found that 94% of parents of obese children in their sample classified their child as having a normal weight, and Maynard et al. (2003) found that "nearly one third (32.1%) of mothers reported their overweight child as "about the right weight" (p. 1226). In addition, Myers and Vargus (2000) and Huang, Becerra, Oda, Walker, Xu, Donohue, et al. (2007) found that almost one third of parents surveyed did not view their at risk or overweight child as having an elevated weight status. He and Evans (2007) report that 63% of overweight children in their sample were categorized as having a normal weight. Killion, Hughes, Wendt, Pease, and Nicklas (2006) found that 49% of parents of children with BMIs \geq 95th percentile were satisfied with their child's current weight status. The majority of parents and caregivers in each of the 23 studies were unable to correctly identify their child's weight status, and large percentages of these parents and caregivers underestimated the weight of an obese child. The numbers suggest that a large portion of at risk and overweight children are not recognized by their parents as having a serious health condition.

Although the major findings were consistent, there were some inconsistencies within these quantitative studies. Based on epidemiological data there is a known disparity in obesity rates between children of varying ethnicities (AHA, 2004). Another disturbing finding from this body of literature is that African American and Hispanic caregivers had greater difficulty in identifying obesity in their children and often were

less concerned with the future health impact of childhood obesity (Baughcum et al., 2000; He & Evans, 2007; Killion et al., 2006; Maynard et al., 2003; Myers & Vargus, 2000; Reifsnider et al., 2006a; Young-Hyman et al., 2000).

Despite having 69% of all child participants ranked as obese or super obese, only 44% of parents and family members surveyed by Young-Hyman et al. (2000) felt their child's weight was a health risk. African Americans, in particular, seemed to have an optimistic bias related to the future of obese children and voiced that if the child seemed happy and functioned well, there was no need for immediate action (Young-Hyman et al., 2000). This difference in perceptions of childhood obesity may be related to cultural variations in the definition and connotations of obesity, which were reported in the qualitative literature (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004). Although the differences in perceptions between ethnic groups in this set of quantitative studies were not statistically significant (Baughcum et al. 2000; Eckstein et al., 2006; Maynard et al., 2003), the findings are still disturbing because it is known that these two minority groups often suffer the most serious consequences of uncontrolled obesity and its co-morbidities (Crawford et al., 2001).

Maternal characteristics often are studied in an attempt to understand how and why weight and feeding problems develop in children (Davison & Birch, 2001). Maternal education has been correlated with child weight status in many studies (Davison & Birch, 2001), and both Baughcum et al. (2000) and Genovesi et al. (2005) found that children of mothers with less education tended to weigh more. In one sample, children of mothers with low education levels were more than 6.2 times likely to be obese than those with mothers at higher educational levels (Baughcum et al., 2000). In Genovesi et al.'s (2005)

study, both mothers ($p= 0.002$) and children ($p= 0.02$) had higher obesity rates if the mother had a lower educational level. This finding was not consistent across the body of literature, with Adams et al. (2005), Carnell et al. (2005), and He and Evans (2007) reporting that there was no relationship between maternal education level and child weight. The inconsistency in these findings may be related to the homogeneity of educational experiences for parents and caregivers in these studies (Adams et al., 2005; Carnell et al., 2005).

Another maternal characteristic that has been proposed to provide information on weight-related issues in children is the maternal BMI (Davison & Birch, 2001). Maternal BMI correlated with obesity in children in eight of the studies reviewed (Adams et al., 2005; Baughcum et al., 2000; Campbell et al., 2006; Genovesi et al., 2005; Jackson et al., 1990; Jeffery et al., 2006; Maynard et al., 2003; Watkins, Clark, Foster, Welch, & Kasavuba, 2007). In Adams et al.'s (2005) sample, children with a weight problem "were more likely than others to have an obese parent ($p < 0.055$)" (p. 148). According to Baughcum et al. (2000), poorly educated obese mothers were more likely to have obese children than women with appropriate BMI and higher education levels (19% versus 14%). Genovesi and colleagues (2005) report that over 28% of the mothers sampled were overweight and obese and that half of these women had an overweight or obese child. In Jackson et al.'s (1990) study, a stepwise discriminant function analysis found that obese mothers were more likely to misclassify their child's weight ($r(95) = -.20, p < .05$). Only one study where maternal BMI was examined failed to yield a significant correlation between the BMI in mothers and their children (Carnell et al., 2005). This finding gives support to the view that child weight issues must be addressed in a manner that includes

family-based interventions because unhealthy eating and activity patterns may be transmitted from parents and caregivers to children (Davison & Birch, 2001).

Several characteristics of overweight/obese children also were examined to determine if there was a relationship between them and the parents' or caregivers' perception of the child's weight. Characteristics examined included the child's age (e.g., Adams et al., 2005; Crawford et al., 2006; Fisher et al., 2006), gender (e.g., Campbell et al., 2006; Jeffery et al., 2005), and current BMI (e.g., Eckstein et al., 2006; Young-Hyman et al., 2000). The child's age (children studied were age 0-18 years) was found to be a significant correlate to obesity in six studies, with older children being more readily identified as having a weight problem (Crawford et al., 2006; Eckstein et al., 2006; Genovesi et al., 2005; Huang et al., 2007; Maynard et al., 2003; Young-Hyman et al., 2000). Genovesi et al. (2005) found the relationship between maternal perception of child weight and child age trended toward significance. In Maynard et al.'s (2003) study of parents and children age 2-11 years, the child's age and gender accounted for 22% of the variance in parental ability to classify an obese child as having a weight problem. Older children in this study also had a lower risk of having their weight misclassified by their parents ($OR= 0.68$) (Maynard et al., 2003). Young-Hyman et al. (2000) found that a child's age made a significant contribution ($p= 0.01$) to prediction of obesity risk. Eckstein et al. (2006) also found that children over six years of age were more readily identified as having weight problems.

In relation to the sex of the child, it appears that parents and caregivers can more easily recognize obesity in females than in males (Campbell et al., 2006; Fisher et al., 2006; He & Evans, 2007; Maynard et al., 2003). In a representative sample, Maynard et

al. (2003) found that mothers were three times as likely to recognize obesity in a female child. Campbell et al., (2006) found that the likelihood of a female child being correctly identified as overweight/obese was 4.6 times that of an overweight/obese male child being identified correctly (*RR* 4.6; 95% *CI*, 1.1-19.8).

Fisher et al. (2006) reported that 67% of parents of overweight males are unaware of the problem, while only 44% of overweight females go unrecognized by their parents. In contrast, Baugchum et al. (2003) found that the child's gender did not have a significant effect on the ability of the mother to identify obesity in the child. The most consistent finding related to the child was that the heavier the child, the greater the likelihood that he or she might be identified as overweight/obese or having parental concern regarding his or her weight (Killion et al. 2006; May et al., 2007; Maynard et al., 2003; Young-Hyman et al., 2000). Adams et al. (2005) stated that obese children in their study were more likely to be correctly identified as obese if their BMI was greater than the 99th percentile on growth charts. Carnell et al. (2005) found that "the odds of the child being perceived as overweight were higher for overweight (2.7; 95th *CI* 0.5, 16.5) and obese (28.6; 7.1, 115.4) children compared with normal weight children" (p. 354). These findings point out that parents and caregivers are not detecting obesity in younger children and males. It also signals that parent's or caregiver's realization that the child has a weight problem may not come until the child's condition is severe. Because obesity is an increasing problem in both male and female preschool children it is imperative that these findings be examined and work begun on early family-based interventions for weight management (Davison & Birch, 2001; Kitzmann & Beech, 2006; Rio-Navarro et al., 2004).

Critical Analysis of Methodological Literature

A critical analysis was conducted to explore and critique the methodological approaches taken in 28 studies related to the phenomenon of parental perceptions of child body weight. Overall advantages, disadvantages, strengths, and weaknesses related to the methods used in the collective body of qualitative and quantitative literature on this phenomenon were analyzed. Finally, the overall conclusions from and contributions of all 28 studies to the nursing knowledge on this phenomenon were determined.

Several studies focused on lower income mothers as subjects and within this group of studies findings were consistent (e.g., Baughcum et al., 1998; Hirschler et al., 2006; Jain et al., 2001; May et al., 2007; Myers & Vargus, 2000). Mothers in these studies tended to be less concerned about obesity unless it impaired a child's functioning or happiness. They also expressed that, in some cases, food was used as a reward or pacifier for the child. Findings of greater control and concern related to the short-term effects of obesity were seen in studies in which parents and caregivers from higher socioeconomic levels were included in the sample (e.g., Baughcum et al, 2000; Etelson et al. 2003; Keller et al., 2004; Maynard et al., 2003).

One key methodological difference between qualitative and quantitative studies was the ages of the children whose caregivers were studied. In four of the phenomenological studies the children ranged from birth to five years of age (Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001; Sherry et al., 2004). In the quantitative studies, children ranged in age from birth to 20 years. Despite this difference, the prevailing attitudes and perceptions of the parent or caregiver were similar across all studies.

Another methodological difference related to the ethnic groups included in the samples. In seven of the studies, the samples were primarily or completely racial and/or ethnically homogeneous (e.g., Genovesi et al., 2005; Hirschler et al., 2006; Reifsnider et al., 2006a; Young-Hyman et al. 2000). Findings in these studies were slightly different from the findings of other studies. Although altered perceptions related to the child's weight status still existed, the authors found many parents and caregivers who considered increased body weight levels in children to be related to heredity and a culturally desirable trait (e.g., Crawford et al., 2004; Myers & Vargus, 2000; Young-Hyman et al. 2000). In addition, authors (e.g., Crawford et al., 2004; Jain et al., 2001; Young-Hyman et al., 2000) found that non-Caucasian samples expressed distrust for growth charts and healthcare providers' information about child body weight.

Both the quantitative and qualitative studies included bias towards a maternal perspective of weight perception for children. The samples in many of the studies were composed exclusively of maternal caregivers. Several of the studies reviewed used other caregivers, such as fathers and grandparents, as subjects, but the percentage of subjects who were not mothers was low (e.g., Gray et al., 2007; He & Evans, 2007; Huang et al., 2007; Keller et al., 2004; Watkins et al., 2007). Also, in each of the qualitative studies all caregivers were mothers, and therefore the paternal caregiver's lived experience was not explored. It is possible that this under-representation of other caregivers in both sets of studies could have had an effect on the results.

There are obvious advantages and disadvantages to the methodological approaches used to study the phenomenon of parental perceptions of child body weight. Researchers and reviewers have to consider whether or not one-time focus groups and

quantitative data collection using a cross-sectional designs provide the richness and quality of data researchers need to draw conclusions about the relationship between parental perceptions and childhood obesity. The methods used in these studies allow researchers to examine the phenomenon in the sample at a specific point in time, but does not allow for examination of the stability of perceptions and/or feelings over time. It should also be noted that this type of data collection allows researchers to find linkages among concepts, but it cannot establish cause and effect relationships.

Advantages and disadvantages can be seen in the data collection methods used by the researchers. The use of surveys/questionnaires to collect data in the quantitative studies is advantageous from the standpoint of both time and cost, but if not used appropriately they may decrease validity and reliability of data collected. The use of surveys and questionnaires does limit the type of data received since the researcher is asking the participants to respond to a finite set of options. The studies that used qualitative approaches had data that are more representative of the experiences and feelings of parents in regards to perceptions of child body weight. These types of data are invaluable in understanding a concept and guiding future studies, but they are costly in terms of financial resources needed to collect them and the subsequent time needed to code and interpret them.

Sampling strategies included primarily convenience methods, with some purposive sampling done for qualitative studies. The use of convenience sampling in most of the quantitative studies was effective in decreasing cost and time spent in sampling, but the drawback of this approach is that there was no guarantee that the sample is representative of the population of interest. A mix of purposive and

convenience sampling was used in the five qualitative studies reviewed. Using a purposive strategy was advantageous because it sampled participants who are having the experience that the researchers were interested in studying. However, combining purposive sampling with a convenience strategy allowed the possibility of a selection bias for those who self-select into the study. The use of convenience sampling methods decreased both internal and external validity. Overall, the advantages and disadvantages in design, sampling, and instrument choices seen in the studies reviewed involve decisions that pit lower cost and ease of administration and efficiency against quality and validity of data collected.

Both qualitative and quantitative researchers used several strategies that strengthened the studies and increased confidence in the findings. For example, in all of the qualitative studies multiple researchers reviewed the focus group and interview transcripts for themes. Additionally, Baughcum et al. (1998) and Jain et al. (2001) reported using independent reviewers who were not involved with the study's design or implementation to confirm themes. Because focus group sessions in all studies were audio taped, transcribed, and loaded into a qualitative data processing program, the reader has greater confidence in the trustworthiness of the data. Also, the researchers who had samples with Hispanic caregivers provided interpreters fluent in Spanish to conduct the focus groups to ensure that concepts and themes were captured appropriately (Crawford et al., 2004; Sherry et al., 2004).

A strength noted in five of the quantitative studies was the pilot testing of questionnaires before data collection began (e.g., Fisher et al. 2007; He & Evans, 2007; Myers & Vargus, 2000). This methodological approach increases the likelihood that the

results are valid and the instrument is reliable. Several researchers developed questionnaires, but did not provide information about instrument development, which decreases confidence in the validity of findings (e.g., Adams et al., 2005; Carnell et al., 2005; Hirschler et al., 2006; Jackson et al., 1990).

Some weaknesses were noted in both the qualitative and quantitative methodologies. A prevalent weakness was the lack of explicit conceptual or theoretical frameworks for both the qualitative and quantitative studies. Although a few studies contained implicit references to Social Cognitive Theory and Ecological Systems Theory, these references would be difficult to extricate for readers who were not familiar with the tenets of these theories. This lack of explicit frameworks may be related to the qualitative and descriptive nature of the studies or editing by journal review committees.

The usefulness and application of the findings to larger populations were also problematic because of the design and sampling strategies used. Readers can draw conclusions from the findings of the qualitative studies, but transferability was limited because the purpose of these studies was to present a picture of the parent/caregiver's experience and feelings at the time of the study. A major weakness noted in some of the quantitative studies was a relatively small sample size (e.g., Etelson et al., 2003; Jackson et al., 1990; Reifsnider et al., 2006a; Watkins et al., 2007), and the lack of randomization of subjects through selection or assignment. This lack of randomization is expected because the studies were descriptive and correlational, but it would be inappropriate to generalize these findings to different populations. Also, because all the quantitative studies but one (Maynard et al., 2003) used a convenience sampling method, the results may not reflect patterns in the general population of interest.

In considering the appraisal of these 28 studies, it is clear that each study makes a contribution to what is known about parent/caregiver perceptions of child overweight. The qualitative studies suggest that mothers of children have varying perceptions about what is an appropriate body weight, how weight problems develop, and barriers to addressing these problems. The quantitative studies suggest the commonality that parents and caregivers share about not accepting that a child is obese and having difficulty correctly identifying a child's weight. Although these findings are not appropriate for transfer or generalization to all parents because of study designs and sampling issues, a comparison and analysis of study findings does allow for synthesis of the current body of knowledge about the phenomenon of interest and generation of questions for further research.

Conclusions drawn from both the qualitative and quantitative studies about the accuracy of parental perceptions of children's body weight are disturbing. The findings suggest that parents often have misconceptions about the definition, etiology, and appropriate management of childhood obesity. Although these findings are disturbing for healthcare providers, they do provide direction for areas of future qualitative and quantitative inquiry related to the phenomenon of interest.

Gaps in the Literature Addressed by this Dissertation Study

From the synthesis of the literature, it was clear that parents in previous studies often had an altered perception of their child's weight. Health professionals should be concerned based on the analysis and synthesis of the literature reviewed about how parents perceive their child's body weight and its effect on the child's short-term and

long-term health risks. These findings put toddlers and preschool aged children at risk for the development and continuation of body weight problems. The variations in parental perception seem to be related to internal variables such as cultural affiliation, family traditions, basic understanding of health and illness, and self-efficacy.

Based on the review of literature, research is needed to address the factors that affect parental perceptions of body weight in toddlers and preschool children. The current study was undertaken to address some of the conceptual and methodological gaps noted in the review of literature on this topic. Conceptual gaps addressed in this study included the use of a clear theoretical framework and definition of central study concepts. The Revised Health Belief Model was selected to guide this research because it is focused specifically on the process of promoting positive health choices in families with toddlers and preschool children (Roden, 2004a, 2004b).

The Revised Health Belief Model provided direction for the exploration of this phenomenon by indicating that parental perception of their child's health may be linked to a variety of modifying factors and the perceived notion of health and illness (Roden, 2004a) (see Figure 1). Based on Roden's (2004a, 2004b) work with the Revised Health Belief Model, it was apparent that other factors, such as health literacy and perceived parental efficacy, and their relationship to the parents' perception of their child's weight needed to be studied. In addition, Roden's model (2004a) led this researcher to believe that further exploration of how parents perceive their child's body weight is crucial before successful interventions can be developed.

Methodological issues addressed included the inclusion of fathers as subjects and the study of a broader range of variables that may correlate with a parent's perception of

weight in their child. The researcher attempted to collect a representative sample to confirm previous findings related to the level of misperception of child weight found in parents, and to address internal parental variables that have been largely ignored in the study of parental perceptions of child body weight up to this point. These variables included perceived parental efficacy and health literacy. The current study describes how internal variables are related to parental perception of child weight to lay the foundation for future intervention studies.

The overall purpose of this study was to examine the relationships among parental perceptions of body weight in toddlers and preschool children and factors such as parental efficacy and health literacy. Secondary purposes of this study were to 1) examine how a parent knows a child is at a healthy weight, and 2) examine what parents consider as signs that a child is developing a weight problem.

Hypotheses

Hypotheses for this study were:

- 1) Parents of female toddlers and preschoolers were less likely to accurately estimate their child's body weight than parents of male toddlers and preschoolers.
- 2) The younger the child the more likely the parent was to underestimate the child's body weight.
- 3) Parents with less education were more likely to underestimate their child's body weight than parents with higher education levels.

CHAPTER III

METHODOLOGY

The purpose of this chapter is to present the methodology used in this study of parental perceptions of body weight in toddlers and preschool age children. Research design, description of sample, sample size, setting, instruments, sampling procedures, protection of human subjects, data collection methods, and data analysis are presented.

Research Design

A descriptive, correlational, cross sectional design was used to examine parental perceptions of body weight in toddlers and preschool children. In this study perceived parental efficacy, level of health literacy, concern for child weight, and perception of child weight were measured using parental self-report instruments. Two open-ended questions were asked after the parents completed the self-report questionnaires and surveys.

Sample

Sample Characteristics

The target population for this study was parents of toddlers and preschool children (age 2-5 years). The accessible population was parents of toddlers and preschool children (age 2-5 years) who were seen for services in the public health department or a private pediatrician's office in South Central Kentucky. Participants who met the following

criteria were invited to participate in the study: 1) parent of a toddler or preschool age child (2-5 years), 2) stated ability to read and understand English, and 3) had a child with no chronic illnesses. The sample included those who were biological, adoptive, or foster parents.

Participants were excluded if they were not the mother or father of a toddler or preschool child, had a child who had a chronic illness, were unable to read and understand English, or declined to participate. Parents of children with chronic health conditions may have perceptions or concerns about their child's weight related to the chronic nature of their illness. The primary investigator believed that this could confound the data analysis. Participants who did not read English could not be included because of the reliance on English language survey instruments and the unavailability and expense of providing translation services.

Sample Size

Convenience sampling was used to recruit participants. Using power analysis tables (Polit & Beck, 2004) it was determined that 120 participants were needed to detect statistically significant correlations of .25 or greater with 80% statistical power. The maximum alpha was set at .05 for determining statistical significance.

Research Setting

Data were collected at two sites: a health department in South Central Kentucky, and a private pediatrician's office in the same county. Specific programs and services offered by the health department relating to this study included the Women, Infant, and

Children Supplemental Nutrition Program and the Well Child Program in which low-income families with young children are provided health and nutrition services. The pediatrician's office in the study served both low-class and middle-class income families and accepted Medicaid, private insurances, and self-pay patients. The researcher assisted the parent in completing the questionnaires for the study at the time of their child's visit to the health department or pediatrician's office.

Instruments

Demographic Questionnaire

Each participant answered a demographic questionnaire. Information collected on the questionnaire was sex, age, race/ethnicity, education level, family income, and number of persons living in the home. Parents also were asked for demographic and health information on their child and to self-report height and weight for themselves.

Parenting Sense of Competence Scale (Efficacy Subscale)

The Parenting Sense of Competence Scale (PSOC) is a self-report measure that was originally developed to ascertain parents' views of themselves (i.e., parenting self-esteem) (Gibaud-Wallston, 1977). Johnston and Marsh (1989) conducted a principal-components analysis of the PSOC and found two consistent factors or subscales: the satisfaction subscale and the efficacy subscale. The efficacy subscale detects "an instrumental dimension reflecting competence, problem solving ability, and capability in the parenting role" (Johnston & Mash, 1989, p. 167). The complete PSOC is often used in measuring parental efficacy, but it has been suggested that only the self-efficacy

subscale is appropriate (Montigny & Lacharite, 2005), and that subscale was used as a measure of efficacy in this study. The efficacy subscale of the PSOC, as described by Johnston and Marsh (1989), was designed to measure “the degree to which a parent feels competent and confident in handling child problems” (Johnston & Mash, 1989, p. 176). It contains eight questions; each question is “answered on a 6-point scale ranging from strongly disagree (6) to strongly agree (1). Items are reversed scored so that higher total score indicates a higher level of perceived efficacy in the parent role. Previous studies have reported internal consistency values between .67 and .88 (Coleman & Karraker, 2003; Johnston & Mash, 1989; Lovejoy, Verda, & Hayes, 1997; Ohan, Leung, & Johnson, 2000; Sanders & Woolley, 2005). It was found to be significantly correlated with the Parental Locus of Control Scale ($r = -.24, p < .05$) and perceptions of child behavior problems (Lovejoy et al., 1997). Coleman and Karraker (2003) looked at several tools to measure general and domain specific efficacy in parents and found the PSOC-Efficacy Subscale to be significantly correlated with the Self-Efficacy for Parenting Tasks Index-Toddler Specific (SEPTI-TS) ($r = .48, p < .001$). Cronbach’s alpha for scores collected in the current study was .53.

The Test of Functional Health Literacy in Adults -Short Form (S-ToFHLA)

The Test of Functional Health Literacy in Adults [ToFHLA] was designed to “measure patient’s ability to read and understand the things they commonly encounter in the health care setting using actual materials like pill bottles and appointment slips” (Baker, Williams, Parker, Gazmararian, & Nurss, 1999, p. 34). The ToFHLA is available in both English and Spanish forms. A short form of the ToFHLA (reduced from 67 items

to 36 items) was developed to shorten the time necessary to administer the instrument, yet preserve its ability to estimate health literacy. Cronbach's alpha for the comprehension items on the S-ToFHLA was .97. According to Baker et al. (1999), the correlation between the short form of the ToFHLA (S-ToFHLA) and the REALM (Rapid Estimate of Adult Literacy in Medicine) was .80, which is only slightly lower than that found using the original version of the ToFHLA (Baker et al., 1999). The correlation between the S-ToFHLA and the complete version of the ToFHLA is .91. On average, it took participants in this study less than 5 minutes to complete the S-ToFHLA. Possible scores on the S-ToFHLA range from 0-36. Authors (Baker et al., 1999) have suggested that an S-ToFHLA score at or above 23 is 'Adequate', 17-22 is 'Marginal', and at or below 16 demonstrates inadequate literacy to function in health-related situations. Cronbach's alpha for scores in the current study was .93.

Child Feeding Questionnaire

The Child Feeding Questionnaire (CFQ) was used to address the perception of the child's weight, as well as the feeding patterns and parental concerns associated with the child's eating pattern. Birch et al. (2001) originally developed the CFQ for use with Caucasian and Hispanic subjects. Anderson, Hughes, Fisher, and Nicklas (2005) conducted a confirmatory factor analysis that supported Birch et al.'s (2001) original factor structure and also supported the use of the instrument with African American and Hispanic populations. It is a 31 item self-report scale with seven subscales related to parental control over eating, perceptions about child's weight, and concerns about child weight. Only the Parental Concern for Child Overweight subscale was used in this study.

Participants answer based on a Likert scale from 1 (unconcerned) -5 (concerned). The average value of responses to the items in a respective subscale are used as the subscale score. Higher scores indicate various things dependent on the subscale in question. For example, a higher score on the perception scale indicates a higher level of perception of the child being overweight. Birch et al. (2001) reported internal consistencies of .70 to .92 for the seven subscales. The Cronbach's alpha for the scores in this study was .77.

Accuracy of Perceptions

Parents' responses to the question about their perception of their children's weight were compared to their respective child's actual weight status based on CDC charts to determine if parental perceptions were accurate or inaccurate. A parent's perception was considered accurate if it met one of the following criteria: 1) the child's BMI was between 5th and 94th percentile on CDC growth charts and they identified the child as having an appropriate body weight, 2) the child's BMI was < 5th percentile on CDC growth charts and they identified the child as being underweight, or 3) the child's BMI was \geq 95th percentile on CDC growth charts and they identified the child as overweight. Any other perception was considered inaccurate.

Open-Ended Questions

Two open-ended questions were asked by the researcher after the completion of the questionnaires: 1) How do you know a child is at a healthy weight?, and 2) What are the signs that a child is developing a weight problem (either underweight or overweight)? Responses to these questions were audio taped for later coding and content analysis.

Physiologic Measures

The height and weight of each child were collected from the child's medical record after the clinic visit was completed and all questionnaires were answered. Height and weight are routinely assessed on children on visits to the WIC department and the pediatrician's office. These measures were used to calculate the child's BMI.

Sampling Procedures

A convenience sampling method was used for this study. The researcher worked with the clerical and nursing staff at each facility to review the daily clinic appointment schedule to identify children in the toddler and preschool age range (2-5 years) who would be presenting to clinic for services in a given week. This step was taken to ensure that the researcher was present in clinic on days when a large volume of prospective participants was scheduled for clinic visits. The researcher solicited informed consent from parents who presented to clinic with their toddler or preschool age child for services.

Protection of Human Subjects

Approval for the study was obtained from both of the collection facilities and from the Vanderbilt University Institutional Review Board for the Protection of Human Subjects. Potential participants were approached by the researcher in the clinic setting, given time to discuss the study and ask questions, and assured of the option to participate or not without fear of loss of services. There were no exclusions of participants based upon gender, race, or ethnicity.

There were few anticipated risks to participants in the study. Participants might have been inconvenienced by the time required to complete the surveys, questionnaires and demographic questionnaire. A parent might have become concerned about his or her child's weight while completing the instruments. Participants were in a clinic setting during the data collection, where information on healthy nutrition for their child was readily available. In addition, participants were given the researcher's contact information and were encouraged to call if they had questions or concerns after data collection.

The completed survey and demographic questionnaires were locked in a file cabinet in the researcher's office. Data records were de-identified prior to entry into a password protected database for analysis. To prevent identification by proxy, data will only be provided in aggregate format in written and verbal presentations.

Data Collection Methods

After the study was approved by the Institutional Review Board for Protection of Human Subjects at Vanderbilt University and both data collection sites, subject recruitment was initiated. The researcher approached parents of toddler and preschool children in the clinic setting at either the pediatrician's office or the public health department and offered information on participation in the study. Consented parents were escorted to a private room or section of the lobby where the researcher administered the study instruments. Total time to complete the questionnaires was 15-20 minutes. After completing the questionnaires, the participants were asked the two open-ended study questions. Responses were recorded on audio cassettes for subsequent transcription and content analysis. Physiologic data, including height and weight, were obtained from

the child's medical record and used to calculate BMI. Completed surveys and tapes used to record answers to the open-ended questions were locked in file cabinets in the researcher's office. The researcher double-entered all survey data into an SPSS database on a password protected computer located in the researcher's private office. Answers to qualitative questions were transcribed into a word processing file and secured on a password-protected computer in the researcher's private office.

Data Analysis

Analyses included both quantitative and qualitative data analysis procedures. Statistical analyses were performed using SPSS-PC (version. 14.0). Several strategies, including examining frequency distributions and histograms, were used to look for missing data, outliers, or coding errors. Missing or unusual data values were reviewed for data entry errors and, if found, errors were corrected. Descriptive statistics were used to summarize data values and to evaluate the shapes of the distributions of continuous data. Data from the CFQ, S-ToFHLA, and PSOC-Efficacy Subscale, as well as continuous data from the demographic survey and physiologic measures (e.g., parental age, child BMI), were not normally distributed. Thus, nonparametric methods (e.g., Mann-Whitney test) were used to compare those values from the two data collection facilities. The natural log transformation was used to transform the values to a normal distribution for use in bivariate and linear regression analyses. Chi Square Tests of Independence were used to compare the values of nominal demographic characteristics for the collection sites. Univariate and multivariate logistic regression models were used to address the primary research questions. Accuracy of child weight was operationalized as a

dichotomous dependent variable comprised of values indicating whether or not the primary caregiver underestimated the child's weight ('1'=Yes, '0'=No). Bivariate and multivariate linear regression was used for the analysis of a secondary research question in which concern for child's body weight (continuous scale of measurement) was the dependent variable of interest.

Qualitative data analysis was completed on responses to the two open-ended questions asked of each participant. The researcher transcribed answers to the open-ended questions. Each interview was replayed multiple times and checked with the transcript to ensure accurate transcription. The completed transcripts were loaded into a password-protected database that could be accessed only by the researcher and the dissertation chair. Content analysis was selected as the method of data analysis for the open-ended question responses.

Hickey and Kipping (1996) suggested a flexible approach to content analysis of open-ended responses. This approach can be adapted for and carried out by as few as two researchers, as it was in the current study. The steps taken in this content analysis were 1) immersion and identification of preliminary categories, 2) reaching consensus on categories, 3) allocating category and code details, 4) dealing with rogue responses, and 5) merging and reallocating details (Hickey & Kipping, 1996).

Immersion in the data began as an independent process with the researcher carefully transcribing the interviews and then repeatedly reading the transcripts to develop a sense of what the data were saying as a whole. While reading the transcripts the researcher made notes in the margins and highlighted key words and phrases. The researcher worked with her dissertation chair, who has experience in qualitative data

analysis and researching childhood obesity, during the rest of the content analysis process. It was decided that a random selection of transcripts would be examined first by each researcher to develop preliminary categories for the data. The random transcripts to be examined were selected by using the select cases feature on SPSS, and a selection of 15% ($n=21$) of the total cases was made. Each researcher then worked independently to examine the selected transcripts and develop preliminary categories for the data. The researchers then used email and telephone calls as a means to discuss the emerging coding structure and reach consensus on the categories to be used to code the rest of the data. After deciding on the main categories, the researcher worked independently to code the full data set ($N=116$) using the established coding structure. In addition to allocating data to categories, detail codes were added to responses.

The coding strategy was then sent back to the dissertation chair for review, and he checked the full data set using the detailed codes developed by the researcher. A series of phone calls were used to compare thoughts on the coding structure. At this time, rogue responses were identified and discussed, and detail codes were revised. The coding structure was finalized and exemplar quotes were selected. The researcher typed the qualitative analysis into narrative form that was reviewed and confirmed by the dissertation chair. The narrative was then converted into tabular format to provide a concise description of the participants' responses that emerged from the open-ended questions. In addition, at the recommendation of the dissertation committee, responses from the parents who were accurate in their perceptions of their child's body weight were compared with responses from parents who underestimated their child's weight to look for differences. Exemplar quotes from both groups of parents are included in the tables.

CHAPTER IV

RESULTS

This chapter presents the results of the analyses used to address the research questions and hypotheses posed in the current study. Sample characteristics and quantitative and qualitative findings will be presented. Initially the overall sample and subsamples from the two recruitments sites will be described. Summaries and analyses specifically addressing the research questions and hypotheses then will be presented. Finally, information from a content analysis conducted on the responses to the open-ended questions posed to study participants will be presented.

Sample Characteristics

The convenience sample for this dissertation study was comprised of 120 parents of preschool children age two to five years, with 60 parents (50%) recruited from a county health department in South Central Kentucky and 60 parents (50%) recruited from a private pediatrician's office in the same county. Demographic information and self-report physiologic data were collected from parents. In addition, child physiologic data (height and weight) were collected from the child's medical record.

Characteristics of the parents are summarized in Table 1. Participants included 110 mothers and 10 fathers, most of whom were Caucasian (80%). A majority of parental participants were married ($n=64$, 53.3%), with 37.5% ($n=45$) reporting being

single and another 11 participants (9.2%) being divorced. The majority of parents had at least a high school education ($n=93$, 77.5%) (see Table 1).

The average age of parents in the study was 28.2 years, with a range of 17-59 years (see Table 2). Children in the study had an average age of 2.98 years, with 73.3% being two to three years of age (see Table 2). Families varied in size, with the average family having just over four total members including an average of about two children per household (see Table 2).

There were no statistically significant differences between the health department and private office sites in parental or child gender, parental education level, marital status, or employment status (employed versus unemployed) ($p > .05$). There were statistically significant differences between the racial/ethnic makeup of the sites (parents, $p=.011$; children, $p=.032$), total family income per year ($p=.003$), and socioeconomic status (Hollingshead's Two Factor Index of Social Position) ($p=.013$) (see Table 1). The sample from the private pediatrician's office was comprised of more Caucasian participants with higher total family income levels and parental social position levels based on income and education levels. Parental and child age, total number of people in the household, and number of children living in the home were not statistically significantly different between the two sites ($p > .05$) (see Table 2).

Table 1. Demographic characteristics (nominal and ordinal variables) for total sample and by site

	Private Clinic (n=60)	Health Dept (n=60)	Overall (N=120)
Parent			
Gender ($p = .509$)			
Female	54 (90.0%)	56 (93.3%)	110 (91.7%)
Race/Ethnicity ($p = .011$)			
Caucasian	54 (90.0%)	42 (70.0%)	96 (80.0%)
Hispanic	0 (0.0%)	4 (6.7%)	4 (3.3%)
African-American	6 (10.0%)	9 (15.0%)	15 (12.5%)
Other	0 (0.0%)	5 (8.3%)	5 (4.2%)
Education Level ($p = .464$)			
< H.S.	12 (20.0%)	15 (25.0%)	27 (22.5%)
H.S.	21 (35.0%)	27 (45.0%)	48 (40.0%)
Some college	21 (35.0%)	14 (23.3%)	35 (29.2%)
B.S. degree	5 (8.3%)	4 (6.7%)	9 (7.5%)
> B.S. degree	1 (1.7%)	0 (0.0%)	1 (0.8%)
Family Income ($p = .003$)			
< \$20,000	19 (31.7%)	37 (61.7%)	56 (46.7%)
\$20,000-\$49,999	22 (36.7%)	17 (28.3%)	39 (32.5%)
≥\$50,000	10 (16.6%)	2 (3.3%)	12 (10.0%)
Did not respond	9 (15%)	4 (6.7%)	13 (10.8%)
Hollingshead ISP* ($p = .013$)			
Lower Class	13 (21.7%)	27 (45.0%)	40 (33.3%)
Lower Middle Class	29 (48.3%)	20 (33.3%)	49 (40.8%)
Middle Class	11 (18.3%)	12 (20.0%)	23 (19.2%)
Upper Middle Class	7 (11.7%)	1 (1.7%)	8 (6.7%)
Upper Class	0 (0.0%)	0 (0.0%)	0 (0.0%)
Child			
Gender ($p = .464$)			
Female	26 (43.3%)	30 (50.0%)	56 (46.7%)
Race/Ethnicity ($p = .032$)			
Caucasian	49 (81.7%)	35 (58.3%)	84 (70.0%)
Hispanic	1 (1.7%)	6 (10.0%)	7 (5.8%)
African American	4 (6.7%)	9 (15.0%)	13 (10.8%)
Other	6 (10.0%)	10 (16.7%)	16 (13.3%)

*Hollingshead's Two Factor Index of Social Position

Table 2. Demographic characteristics (continuous variables) for total sample and by site

	<i>M ± SD</i>	Median	IQR*	Min, Max	<i>p</i>
Age					
Parent					(<i>p</i> =.090)
Private Clinic	29.38 ± 8.02	28.00	23.00 - 32.75	17.00, 59.00	
Health Dept	27.02 ± 5.52	26.00	23.00 - 28.75	19.00, 45.00	
Overall	28.20 ± 6.96	27.00	23.00 - 31.00	17.00, 59.00	
Child					(<i>p</i> =.361)
Private Clinic	3.08 ± 0.98	3.00	2.00 - 4.00	2.00, 5.00	
Health Dept	2.88 ± 0.69	3.00	2.00 - 3.00	2.00, 4.00	
Overall	2.98 ± 0.85	3.00	2.00 - 4.00	2.00, 5.00	
Total # in Family					(<i>p</i> =.966)
Private Clinic	4.15 ± 1.54	4	3 – 5	2, 10	
Health Dept	4.23 ± 1.77	4	3 – 5	2, 12	
Overall	4.19 ± 1.65	4	3 – 5	2, 12	
Total # Children in Home					(<i>p</i> =.696)
Private Clinic	2.27 ± 1.21	2	1 – 3	1, 6	
Health Dept	2.45 ± 1.57	2	1 – 3	1, 10	
Overall	2.36 ± 1.40	2	1 – 3	1, 10	

* IQR = 25th - 75th percentile values

Children in the study had an average BMI of slightly more than 17 while their parents' average was approximately 29 (see Table 3). This parental BMI average is greater than the recommended BMI of 19-25 for adults. No statistically significant difference was found between the child BMI values from the two sites; however, there was a statistically significant difference in parental BMI values. The parents recruited from the health department had higher mean BMIs than those of the parents recruited from the private office (see Table 3).

Table 3. Physiologic characteristics for total sample and by site

	<i>M ± SD</i>	Median	IQR*	Min, Max	<i>p</i>
BMI					
Parent					(<i>p</i> =.005)
Private Clinic	27.02 ± 7.78	25.09	22.04 - 31.17	16.69, 58.54	
Health Dept	30.97 ± 8.64	29.93	24.55 - 35.57	17.71, 52.85	
Overall	28.98 ± 8.42	26.69	22.74 - 34.15	16.69, 58.54	
Child					(<i>p</i> =.962)
Private Clinic	17.25 ± 2.62	16.71	15.79 - 18.12	13.18, 28.32	
Health Dept	17.19 ± 2.23	16.92	15.80 - 18.11	13.39, 24.96	
Overall	17.22 ± 2.42	16.86	15.79 - 18.12	13.18, 28.32	

* IQR = 25th - 75th percentile values

Descriptive statistics for the Parental Sense of Competence-Efficacy Subscale, the Test of Functional Health Literacy in Adults, and the Child Feeding Questionnaire are presented in Table 4.

PSOC-Efficacy Subscale. The average score for the total sample on this instrument was 38.9, indicating that the participants had a positive view of their parenting skills and ability to solve problems related to their child.

S-ToFHLA. Scores on the S-ToFHLA in this study ranged from 2-36. The mean score for participants completing the measure was 33.6, indicating that the sample overall had an adequate health literacy level. Only three of the 116 participants (2.6%) had a score of less than 23 on the S-ToFHLA, a value indicative of inadequate health literacy. There was no statistically significant difference between the S-ToFHLA scores from the two sites (*p*=.705).

CFQ. Scores on the Concern for Child Overweight Subscale in this study ranged from 1-5, with the average score being 1.82. The average score indicates a low level of concern as a value of 1 indicates the parent is unconcerned and a value of 2 indicates the parent is slightly unconcerned. There was no statistically significant difference between the CFQ Concern for Child Overweight Subscale scores from the two sites ($p=.154$).

Table 4. Descriptive summaries of the PSOC-Efficacy Subscale, S-ToFHLA, and CFQ scores for the overall sample and by data collection site

	<i>M ± SD</i>	Median	IQR*	Min, Max	<i>p</i>
PSOC-Efficacy Subscale					($p=.524$)
Private Clinic	39.15 (3.52)	39.00	36.25- 41.75	31.00, 46.00	
Health Dept	38.65 (3.87)	38.50	36.00- 41.00	29.00, 47.00	
Overall	38.90 (3.69)	39.00	36.00- 41.00	29.00, 47.00	
S-ToFHLA					($p=.705$)
Private Clinic	33.88 (1.21)	35	34.00- 36.00	20.00, 36.00	
Health Dept	33.35 (5.56)	35	33.50- 36.00	2.00, 36.00	
Overall	33.62 (4.50)	35	34.00- 36.00	2.00, 36.00	
CFQ Subscales					
Concern About Child Overweight					($p=.154$)
Private Clinic	1.72 (1.28)	1.00	1.00-2.25	1.00, 5.00	
Health Dept	1.96 (1.28)	1.00	1.00-2.33	1.00, 5.00	
Overall	1.82 (1.28)	1.00	1.00-2.33	1.00, 5.00	

* IQR = 25th - 75th percentile values

Quantitative Findings

Question # 1- What is the parent's perception of the toddler's or preschool child's body weight?

Table 5 summarizes the parental participants' perceptions of their children's body weight on the day of the clinic visit in comparison to the child's actual BMI category on a standardized CDC growth chart for gender and age. There was no statistically significant difference between the private office group and the health department group on the parents' perception of their child's weight ($p=.850$) nor on the distribution of child body weight among the CDC BMI categories ($p=.838$).

Table 5. Parental Perception of Child Body Weight Compared to Actual Child BMI for Total Sample

	Child's Weight Status Based on CDC BMI Categories				
	Underweight	Appropriate	At Risk	Overweight	Total
Perception of Child Body Weight					
Underweight	3 (2.5%)	15 (12.5%)	0 (0.0%)	0 (0.0%)	18 (15.0%)
Appropriate	3 (2.5%)	52 (43.3%)	24 (20.0%)	16 (13.3%)	95 (79.2%)
Overweight	0 (0.0%)	1 (0.8%)	1 (0.8%)	5 (4.2%)	7 (5.8%)
Total	6 (5.0%)	68 (56.7%)	25 (20.8%)	21 (17.5%)	120

Question # 2- What factors are associated with the accuracy of the parent's perception of the child's body weight?

Research question # 2 explores the accuracy of parental perceptions of preschool child body weight in this sample and the factors that may be related to the accuracy of parental perceptions of toddler or preschool child's body weight.

Accuracy of parental perception of child body weight was assessed by comparing the child's BMI on standardized CDC growth charts for age and gender with parent's responses to question number 24 on the demographic questionnaire regarding how their perception of the child's weight on the day of the clinic visit and data collection (see Appendix A). Table 6 displays a summary of the accuracy of parental perceptions of their child's body weight.

Table 6. Summary of Accuracy of Parental Perceptions of Child Body Weight Compared to CDC BMI Categories

	Child's Weight Status Based on CDC BMI Categories				
	Underweight	Appropriate	At Risk	Overweight	Total
Accuracy of Perception					
Overestimate	3 (2.5%)	1 (0.8%)	1 (0.8%)	0 (0.0%)	5 (4.2%)
Accurate	3 (2.5%)	52 (43.3%)	24 (20.0%)	5 (4.2%)	84 (70.0%)
Underestimate	0 (0%)	15 (12.5%)	0 (0.0%)	16 (13.3%)	31 (25.8%)
Total	6 (5.0%)	68 (56.7%)	25 (20.8%)	21 (17.5%)	120

Thirty percent of parents in the total sample had an inaccurate perception of their child's weight, representing both underestimations and overestimations of child body weight; however, only 4.1% ($n=5$) were inaccurate in the overestimation direction. Of the parents who had an inaccurate perception of their child's body weight ($n=36$), 41.7% had a child whose BMI was appropriate based on the CDC standardized growth charts, but was identified by the parent as being underweight. In addition, 76.2% of children in this sample, who were already overweight, were labeled as having an appropriate body weight by their parent. There was no statistically significant difference between the two sites on whether the parents were accurate in their perceptions or not

($p = .738$). Because of the limited number of parents with overestimation inaccuracies ($n = 5$), there were insufficient data collected in this study to investigate those types of inaccuracies. Therefore, the focus for the subsequent hypotheses testing was factors associated with parental underestimation of their child's weight.

Hypotheses Testing

The child's gender, age, and parental education were factors previously found to be associated with parental perceptions of child's body weight. Results of both univariate and multivariate logistic analyses of the relationships of those factors to whether or not the parent underestimated their child's weight are summarized in Table 7. No statistically significant univariate or multivariate associations of child gender, child age, nor parental education with the likelihood that parents would underestimate their child's weight were found in this sample ($p > .05$).

Table 7. Relationship between Demographic Variables and Accuracy of Parental Perception of Child Body Weight

Variable	Univariate ^a			Multivariate ^b		
	<i>OR</i>	95% <i>CI</i> <i>OR</i>	<i>p</i>	<i>OR</i>	95% <i>CI</i> <i>OR</i>	<i>p</i>
Site	1.07	0.47 - 2.43	0.878	0.99	0.43 - 2.30	0.976
Female Child	0.95	0.42 - 2.17	0.904	0.96	0.42 - 2.20	0.919
Child Age	0.95	0.58 - 1.54	0.820	0.95	0.58 - 1.54	0.825
Parent Education	0.81	0.55- 1.19	0.279	0.81	0.55 - 1.19	0.285

^a Cox & Snell R^2 : Site= $<.001$, Female= $<.001$, Child Age= $<.001$, Parent Educ = $.010$

^b Cox & Snell $R^2 = .011$

Subquestions

Summaries of the univariate and multivariate relationships of parents' perceived level of parenting efficacy, health literacy level, and concerns regarding child body weight with the likelihood that they underestimate their child's weight are presented in Table 8. There was no statistically significant relationship between the parents' concern regarding child body weight and their perceived level of parenting efficacy or the site where data was collected in either the univariate or multivariate analyses ($p < .05$). The relationship between parental health literacy level and concern for child body weight was statistically significant in both univariate ($p = .006$) and multivariate analyses ($p = .007$). The odds ratio of 0.98 indicates that parents who had higher health literacy scores were more likely to accurately perceive their child's body weight. Health literacy scores alone accounted for 7.1% of the variance in accuracy of parental perceptions of child weight in the model, whereas the complete model accounted for only 7.2% of variance in accuracy of perceptions (see Table 8).

Table 8. Relationship of Site, Health literacy, Efficacy, and Concern Variables to Accuracy of Perception of Child Body Weight

Variable	Univariate ^a			Multivariate ^b		
	<i>OR</i>	95% <i>CI</i> <i>OR</i>	<i>p</i>	<i>OR</i>	95% <i>CI</i> <i>OR</i>	<i>p</i>
Site	1.07	0.47 - 2.43	0.878	1.03	0.43 – 2.50	0.942
Health Literacy	0.98	0.97 - 0.99	0.006	0.98	0.97 – 1.0	0.007
Efficacy	1.02	0.91 – 1.14	0.783	1.00	0.90 – 1.13	0.947
Concern	1.00	0.98 – 1.01	0.547	1.00	0.98 – 1.01	0.704

^a Cox & Snell R^2 : Site= $<.001$, Health Literacy= $.071$, Efficacy = $.001$, Concern= $.003$

^b Cox & Snell $R^2 = .072$

Relationships of perceived parental efficacy levels and parental health literacy with parental concern regarding the preschool child’s body weight are summarized in Table 9. There were no statistically significant relationships found in univariate and multivariate linear regressions among these variables in this sample ($p > .05$).

Table 9. Relationship of Site, Health Literacy, and Efficacy to Concern for Child Body Weight

Variable	<i>r</i>	<i>p</i>	Multivariate ^a			
			B	SE _B	β	<i>p</i>
Site	.115	0.233	6.60	5.50	0.12	0.23
Health Literacy	.107	0.263	0.10	0.09	0.12	0.23
Efficacy	-.016	0.862	0.19	0.73	0.03	0.79

^a Multiple $R = .156$, $p = 0.45$, $R^2 = .024$, Adjusted $R^2 = -.003$

Finally, no statistically significant association was found between parental efficacy and health literacy ($r = -.077$, $p = .410$).

Qualitative Findings

The researcher collected data from parents of preschool children based on their responses to two open-ended questions. The questions were 1) How do you know a child is at a healthy weight?, and 2) What are the signs that a child is developing a weight problem (either underweight or overweight)? The parents were interviewed, and their responses were audio taped. The complete interview was treated as a unit of data, and content analysis was completed. Content analysis revealed three overarching themes regarding how parents knew children were at a healthy weight or were developing a weight problem. These themes were: 1) expressions of parental uncertainty and/or lack of

knowledge regarding how to determine the appropriateness of body weight in children, 2) parental reliance on subjective observations and feelings regarding the child to determine appropriateness of body weight, and 3) parents referring to objective data sources to determine when a child was at an appropriate weight.

Theme 1-Expressions of Parental Uncertainty and Lack of Knowledge

Parents were often unsure of how to determine the appropriateness of body weight in children. Three subthemes emerged: 1) some parents did not know or were not sure how to determine appropriate body weights in children, 2) some parents said there was no definite way to tell if a child had a healthy body weight or was developing a weight problem, and 3) some parents said they would not notice if children were developing weight problems. Parental uncertainty and lack of knowledge were found in both parents who accurately perceived their child's body weight and those who underestimated their child's body weight. The percentage of parents who expressed uncertainty and lack of knowledge was higher in the group that underestimated their children's body weight (40%) compared to those who were accurate in their perceptions (23.2%). Subtheme #1 was most commonly expressed by participants from both the accurate and underestimating groups. Exemplar quotes for this theme and its associated subthemes are presented in Table 10.

Table 10. Theme 1: Expressions of parental uncertainty and/or lack of knowledge regarding how to determine the appropriateness of body weight in children

Subtheme	Exemplar Quotes
<i>Subtheme 1: Parents were not sure how to determine an appropriate body weight in children</i>	<p>“Good Lord, I don’t know. I don’t know.” (A)</p> <p>“It’s kind of hard because, I don’t know. I don’t know.” (U)</p>
<i>Subtheme 2: Parents said there was no way to tell about appropriate body weight in children</i>	<p>“There is a way to tell, but then there isn’t a way to tell.” (A)</p> <p>“There’s no true way to define it.” (U)</p> <p>“Yeah, because, I mean, it’s really, it would kind of be really hard to know, really, you know what I’m saying.” (U)</p>
<i>Subtheme 3: Parents reported not noticing appropriate body weight or weight problems</i>	<p>“Wow, I don’t know. She’s overweight. Well she’s not overweight, but she’s at like 90th for her weight. And, I didn’t realize. Um, I didn’t know.” (A)</p> <p>“I wouldn’t notice it.” (U)</p>

(A)-Quote from a parent who was accurate in perception of their child’s body weight

(U)-Quote from a parent who underestimated their child’s body weight

Theme 2: Parental Reliance on Subjective Parental Observations and Feelings

Parents commonly relied on their own observations about children to determine if a child's weight was appropriate and healthy. Observations made by parents included noting the child's activity/energy level, mood, behaviors, appetite, and physical appearance. Parents also relied on their feelings/sense of a child's weight to determine appropriateness, made comparisons between children, and considered the length of time that a child had a weight alteration in determining the seriousness of a weight problem.

Both accurate and underestimating parents used subjective observations and feelings as a means of determining the appropriateness of their child's body weight. However, parents who underestimated their child's body weight more often relied on just looking at the child to determine weight appropriateness. Almost three fourths of the parents who were underestimators thought just looking at the child was the best way to determine weight appropriateness (73.3%) compared with just over one fourth of parents who were accurate in their perceptions of child body weight. In addition, parents who were accurate in their perceptions were more likely to give several examples of subjective observations they used to determine the appropriateness of child weight, whereas parents who underestimated their child's weight often only reported one type of observation to determine appropriateness of child body weight. Finally, it was interesting to note the group of parents who were accurate in their perceptions mentioned all of the subthemes in their collective responses, while parents who underestimated child body weight relied on just a few of the subthemes (e.g., just looking at the child, specific physical attributes of the child, and comparisons to other children). Exemplar quotes for this theme and its associated subthemes are presented in Table 11.

Table 11. Theme 2: Parental reliance on subjective observations and feelings regarding the child to determine appropriateness of body weight

Subtheme	Exemplar Quotes
<p><i>Subtheme 1: Activity and Energy Levels</i></p>	<p>“Um, they’re active. They don’t sleep a lot. And, they don’t lay around.” (A)</p> <p>“Um, you can, I can kind of, when they’re not complaining of a lot of things, of being tired all the time and when they’re playing.” (A)</p> <p>“If it looks like, I mean they’re just weak at the knees, and you know, can’t even sit up.” (U)</p>
<p><i>Subtheme 2: Child Mood and Behavior</i></p>	<p>“There’s mood changes. I know with the weight loss, especially if they’re not eating right, their hair and their eyes will look different when they’re losing weight. And, overweight they’ll be grouchy.” (A)</p> <p>“When he’s happy, and when he’s like really active. I would say that’s when he’s healthy.” (A)</p>
<p><i>Subtheme 3: Appetite and Eating Habits</i></p>	<p>“Yes. Like um, like if they’re eating, they’re just wanting to eat too much. He might be having a problem with overweight.” (A)</p> <p>One parent stated weight problems began with bad eating habits and suggested that parents look at “the way that they want to eat, like the junk food and stuff” and to be careful when “they’d rather eat junk food than fruit and stuff.” (A)</p> <p>“Um, underweight would be when they’re not eating anything at all. Um, and overweight is when you can really tell that they’re eating junk food instead of, eating more junk food than healthy food.” (U)</p>
<p><i>Subtheme 4: Could Tell Just By Looking at the Child</i></p>	<p>“Yeah. Just by looking. That’s the way you can tell.” (A)</p> <p>“I just know if they look normal.” (A)</p> <p>“Well, um, like with [child name], you know you can tell, I mean she’s got, I mean she’s not too skinny, she’s not too fat. You know, she’s not like, you can tell she’s healthy. She’s got enough body weight on her. She doesn’t, she doesn’t look like I have starved her to death. (U)</p>

<p><i>Subtheme 5: Physical Attributes</i></p>	<p>“Yeah. When they start getting fat instead of muscle in places, like, you know, their arms, their legs, their stomach.” (A)</p> <p>“Um, if their belly sticks out and they have little cellulite, literally, have cellulite on their legs. And these little dimples and little fat rolls. I mean that’s what indicates if they’re overweight. That’s it.” (U)</p> <p>“If they’re underweight, then they, um, you would see it in their face. Their eyes are sunken in a little bit.” (A)</p>
<p><i>Subtheme 6: Parental Feelings about Child Body Weight</i></p>	<p>“No I can’t see, but I can tell. It’s a feeling, but I don’t know how to say what I mean.” (A)</p> <p>“You can pretty much tell if they’re going to have a problem with being overweight or underweight.” (U)</p>
<p><i>Subtheme 7: Comparisons to Other Children</i></p>	<p>“But, like [child name], like I said, he was nine pounds and he’s skinny. And, [child name], he was seven pounds but he’s starting to get love handles and the little boy boobs, I guess. My seven year old, he’s overly tall for his age, and he has the boobs and he’s got a big stomach and hips. But, his legs and everything are normal.” (A)</p> <p>Another mother stated that appropriate body weight was “when they’re equivalent to other children their age.” (U)</p>
<p><i>Subtheme 8: Length of Time Weight is Considered a Problem</i></p>	<p>“Um, if they didn’t lose it in a few years. You know sometimes its baby weight, but if it sticks on you as you get older and older, and you continue to get bigger and bigger or smaller and smaller, then you can tell there is a problem there. Because you know, usually if you start out overweight, because you know he was really overweight when he was younger, but as he got older it started to drop off a little bit. The more activities he started doing. If he continued to pick up weight instead of losing, I would have thought that he had a weight problem.” (A)</p> <p>“The way I look at it is, just as long as they’re healthy, I hope they’ll grow out of it at some point in time.” (A)</p>

(A)-Quote from a parent who was accurate in perception of their child’s body weight
(U)-Quote from a parent who underestimated their child’s body weight

Theme 3: Parents Referring to Objective Data Sources

Although several parents relied on their own subjective interpretations to determine the appropriateness of a child's body weight, many others wanted to use more objective sources and measures to examine the issue. Parents reported using many objective data sources or measures, including information from the child's physician or other healthcare provider, books and internet resources, number of portions eaten based on the food pyramid, clothing sizes, and standardized growth charts. Some parents also mentioned the desire to know the child's actual body weight measured by a scale or body mass index before making a determination of the appropriateness of a child's size. In addition, parents mentioned several obvious signs of physical distress or poor health status as being important benchmarks of having or not having a healthy body weight in childhood. Exemplar quotes for this theme are presented in Table 12.

Responses from parents who underestimated their child's body weight were compared with responses from parents who were accurate in their perceptions. Parents whose perceptions were accurate used objective data sources more often than parents who underestimated their child's body weight (58.5% vs. 46.6%). In both groups, the most common objective data sources referenced in the narrative comments were soliciting physician or medical provider advice and monitoring for objective signs of physical distress/poor health. Responses mentioning the need to seek physician or medical provider advice were noted in 16.6% of responses from parents who underestimated their child's body weight, 17% of responses from those who had accurate perceptions. Similar to the pattern found with theme number 2, parents in the accurate perception group frequently mentioned more than one objective way to determine

appropriateness of child body weight, while those parents who underestimated child weight were more likely to rely on one measure such as the physician advice or the child having an established health problem.

Table 12. Theme 3: Parents referring to objective data sources to determine when a child was at an appropriate weight

Subtheme	Exemplar Quotes
<i>Subtheme 1: Physician or Other Medical Provider's Advice</i>	<p>"I guess a lot of that depends. You rely on your medical professional to tell you. Yes. I really rely on that. For the doctor to let me know." (A)</p> <p>"You really wouldn't know without taking them to the doctor." (U)</p>
<i>Subtheme 2: Books/Internet Resources</i>	<p>"I could go to the internet and check it out. If I had their weight and their height, I could go to the internet and check out to see if they were in their right range." (A)</p> <p>"I've got books and stuff at the house that I go by." (A)</p> <p>"I can read up on it too." (U)</p>
<i>Subtheme 3: Growth Charts</i>	<p>"Or, like, um, like, a health chart, you can look at that. The one from here." (A)</p> <p>"Um, they can give you a chart, and you can see if they're in that range." (A)</p>
<i>Subtheme 4: Clothing Size</i>	<p>"To me it's, you know, like their age and their clothes size. That's the way I look at it. Like if they're in the right clothes size for their age group normally." (A)</p> <p>"Um, he is two years old, he's 24 months old. He can still fit in clothing that is 18 months old, so I know he can still fit in clothing fitted at an age range." (A)</p> <p>"You know, if they're two years old and they can wear the 2T clothing." (U)</p>

<p><i>Subtheme 5: Objective Measure of Eating Habits</i></p>	<p>“They can be underweight from not eating enough too; go by the food pyramid is what I do.” (A)</p> <p>“Like him, I have to watch because he eats a lot. He eats the portions of a five year old.” (A)</p>
<p><i>Subtheme 6: Actual Weight Measurement and BMI</i></p>	<p>“You can weigh them and monitor their weight. Cause then you know that their weight’s about average.” (A)</p> <p>“... by the age brackets and what the weight requirements are at that age. And, then determined by her height and weight, what she actually should be.” (A)</p> <p>“The only way I can determine to know this is by their age and if their height and weight matches up to what it’s supposed to be in medical terms.” (U)</p>
<p><i>Subtheme 7: Objective Physical Distress/Poor Health Status</i></p>	<p>One mother reported that she saw a strong relationship between weight and immunity, commenting, “They’ll be sick, they’ll stay, their immune system is weakened if they’re overweight or underweight.” (A)</p> <p>“I see a lot of kids that have problems walking. Or, you know, breathing. You know, if they can’t take care of themselves, there’s something wrong.” (A)</p> <p>A parent reported signs of respiratory distress in her own daughter including “heavy breathing. Can’t breathe when they lay down, because she does that” and “when she runs, she gets out of breath quicker.” (U)</p>

(A)-Quote from a parent who was accurate in perception of their child’s body weight
(U)-Quote from a parent who underestimated their child’s body weight

Summary

The quantitative and qualitative findings from this dissertation study provided insights into parental perceptions of preschool child body weight. Many children and parents in the current study were at risk for or already had an elevated BMI. Current study findings also demonstrated that parents had inaccurate perceptions of body weight in their toddlers and preschool children. Thirty percent of parents in the study either overestimated or underestimated their child's body weight. Perceptions of body weight were found to be associated with the parents' health literacy levels and influenced by both subjective observations and information from objective data sources. Parental efficacy levels and level of concern from child weight were not statistically significant predictors of whether the parent would accurately perceive the preschool child's body weight.

CHAPTER V

DISCUSSION

This dissertation study was conducted to evaluate parental perceptions of body weight in toddlers and preschool children. The primary purpose of this study was to examine the relationships among the accuracy of parental perceptions of toddler and preschool child body weight, perceived parental efficacy levels, health literacy levels, concern for child body weight, and selected demographic factors. A secondary purpose was to ascertain parental thoughts on how to determine the appropriateness of a toddler's or preschool child's body weight and signs that children were developing weight problems.

In this chapter, demographic and physiologic variables will be discussed. The meaning of findings related to research questions, the predictive values of variables used in univariate and multivariate logistic and linear regression models, and a synthesis of qualitative findings will be presented. Significance of findings and limitations and strengths of the study also will be presented. The chapter will conclude with implications for nursing practice, nursing research, and public policy development.

Sample Characteristics

Two locations were used for data collection to increase diversity of the sample. Data collection took place at a public county health department in a WIC clinic and at a private pediatrician's office in the same community. Although a convenience sampling

method was used, the researcher made efforts to approach members of minority groups and males about participation to increase diversity and overcome sampling issues that had been seen in previous studies. The groups were similar on all demographic characteristics, with the exception of gender, race/ethnicity, family income level, and parental Index of Social Position.

Gender

The sample for this dissertation study consisted of mainly female participants ($n=110$), and fathers made up only slightly over eight percent of total participants ($n=10$). This finding is consistent with previous research on parental perception of body weight in toddlers and preschool children. Previous researchers had other caregivers, such as fathers and grandparents, in their samples, but the percentage of participants who were not mothers was low in each of these studies (e.g., Adams et al., 2005; Etelson et al., 2003; Young-Hyman et al. 2000). In addition, all previous qualitative data about this phenomenon were collected from mothers (e.g., Jackson et al., 2005; Jain et al., 2001; Sherry et al., 2004).

To address this limitation the current study collected both quantitative and qualitative data from mothers and fathers. The results of the quantitative data did not reveal any meaningful differences between mothers and fathers in regard to perception of or concern for preschool child body weight. However, content analysis for the open-ended responses in this study added clarity to the quantitative findings by recognizing that fathers and mothers shared many of the same ideas about appropriateness of body weight in toddlers and preschool children. The fathers who responded to the open-ended

questions reported relying on the child's looks and other subjective observations as the primary method for determining the appropriateness of a child's body weight. Having qualitative data from the responses to open-ended questions in this study provided some information about how fathers view body weight in their children. Caution should be used in interpreting both the quantitative and qualitative findings related to parent gender given the small number of paternal participants. Further research is needed to ascertain fathers' views on body weight in toddlers and preschool children as the number of stay at home fathers and single parent fathers increases in the US.

Race/Ethnicity

The results revealed racial/ethnic differences between the two data collection sites. The sample from the private office contained more Caucasian participants (90%), and the only other ethnicity represented was African American (10%). The ethnic makeup of the health department sample was more racially and ethnically diverse, and it included Caucasian, African American, Hispanic, Bosnian, and South-East Asian participants. Given the lower socioeconomic status of minority groups in the US, the diversity of the sample found in a clinic that provides services to impoverished families was not unexpected. The racial and ethnic makeup of the total sample mirrors the U.S. census data for the state and county in which the study was conducted (U.S. Census Bureau, 2008). This improves the generalizability of the findings to the population of the area in which the study was conducted.

Family Income Level/Index of Social Position

Another area of difference between the two samples was related to total family income level. Nearly twice as many participants from the health department reported a total family income of less than \$20,000 compared with the sample from the private pediatrician's office. In addition, five times more parents from the private office reported family incomes of greater than \$50,000, and twice as many parents from this site declined to answer questions about their income. There also was a difference between the groups with regard to socioeconomic status based on education and income levels. The health department sample contained over two times the number of participants who were classified in the lowest socioeconomic class compared to the private pediatrician's office sample. These findings were expected given that the private office provides care for not only Medicaid patients, but also to patients who are able to pay for visits or who have private insurance. Having the two sites allowed for examination of the concepts in parents who were in various socioeconomic classes, and the findings confirm that early childhood overweight and parental misperceptions of child body weight are health concerns that cross all socioeconomic classes.

Summary of Demographic Differences

The differences between parents at the two sites on race/ethnicity and family income level and the difficulty in obtaining fathers for the sample were expected. These findings mirror trends found in previous research. It is common for studies of child health issues to include high levels of maternal participation. In addition, the differences in race/ethnicity and income levels were seen by the researcher as desirable because of the

need to sample a broad selection of parents of toddlers and preschool children. It was thought that having a larger and more representative total sample would aid in generalizing and transferring findings from the current study. In addition, having the two sites was crucial to developing the knowledge base for how to design interventions that are tailored based on familial needs and characteristics.

Physiologic Measurement

Physiologic data for child participants in this study were collected from reviewing the child's medical record. Children's heights and weights from the day of the visit were used to calculate their BMI. Parents were asked to provide self-report data about their height and weight, and these data were subsequently used to calculate parental BMI. The number of parents and children with elevated BMIs was clinically significant in this sample.

Parent BMI

The BMI results reveal that the average parent in this study was overweight or obese. Parents from the health department had higher BMIs than the participants from the private office site, although the average BMI for both groups when assessed separately was over the recommended BMI for healthy adults. Parents in the sample had inaccurate perceptions of their own body weight, which is similar to findings from previous studies (Chang & Christakis, 2001, 2003; Fitzgibbon et al., 2000; Kuchler & Variyam, 2003; Malinauskus et al., 2006; Paeratakul et al., 2002). In the current sample, 37.6% of parents

were obese based on their self-reported height and weight values, while only 17.5% reported feeling markedly overweight.

The parental BMIs in this sample are of concern for several reasons. First, self-report body weight, although a feasible and low-cost method of collecting data, are subjective and prone to error. Second, previous research indicates that many adults, especially females, tend to have inaccurate perceptions about their body weight (e.g., Chang & Christakis, 2001, 2003; Kuchler & Variyam, 2003; Paeratakul et al., 2002). These results indicate that the inaccurate perceptions of one's body weight may often leads to overestimation or underestimation of weight, which can be further linked to poor nutrition and health outcomes. Often participants underreport their true weight; therefore, the BMIs for parents in the current sample could be higher than the levels reported. Distortions in perception of one's own weight has also been linked to a parent's inability to accurately perceive his or her child's body weight (Genovesi et al., 2005; Jackson et al., 1990). The results of the current study support the findings of Adams et al. (2005) and Eckstein et al. (2006) who both identified that parental misperceptions of their own body weight can limit the their ability to make positive decisions about nutrition and exercise for themselves and their children. Therefore, misperceptions of parent's own body weight can be associated with higher misperceptions of weight for their children and impact decisions made about healthcare. This is an issue that needs further investigation.

Child BMI

Data collected on child BMI in this sample provide results similar to those found in previous studies. Based on the CDC growth percentiles, nearly 40% of toddlers and

preschool children in the sample were at risk for overweight or already overweight. The results of the current study provide more evidence to support the rise in the number of overweight children in toddler and preschool age groups as documented, with a 40% increase over the past 14 years (Robert Wood Johnson Foundation, 2005). Similar levels of obesity in this age group also were found in studies by several authors (e.g., Baughcum et al., 2000; Carnell et al., 2005; Hirschler et al., 2006; May et al., 2007; Reifsnider et al., 2006a).

Meaning of Findings Related to Research Questions

The meaning of findings will be discussed in relation to the two main research questions presented in the study: 1) What is the parent's perception of the toddler or preschool child's body weight?, and 2) What factors are associated with the accuracy of the parent's perception of his or her child's body weight? In conjunction with Research Question # 1, qualitative findings, derived from the open-ended questions about perceptions of what is an appropriate body weight for a child, will be discussed. With Research Question # 2, the six subquestions related to factors influencing the accuracy of parental perceptions of body weight in preschool children will be addressed.

Research Question # 1

The findings from this dissertation study support and validate previous findings about how parents perceive preschool child body weight. In the current study, nearly 80% of parents perceived that their child's weight was appropriate, and 15% felt their child might be underweight. Only slightly more than 5% of parents felt their child was

overweight at the time of data collection, while based on CDC standards 17.5% of children in the study were actually overweight. This is consistent with perceptions seen in previous literature where it has been common for parents of overweight children to describe their children as being underweight or at an appropriate weight. In these same studies, parents were often not able to identify when a child was at risk for overweight or already overweight.

The inability of parents to perceive weight problems, especially overweight, in children is of concern to nurses and other healthcare professionals because elevated BMIs in children represents one of the most serious and rapidly developing health concerns for our nation (Society of Pediatric Nurses [SPN], 2007). According to Holm Denoma et al. (2005), examining and understanding the perceptions parents have about their child's weight is crucial because of the relationship between weight perception and feeding habits. Previous research has shown that recognition of the seriousness of overweight and obesity in children is a key to the development of prevention and treatment strategies (e.g., Carnell et al., 2005; Maynard et al., 2003).

In an attempt to provide greater understanding about the accuracy of how parents perceive their child's weight, this study included two open-ended questions. These questions were 1) How do you know when a child has an appropriate body weight?, and 2) What would be signs that a child is developing a weight problem (either underweight or overweight)? The qualitative findings from these open-ended questions support findings from previous qualitative studies and provided new understanding of parental perceptions of child body weight.

In the current study, many parents felt that they could determine the appropriateness of a child's body weight by using subjective observations of child characteristics such as mood, behavior, and activity. Parents reported that children who were active and happy would be likely to have an appropriate body weight. This finding was seen in both parents who accurately perceived their child's weight and those who underestimated their child's body weight. It is also consistent with the findings of previous researchers, who reported that a healthy weight was defined by being able to participate in desired activity, not being teased, acting happy, and looking healthy (e.g., Baughcum et al., 1998; Crawford et al., 2004; Jain et al., 2001;). Like the parents in the current study, parents in these studies often did not want to define a child's weight in a numerical sense, but used appearance and behavior as markers of health.

In addition, parents in the current study often had trouble defining weight problems in their children or reporting signs that identified the initial development of weight problems. This confusion about what signifies a weight problem in a child was seen in previous qualitative studies on this phenomenon. Because parents are unsure how to define weight problems and often rely on visual cues to assess weight problems, nurses are in a strategic position to intervene to help parents develop more accurate perceptions of what constitutes an appropriate body weight for their child.

This study provided new information about objective measures parents use when assessing the appropriateness of their child's body weight. Several parents in this study reported that the pediatrician or healthcare provider was an important source of data about their child's weight status. Other objective measures that were also discussed as being important in helping parents define and understand their child's weight status

included clothing sizes, growth charts, books, and internet resources, among others. The reliance on growth charts and medical advice was in contrast to findings from other studies where distrust for these sources was expressed by parents (e.g., Crawford et al., 2004; Jain et al., 2001; Young-Hyman et al., 2000). This new finding provides nurses with a better understanding of the avenues for teaching patients about how to determine when a toddler or preschool child has an appropriate body weight or a weight problem may be developing.

Another finding that was different from previous qualitative literature on parental perceptions of child body weight was that parents in this study did not mention heredity as a cause of obesity. In previous studies (Baughcum et al., 1998; Crawford et al., 2004; Jackson et al., 2005; Jain et al., 2001; Young-Hyman et al., 2000) parents often reported that children had a tendency to be obese based on their genetic makeup. In the current study, both parents who had accurate and inaccurate perceptions of their toddler or preschool child's body weight clearly identified obesity as being related to lack of physical activity and eating habits. None of the responses from parents mentioned heredity as the cause of weight problems in young children.

Research Question #2

Research question # 2 addressed factors that were thought to affect how parents perceived their toddler or preschool child's body weight. Factors examined included both demographic and psychosocial factors.

Demographic Factors

In previous studies, certain demographic characteristics for the parent and child were predictive of the parent's ability to accurately identify his or her child's weight status. These characteristics included child gender and age and parental education level. In the current study child gender did not predict accuracy of parental perceptions of their toddler or preschool child's body weight. In previous studies, it appeared parents and caregivers could more easily recognize overweight status in females (e.g., Fisher et al. 2006; He & Evans, 2007). Maynard et al.'s (2003) and Campbell et al.'s (2006) studies indicated that boys were 3-4 times less likely to be perceived as overweight by parents. Fisher et al. (2006) reported that 67% of parents of overweight males are unaware of the problem, while only 44% of overweight females go unrecognized by their parents. The findings of the current study are similar to those of Baugchum et al. (2003) who found that the child's gender did not have a significant effect on the ability of the mother to identify obesity in the child.

Regarding child age, it has been noted in previous literature that older children are more readily identified or perceived by parents as having weight problems (e.g., Crawford et al., 2006; Eckstein et al., 2006; Huang et al., 2007). Both Maynard et al. (2003) and Young-Hyman et al. (2000) reported that child age had significant predictive value in logistic regression analyses. In the current sample, age was not a significant predictor of accuracy of parental perceptions of child weight. A possible explanation for this contrasting finding is the age range in the current sample. Children in samples where child age was found to be statistically significant ranged in age from 2-20 years. The small age range in the current sample may account for the lack of statistical significance

in the predictive value of child age in univariate and multivariate logistic regression analyses.

Further, it was hypothesized that parents with less education would be more likely to underestimate their child's body weight than parents with higher education levels. The results revealed that there was no statistically predictive value for level of education in the current sample. The finding may be related to limited variability in parental education level in the current sample. Nearly three fourths of all parents in the current study had a high school education or greater, and only 10 parents had completed a bachelor's degree or graduate degree.

Psychosocial Factors

Studies on parental perceptions of child body weight have been limited to looking at demographic and physiologic data for correlates and predictors of perceptual accuracy. In the current study, psychosocial variables, including concern for child weight, health literacy, and parental efficacy, were examined in relation to accuracy of parental perceptions of body weight in preschool children. A discussion of each of these factors follows.

Health literacy entails both cognitive and social skills (Speros, 2005) and is related to one's ability to gather and process information to make decisions related to health and health related services (U.S. Department of Health and Human Services, 2000). Antecedents to adequate health literacy include the ability to read and comprehend words and numbers and having previous exposure to the healthcare system (Speros, 2005). Having adequate health literacy has been generally reported to be correlated with

self-reported health status, lower health care costs, increased knowledge and understanding of the healthcare system, and shorter hospital stays (Pawlak, 2005; Speros, 2005). Low health literacy can result in treatment delays and the inability to obtain or use preventive services (Davis & Wolf, 2004), in addition to leading to poorer understanding of treatments, medical instructions, and self-management of disease process.

In the current study, health literacy was predictive of accuracy of parental perceptions of child body weight. This finding indicated that parents who had higher health literacy levels were more likely to have accurate perceptions of their child's weight. This finding supports other investigators (Moon, Cheng, Patel, Buamhaft, & Scheidt, 1998) who found that parental health literacy was significantly correlated with accurate perception of and concern for the severity of illness in the child. In addition, studies on health literacy and adult weight perception indicated that clients with lower literacy levels were less likely to comprehend the dangers associated with obesity or to report willingness to take action towards weight loss (Kennen, Davis, Huang, Yu, Carden, Bass, & et al., 2005).

However, the finding from the study conducted by Mika, Kelly, Price, Franquiz, and Villarreal (2005) revealed no association between the concept of health literacy and understanding of medical information. The discrepancies between the findings of the current study and that of Mika et al. (2005) point to the need for further investigation of how health literacy impacts perception of a variety health issues, including parental perception of body weight in young children.

The new findings from the current study, in conjunction with previous findings on health literacy, suggest that parental health literacy should be considered when addressing

body weight in young children. This is especially true given that printed materials are often used in educating parents about nutrition and body weight issues. A recent study by Weiss, Mays, Martz, Castro, DeWalt, Pignone, et al. (2005) suggested that all clients in all settings should have their health literacy assessed by providers, and a new measurement tool has been developed that allows for rapid assessment of health literacy in busy clinic settings. The Newest Vital Sign [NVS] allows providers to measure health literacy in as little as three minutes and is available in English and Spanish versions (Weiss et al., 2005). It is a logical step to begin including health literacy as a routine assessment for families being seen in physicians' offices and public health clinics. Given that the majority of parents in the current study had "adequate" health literacy levels, more study on the relationship between parental health literacy and parental perceptions of child body weight is warranted. "Adequate" health literacy is defined as a score of 23 out of a possible of 36 points on the S-ToFHLA (Baker et al., 1999). Given the relationship found in this study, it may be that "adequate" may not be sufficient for the current parental environment. Replication of this aspect of the study may further illuminate the levels and types of health literacy that may be critical for parents to accurately assess their children's health issues, including body weight.

The predictive value of perceived parental efficacy was examined regarding the accuracy of parental perceptions of toddler and preschool child body weight in the current sample. Montigny and Lacharite (2005) defined perceived parental efficacy as "beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child" (p. 390). It is a concept that is linked with many positive parenting behaviors and child outcomes, including responsiveness to the child,

active maternal coping, and fewer perceived child problems (Coleman & Karraker, 2003). In the current study, perceived parental efficacy was not found to be related or predictive of the parent's accuracy in determining his or her child's weight status. This statistically insignificant finding may indicate a true lack of relationship between the concepts or may be related to measurement error. The tool used to measure the concept of perceived parental efficacy had acceptable alpha levels in other studies and correlated with other measures of parental efficacy (Coleman & Karraker, 2003; Lovejoy et al., 1997; Ohan et al., 2000; Sanders & Woolley, 2005). However, in the current study the Efficacy Subscale had an alpha of .53, indicating that the tool was not robust in measuring the concept under study. Because of possible measurement error the findings about the relationship of perceived parental efficacy, perception of child body weight and concern for child body weight are inconclusive. Further study on these variables is warranted to ascertain what, if any, impact perceived parental efficacy has on parental perception of and concern for child body weight.

Finally, concern for child weight was analyzed as a potential predictor of accuracy of parental perceptions of child body weight. Parents in the current study were found to have a slight unconcern about their child's body weight, and concern for child weight was found to be a nonsignificant predictor of parental perceptions of child body weight. The nonpredictive value and low mean score on this factor in the current study is similar to previous findings about concern for child weight. In studies by several authors (e.g., Adams et al., 2005; Eckstein et al., 2006; He & Evans, 2007) parents often reported little or no concern even when the child was overweight or obese. Because low levels of concern about child weight are frequently found in samples where high levels of

overweight and obesity exist in children, this is a point where parental education and intervention on the part of the healthcare team is important. In addition, concern for child weight was examined in relation to health literacy and parental efficacy. Neither health literacy nor parental efficacy were predictive in univariate and multivariate linear regression models for parental concern for child weight.

Significance of Findings

Findings from this study contribute to the current understanding of how parents perceive body weight in toddlers and preschool children. This study offers new information on psychosocial factors that influence how parents perceive the body weight of their young children. Findings related to health literacy, concern for child weight, and the overall accuracy of parental perceptions are of special interest.

One significant finding from this study is the relationship between parental health literacy and accuracy of perceptions of child body weight. In this study, parents who had higher health literacy scores, were more likely to have accurate perceptions of their child's body weight. This finding supports the proposed relationship between structural factors, such as health literacy, and perceived notion of health discussed by Roden (2004a, 2004b) in the Revised Health Belief Model. Based on the study findings, it is plausible to conclude that increased knowledge of and comfort with the healthcare system, as suggested in Roden's model, can improve the accuracy of how one perceives health and illness.

The findings from this study also emphasize that healthcare professionals must be aware of a parent's understanding of information provided to him or her regarding issues

related to their child's health, including nutrition and exercise. Nurses must remember that often health literacy levels do not correlate with education levels, and parents are often dealing with unfamiliar information and fast paced healthcare settings when seeking care for their child. In addition, parent education materials may not be tailored to the reading level of clients. If parents do not receive information in a manner that fits their education and literacy level, perceptions about the child's health status may be affected. This may ultimately negatively affect understanding of need for and compliance with recommended treatments related to a child's body weight.

Another area of interest is the parent's perception and concern for child body weight in the current sample. Children in the sample did have weight problems (both underweight and overweight). Parents in this sample were relatively unconcerned about weight issues in their children, despite 38.3% ($n=46$) children being at risk or already overweight, the main concern in this study. These findings are of concern for healthcare providers because of the link that may exist between a parent's perception of a health problem and likelihood of taking positive action on behalf of the child. Currently, over 22 million toddlers and preschoolers are overweight worldwide, including up to 20% of U.S. toddlers and preschoolers. This signals an epidemic that must be addressed through a partnership between families and providers (Davison & Birch, 2001; Golan & Crowe, 2004a, 2004b). The action that needs to be taken on behalf of these children can occur only when providers openly and honestly address child weight issues with parents in a collaborative manner. Parents must be open to the idea that their children need help with their weight, which can occur only when parents perceive the child has a problem.

Limitations

The researcher noted several limitations in the current study that may have had an impact on the findings. These limitations were related to study sampling, design, measurement, and data analysis techniques. Sampling was conducted via a convenience strategy. Parents who agreed to participate may have had different perceptions or feelings about body weight in toddlers and preschool children than those who did not participate. Approximately 10 parents were approached and declined to participate. Reasons for non-participation included not having time to complete the study questionnaires or having a sick child who required attention. In addition, four participants agreed to participate, but did not meet the inclusion criteria for the study because their child had a chronic illness. Participants in this study were predominately female, most had at least a high school education, and 80% were Caucasian. Therefore, findings cannot be generalized and transferred to all parents of toddlers or preschool children.

The racial and ethnic composition of the sample, while similar to the population in the county and state where data were collected, cannot be generalized to all parents with toddlers and preschoolers from other regions or cultures. Also, the perceptions of the parents of toddlers and preschoolers in the study may not be representative of the perceptions of parents with infants or older children.

Another limitation of the current study relates to study design. The current study is a descriptive cross-sectional design, so parental perceptions and child body weight were assessed at only one point in time. Second, data collected using a cross sectional design may be impacted by history. For example, during the data collection for this study there was a high profile reality program dealing with child body weight issues, and

several parents commented on this program during their interviews. The timing of data collection in relation to historical events may have had an unknown impact on parental perceptions of their child's body weight. It is also likely that parental perceptions of toddler and preschool child body weight are fluid, and a longitudinal design that could capture variations in perception over time would be ideal. However, previous studies had not addressed the psychosocial factors used in this study. Considering the lack of information on how health literacy and parental efficacy can have an impact on perceptions, using a cross-sectional design for this initial study was warranted. Caution is warranted in making inferences based on study findings. This study examined and described relationships between the variables of interest, but causality should not be inferred.

There were several limitations related to measurement. The height and weight of children in the study were measured by the clinic staff at the two sites using different equipment. It is possible that there could have been differences in the equipment and measurement techniques between sites. However, height and weight are relatively common measures conducted in these facilities, and all measures were conducted by registered nurses or trained medical assistants at both facilities. In addition, three of the questionnaires were administered to the participants by the researcher. It is possible that the participants gave certain responses in an attempt to please the researcher, and this social desirability factor is a problem encountered when collecting data via self-report (Polit & Beck, 2004). However, given the variables under consideration, health literacy, concern about child weight, and perceived parental efficacy, self-report was the only effective way to obtain data needed to analyze the research questions.

In addition, there were measurement issues related to the concept of perceived parental efficacy. The PSOC-Efficacy Subscale did not have strong internal consistency scores in this study. The Cronbach's alpha level for the PSOC-Efficacy Subscale was .53. There are only eight items on the PSOC-Efficacy Subscale, which may limit internal consistency; however, this was an appropriate instrument to use according to experts on subject of parental efficacy (Montigny & Lacharite, 2005). The low internal consistency was an unexpected occurrence given the performance of the PSOC-Efficacy Subscale in other studies (Coleman & Karraker; 2003; Johnston & Mash, 1989; Lovejoy et al., 1997; Sanders & Woolley, 2005) where the instrument had alphas of .67 to .88. Because of the low internal consistency of the PSOC-Efficacy Subscale, findings related to perceived parental efficacy from the current study should be interpreted with caution. Also, the PSOC-Efficacy Subscale is a global measure of parenting efficacy. The concept of perceived parental efficacy as it relates to feelings of competence in managing child nutrition maybe better measured with a task-specific efficacy tool.

Finally, limitations were noted in relation to the collection and analysis of the qualitative data obtained using the open-ended questions. The questions were composed to elicit descriptive data about parental thoughts on the appropriateness of body weight in children and when weight problems would become apparent. Interviews were generally brief and were conducted at the time the parent was in clinic for the child's healthcare. It is possible that this was not an appropriate time and setting to interview parents about perceptions because of the stress of seeking care for their child and the immediate feedback they had received regarding the child's weight. In addition, these data were analyzed using conventional content analysis. This method does not allow for generation

of theory, which limited the researcher to describing parental perceptions of appropriate body weight and signs of weight problems in toddlers and preschool children. There has been limited previous qualitative study on parental perceptions of body weight in toddlers and preschoolers and earlier samples were not representative of the general population. In addition, the purpose of this study was to provide description and examine relationships among concepts and not to generate theory. However, more research is needed on how parental perceptions of child body weight are formed and change over time, and this may be an area suitable for future qualitative studies.

Strengths

The use of quantitative methods and the two open-ended questions posed to parents in this study provided a richer description and led to a more complete understanding of parental perceptions of body weight in toddlers and preschool children. In addition, data were collected from parents at both a private pediatrician's office and a public health department. This allowed for examination of the concepts across a racially/ethnically and socioeconomically diverse group of participants. Having both quantitative and qualitative data from this diverse group of participants builds on findings from other authors and also increases the generalizability of the findings from the current study.

Second, strengths were noted in relation to the sample. The sample, consisting of 120 parents of preschoolers, was an average size given the samples from previous quantitative studies. However, the sample size for previous studies in regard to the collection of qualitative data was typically limited to less than 50 participants and in

some cases as few as 11 participants (e.g., Jackson et al., 2005). The collection of qualitative data on a sample this size is relatively new and is possibly one reason why different perceptions about preschool child body weight were found in this sample. The sample size was also adequate to estimate a power of .80 for a correlation of .25 (Polit & Beck, 2004). In addition, the collection of data on parents from two sites, which included racial/ethnic and income differences, increases the generalizability of the findings.

The researcher demonstrated prolonged engagement in the data collection process, which included spending six months in the clinic settings collecting data. In addition, the researcher had previously worked for three years as a community health nurse in the health department where data were collected. Qualitative questions were specifically designed to elicit parental thoughts and reflections on perceptions of child body weight. Interviews were audio taped and transcribed verbatim by the researcher. All of these aspects increase the creditability of the data collected.

Furthermore, creditability was increased by the use of peer debriefing. To enhance dependability of findings, the researcher had routine discussions with other researchers experienced in the study of health issues related to children, adolescents, and parents to discuss theoretical concepts, findings, and conclusions. Confirmability was achieved by having two independent researchers review and code all transcripts and work together to develop a coding structure that was inclusive of all narrative data, analyze rogue responses, and select exemplars for the final qualitative narrative. The researcher also developed an audit trail consisting of raw data (interview transcripts), data analysis products, and process notes. The audit trail materials can be reviewed by an independent

auditor to assess whether others could reach the same conclusions when analyzing the qualitative data.

Implications

Nursing Practice

Nurses functioning under the ANA Standards of Practice (1998) and Social Policy Statement (2003) are required to address human responses to actual and potential health problems such as childhood overweight and obesity and the altered perceptions parents hold about child body weight. In their *Position Statement on Overweight Children and Adolescents*, the Society of Pediatric Nurses (SPN) (2007) report that nurses must respond to the epidemic of overweight and obesity in American children by addressing the environmental influences on body weight issues, which includes parental perceptions and misperceptions of child weight. According to the SPN (2007), nurses must understand that parental perceptions and familial stress are associated with both child feeding patterns and the development of overweight problems in young children. In addition, previous research has demonstrated that parents seek out and value the advice of providers, including nurses, when they are trying to deal with body weight issues in their children (Edmunds, 2005). Parents appreciated it when healthcare providers demonstrated interest and a positive attitude in addressing weight issues in children, while avoidance of the issue or placating concerned parents was viewed negatively (Edmunds, 2005).

Suggestions for practicing nurses working with toddlers and preschool children and their parents include discussing ways to promote and maintain good nutrition and

healthy body weight and assessment for early identification of children who are at risk or who are already overweight. Early identification can be achieved via routine measurement of variables such as BMI, skin folds assessment, and body weight (AAP, 2003; SPN, 2007). This will allow for prevention and early intervention for those children with elevated physiologic measurements to prevent some of the long-term physiologic and psychosocial consequences of overweight and obesity (Anderson & Butcher, 2006; Friedlander et al., 2003; Reilly et al., 2003; Schwartz & Puhl, 2003; Styne, 2001).

Because nurses provide most of the education given to parents in many healthcare settings, it is crucial that they provide accurate and culturally and developmentally appropriate information to parents about nutrition issues. Anticipatory guidance and education for parents should include information about good nutrition and eating habits including how to calculate appropriate portion sizes and fat content of foods, reading labels on packaged foods and the health risks that being overweight poses for children among other topics (SPN, 2007). Nurses also need to be aware of and sensitive to the varying perceptions of body weight in children that are found in different cultures. It would be helpful for nurses to focus and frame their counseling efforts related to body weight within the context of how overweight and obesity can have a negative impact on health and functioning in the future (Reifsnider et al., 2006a). Parents may not be concerned for child weight at an early age, but will often recognize the disability and dysfunction that can occur related to obesity in later childhood, adolescence, and adulthood. Beginning an open and honest dialogue with parents of young children regarding the issues surrounding child body weight is an important step that all nurses

can take in their practice settings to help parents improve the accuracy of their perceptions of body weight in children.

Nursing Research

According to James, Leach, Kalamara and Shayeghi (2001), healthcare providers are beginning to see the negative impact on overall health that the childhood obesity epidemic is creating. The World Health Organization (2007) estimates that over 20 million children under age five are currently overweight. Parents cannot become involved in obesity preventions and treatment if they are unaware of what constitutes a healthy or unhealthy body weight in their toddler or preschool aged children (Baughcum et al., 2000). The reality and scope of the impending childhood obesity crisis, along with the results of the current study, have led to implications and recommendations for future qualitative and quantitative research on the topic of parental perceptions of body weight in toddlers and preschool children.

First, more qualitative research is needed on the subject of parental perceptions of body weight in toddlers and preschool children. The findings from this and other studies have identified that parents may not use objective data sources to determine the appropriateness of a child's weight and some parents cannot determine and articulate a definition for healthy body weight in young children. More in-depth interviews with parents of children with weight problems are needed to ascertain how perceptions of child weight change when parents are informed that their child has a weight problem. It would be important to conduct further descriptive studies on how parental perceptions form and the process of acceptance that may occur when parents are informed that their

child is overweight. In addition, there are limited qualitative studies of the perceptions of caregivers other than mothers. Understanding the perspectives of various caregivers, including fathers, grandparents, and daycare workers, is crucial because children are often cared for and fed by people other than their mothers.

Second, further quantitative study of the potential relationships between parenting efficacy, health literacy, and perception of child body weight is needed. It will be necessary to replicate the examination of the relationships between parental perceptions of child body weight, health literacy, and perceived efficacy from the current study with more diverse samples and to correct instrument and measurement errors that were found in this study. Furthermore, there was a relationship between parents' health literacy levels and their abilities to correctly perceive their children's weight. This is a promising area of research and could generate further interventions that are tailored to parental health literacy levels and childhood obesity.

In future studies changes in measurement are needed for the concept of perception of child body weight. Future studies should include more specific measures of perception of child body weight including having the parents view a series of figure drawings or photos and select the sketch or photo that most closely resembles their child. These data can then be compared to the child's actual weight to determine whether parental perceptions of child body weight are accurate or if a misperception exists. Standardized and validated figures drawings are available from authors of a previous study (Eckstein et al., 2006), and standardized photo sets can be found on the CDC website (Reifsnider et al., 2006a). The researcher believes that having a more standard measure of perception

will aid in interpretation of results and prevent bias on the part of the participants and researcher in regard to labeling children as overweight or underweight.

Although the relationship between parental efficacy and perceptions was not statistically significant in this study, it warrants further investigation based on the association proposed by Roden (2004a, 2004b) in the Revised Health Belief Model. As mentioned previously, perceived parental efficacy needs to be measured in both a global and task specific sense. This will require the administration of a global instrument, such as the Parenting Efficacy Scale, and a task specific measure, such as the Self Efficacy in Parenting Task Index or Parental Health Behavior Questionnaire. Having more than one measure of efficacy will more clearly define the role of this concept in parental perception of child body weight.

Qualitative and quantitative examination of the impact of cues to action on the perceptions parents have of their children's weight status is also needed. Cues to action can be internal or external, and according to Roden (2004a, 2004b) it is important for providers to consider external cues including the effects of media campaigns and advice from providers on how parents view their child's body weight. Future studies on the phenomenon of parental perceptions of child body weight should include this concept from Roden's (2004a, 2004b) model so that the effects of education and counseling provided by nurses and others can be assessed. Examining parents' views on these external cues will help providers better understand how to provide education to parents and develop successful interventions.

Finally, longitudinal studies of parental perceptions of preschool child body weight should be undertaken. Perceptions are thought to be fluid and influenced by a

variety of factors. An optimal way to address this concept is to follow parents and children over an extended period of time and assess for changes in perceptions and factors or events that may be related to or trigger perceptual shifts. This would provide data on how parental perceptions of child body weight change across the toddler and preschool age range and as children move from relying on parents to feed them to making some of their own choices about when and how much to eat.

Policy Development

As seen in the current study, parents often have misperceptions of their own body weight as well as their child's body weight, and these misperceptions are part of the burgeoning obesity epidemic in our country. According to Sheehan and Yin (2006), both public and private institutions have often been reticent about involving themselves in decision making related to childhood weight and nutrition issues, leaving families to develop their own solutions to this serious health problem. This is disturbing given that obesity, especially childhood obesity, is a public health crisis that will require an extensive response from both the healthcare system and government agencies (Sheehan & Yin, 2006).

Public policy must also be developed not only to aid children and their families but as a safeguard for the nation's already strained healthcare system. It is estimated that the total direct and indirect cost of obesity and its co-morbidities will be more than \$100 billion per year (Schwartz & Puhl, 2003; Sheehan & Yin, 2006; Tschannen-Moran et al., 2003; Zeller & Daniels, 2004). In addition, because obesity decreases life expectancy and

quality of life for children (IOM, 2004b), it should be addressed with the same urgency as other public health concerns (Sheehan & Yin, 2006).

Research data addressing parental perceptions of child body weight from well-designed studies will allow nurses to play a central role in the development of policies that promote healthy weight and appropriate nutrition in young children and their families. Policy efforts by nurses should be aimed at prevention of childhood overweight and the development of effective treatments for those children already affected (Sheehan & Yin, 2006). It has been suggested that prevention is preferred to developing and implementing treatments for overweight and obesity in children (Wofford, 2008). Efforts for prevention should be aimed at children in the toddler and preschool periods because of the increasing numbers of young children who are becoming overweight (Wofford, 2008). Nurses have intimate contact with preschool children and families in a variety of settings and also have the respect of public and private organizations. This makes nurses the perfect group to develop partnerships that include families, communities, businesses, schools, governmental agencies and other interested parties, all working in conjunction to help children maintain a healthy weight (Sheehan & Yin, 2006).

One of the most effective areas in which nurses can work toward policies changes to decrease the large number of toddlers and preschool children who are at risk for or already overweight is to help parents target an area that has been termed the toxic environment (MacPhee, 2008, p. 1). A toxic environment is one in which “people have increased access to high-energy foods and decreased physical activity incentives” (MacPhee, 2008, p. 1). One policy that could be lobbied for by nurses and other healthcare professionals is regulation of commercials aimed at young children and their

parents. MacPhee (2008) reports that children see over 10,000 commercials a year that relate to food and eating, but these messages are usually for unhealthy items such as fast food and candy. Policies need to be developed that limit these advertisements and that promote the development of targeted messages for toddlers and preschool children related to healthy eating and healthy living. Nurses could work in conjunction with various private and government agencies to develop a series of DVDs or commercials that highlight positive nutrition and exercise messages for the preschool age population (IOM, 2006a). These types of materials will capitalize on young (age 2-5 years) children's interest in media and technology. The benefit of such programming is that it limits the number of detrimental health messages transmitted to toddlers and preschool children using commercials for unhealthy foods, and replaces them with positive imagery of what having a health body can mean in terms of the physical, emotional, and social aspects of health (IOM, 2006a).

Research on parental perceptions of toddlers and preschool child body weight can inform policy changes in the WIC program. During WIC visits, health issues deemed important by state and national health agencies are addressed. These issues include whether or not the child eats according to the food guide pyramid, whether or not the child receives dental care, and whether or not anyone in the home uses drugs or alcohol. Nurses should support policy changes that include adding the assessment of parental perception of child body weight to the WIC screening tool. If parents have inaccurate perceptions of their child's body weight at the WIC visit, they could receive immediate counseling on how to determine healthy body weight for a toddler or preschool age. Counseling would include information about subjective and objective cues regarding

child body weight, such as comparisons to other children of the same age, activity and energy levels, growth charts and clothing size, that would facilitate the parent to have an improved understanding of their child's body weight. This would provide an immediate intervention for a parent and support the development and maintenance of accurate perceptions of child body weight in the future.

Conclusion

Accurate perceptions of weight in children is a key to understanding parental actions on behalf of their children in regard to promoting healthy weight and managing overweight. This dissertation study investigated how parents perceived body weight in their toddlers and preschool children and factors that may have influenced these perceptions. The findings offer new insights into the relationships among parental psychosocial factors, concerns and accuracy of their perception of their children's body weight and health literacy. Findings also add new knowledge about how parents define healthy/appropriate body weight and weight problems in young children. The continued study of these phenomena is necessary to enable nurses to help parents provide the best health outcomes for their children and to have a positive impact on the epidemic of early childhood overweight and its related co-morbidities in future generations.

APPENDIX A

Parental Demographic Form

**Parental Perceptions of Body Weight in Preschool Children
Parental Demographic Questionnaire**

1. What is your gender?
_____ MALE _____ FEMALE
2. What is your age?
_____ Years old
3. Which of the following best describes your race/ethnicity?
_____ White, Non-Hispanic
_____ Hispanic
_____ African American
_____ Other (Please specify _____)
4. What is your education level?
_____ Completed less than 7th grade
_____ Junior high (completed 9th grade)
_____ Partial high school (completed 10th or 11th grade)
_____ High school graduate
_____ Partial college (at least 1 year or specialized training)
_____ Standard college or university graduation
_____ Graduate/professional training (graduate degree)
5. What is your marital status?
_____ Single
_____ Married
_____ Divorced
_____ Widowed
6. What is your occupation? _____
7. What is your spouse's occupation? _____ Not applicable _____
8. What is your total family income per year?
_____ Less than \$5,000
_____ \$5,000-\$9,999
_____ \$10,000-19,999
_____ \$20,000-\$29,999
_____ \$30,000-\$39,999
_____ \$40,000-\$49,999
_____ \$50,000-\$74,999
_____ \$75,000-\$100,000
_____ Above \$100,000
9. How many people live in your house?
10. How many children (age 18 years or less) live in your house?

11. What are the ages of the children in your house?

12. How tall are you?
_____ feet and _____ inches
13. How much do you weight?
_____ pounds

14. What is the age of the child in this study?
 _____years
15. What is the gender of the child in this study?
 _____MALE _____FEMALE
16. Which of the following best describes the race/ethnicity of the child in this study?
 _____White, Non-Hispanic
 _____Hispanic
 _____African American
 _____Other (Please specify_____)
17. Was the child in this study breastfed?
 _____YES _____NO
18. If the child was breastfed, how old were they when they stopped breastfeeding?
 _____years and _____months
19. Did the child in this study receive any formula?
 _____YES _____NO
20. If the child received formula, how old were they when they stopped taking formula?
 _____years and _____months
21. At what age did the child in this study begin eating solid foods?
 _____years and _____months
22. Does your child have any health problems?
 _____yes _____no
 If yes, please specify_____
- _____
23. What is the birth order of this child?
 _____First born, _____Middle child, _____Youngest child
24. At this time, how do you view your child's weight?
 _____My child is underweight at this time
 _____My child is at an appropriate weight at this time
 _____My child is overweight at this time

APPENDIX B

Parental Sense of Competence (Efficacy Subscale)

Parental Sense of Competence (Efficacy Subscale)
(Gibaud-Wallston, 1977; Johnston & Mash, 1989)

Listed below are a number of statements. Please respond to each item, indicating your agreement or disagreement with each statement in the following manner:

If you strongly agree, circle the letters SA
If you agree, circle the letter A
If you mildly agree, circle the letters MA
If you mildly disagree, circle the letters MD
If you disagree, circle the letter D
If you strongly disagree, circle the letters SD

1. The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.
SA A MA MD D SD
2. I would make a fine model for a new mother/father to follow in order to learn what she/he would need to know in order to be a good parent.
SA A MA MD D SD
3. Being a parent is manageable, and any problems are easily solved.
SA A MA MD D SD
4. I meet my own personal expectations for expertise in caring for my child.
SA A MA MD D SD
5. If anyone can find the answer to what is troubling my child, I am the one.
SA A MA MD D SD
6. Considering how long I've been a mother/father, I feel thoroughly familiar with this role.
SA A MA MD D SD
7. I honestly believe I have all the skills necessary to be a good mother/father to my child.
SA A MA MD D SD
8. Being a good mother/father is a reward in itself.
SA A MA MD D SD

Scoring- SA=6, A=5, MA=4, MD=3, D=2, SD=1

The scores for all eight items are summed, and higher scores indicate higher levels of efficacy in the parenting role.

APPENDIX C

The Child Feeding Questionnaire

**The Child Feeding Questionnaire (CFQ)
(Birch, Fisher, Grimm-Thomas, Markey,
Sawyer & Johnson, 2001)**

Using the scale below, please mark one response for each question which best corresponds to your answer. **Please answer about your child who is in the study.**

	Never	Seldom	Half of Time	Most of Time	Always
1. When your child is at home, how often are you responsible for feeding him or her?					
2. How often are you responsible for deciding what your child's portion sizes are?					
3. How often are you responsible for deciding if your child has eaten the right kind of foods?					

Using the scale below, please indicate how you would classify **your own weight at each of the 4 time periods** listed below. **Please mark only one response for each time period listed.**

	Markedly Under-weight	Under-weight	Average	Overweight	Markedly Overweight
4. Your Childhood (5 to 10 years old)					
5. Your Adolescence					
6. Your 20's					
7. Currently					

Using the scale below, please indicate how you would classify **your child's weight at each of the time periods** listed below. **Please mark only one response for each time period listed.**

	Markedly Under-weight	Under-weight	Average	Overweight	Markedly Overweight
8. Your child during the first year of life					
9. Your child as a toddler					
10. Your child as a pre-schooler					

Using the scale below, please mark one response for each question which best corresponds to your answer. **Please answer about your child who is in the study.**

	Unconcerned	Slightly Unconcerned	Neutral	Slightly Concerned	Concerned
11. How concerned are you about your child eating too much when you are not around?					
12. How concerned about you about your child having to diet to maintain a desirable weight?					
13. How concerned about you about your child becoming overweight?					

Using the scale below, please mark one response for each question which best corresponds to your answer. **Please answer about your child who is in the study.**

	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree
14. I have to be sure that my child does not eat too many sweets (candy, ice cream, cake or pastries).					
15. I have to be sure that my child does not eat too many high fat foods.					
16. I have to be sure that my child does not eat too much of his or her favorite foods.					
17. I intentionally keep some foods out of my child's reach.					
18. I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior.					
19. I offer my child his or her favorite foods in exchange for good behavior.					
20. If I did not guide or regulate my child's eating, he or she would eat too many junk foods.					
21. If I did not guide or regulate my child's eating, he or she would eat too much or his or her favorite foods.					

22. My child should always eat all of the food on his or her plate.					
23. I have to be especially careful to make sure my child eats enough.					
24. If my child says, "I'm not hungry", I try to get him or her to eat anyway.					
25. If I did not guide or regulate my child's eating, she would eat much less than he or she should.					

Using the scale below, please mark one response for each question which best corresponds to your answer. **Please answer about your child who is in the study.**

	Never	Rarely	Sometimes	Mostly	Always
26. How much do you keep track of the sweets (candy, ice cream, cake, pies, pastries) that your child eats?					
27. How much do you keep track of the snack foods (potato chips, Doritos, cheese puffs) that your child eats?					
28. How much do you keep track of the high fat foods that your child eats?					

Appendix D

Test of Functional Health Literacy in Adults-Short Form
(Parker, Baker, Williams, & Nurss, 1995)

Short Test of Functional Literacy in Adults

STOFHLA

READING COMPREHENSION

HAND PATIENT THE READING COMPREHENSION PASSAGES TO BE COMPLETED. FOLD BACK THE PAGE OPPOSITE THE TEXT SO THAT THE PATIENT SEES ONLY THE TEXT.

PREFACE THE READING COMPREHENSION EXERCISE WITH:

“Here are some other medical instructions that you or anybody might see around the hospital. These instructions are in sentences that have some of the words missing. Where a word is missing, a blank line is drawn, and 4 possible words that could go in the blank appear just below it. I want you to figure out which of those 4 words should go in the blank, which word makes the sentence make sense. When you think you know which one it is, circle the letter in front of that word, and go on to the next one. When you finish the page, turn the page and keep going until you finish all the pages.”

STOP AT THE END OF 7 MINUTES

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A

Your doctor has sent you to have a _____ X-ray.

- a. stomach
- b. diabetes
- c. stitches
- d. germs

You must have an _____ stomach when you come for _____.

- | | |
|-----------|--------|
| a. asthma | a. is. |
| b. empty | b. am. |
| c. incest | c. if. |
| d. anemia | d. it. |

The X-ray will _____ from 1 to 3 _____ to do.

- | | |
|---------|-----------|
| a. take | a. beds |
| b. view | b. brains |
| c. talk | c. hours |
| d. look | d. diets |

THE DAY BEFORE THE X-RAY.

For supper have only a _____ snack of fruit, _____ and jelly.

- | | |
|-----------|-----------|
| a. little | a. toes |
| b. broth | b. throat |
| c. attack | c. toast |
| d. nausea | d. thigh |

with coffee or tea.

After _____, you must not _____ or drink .

- | | |
|--------------|----------|
| a. minute, | a. easy |
| b. midnight, | b. ate |
| c. during, | c. drank |
| d. before, | d. eat |

anything at _____ until after you have _____ the X-ray.

- | | |
|---------|--------|
| a. ill | a. are |
| b. all | b. has |
| c. each | c. had |
| d. any | d. was |

THE DAY OF THE X-RAY.

Do not eat _____.

- a. appointment.
- b. walk-in.
- c. breakfast.
- d. clinic.

Do not _____, even _____.

- | | |
|-----------|------------|
| a. drive, | a. heart. |
| b. drink, | b. breath. |
| c. dress, | c. water. |
| d. dose, | d. cancer. |

If you have any _____, call the X-ray _____ at 616-4500.

- | | |
|---------------|---------------|
| a. answers, | a. Department |
| b. exercises, | b. Sprain |
| c. tracts, | c. Pharmacy |
| d. questions, | d. Toothache |

PASSAGE B

I agree to give correct information to _____ if I can receive Medicaid.

- a. hair
- b. salt
- c. see
- d. ache

I _____ to provide the county information to _____ any

- | | |
|----------|--------------|
| a. agree | a. hide |
| b. probe | b. risk |
| c. send | c. discharge |
| d. gain | d. prove |

statements given in this _____ and hereby give permission to

- a. emphysema
- b. application
- c. gallbladder
- d. relationship

the _____ to get such proof. I _____ that for

- | | |
|-----------------|----------------|
| a. inflammation | a. investigate |
| b. religion | b. entertain |
| c. iron | c. understand |
| d. county | d. establish |

Medicaid I must report any _____ in my circumstances

- a. changes
 - b. hormones
 - c. antacids
 - d. charges
-

within _____ (10) days of becoming _____ of the change.

- | | |
|----------|----------|
| a. three | a. award |
| b. one | b. aware |
| c. five | c. away |
| d. ten | d. await |

I understand _____ if I DO NOT like the _____ made on my

- | | |
|---------|---------------|
| a. thus | a. marital |
| b. this | b. occupation |
| c. that | c. adult |
| d. than | d. decision |

case, I have the _____ to a fair hearing. I can't _____ a

- | | |
|-----------|------------|
| a. bright | a. request |
| b. left | b. refuse |
| c. wrong | c. fail |
| d. right | d. mend |

hearing by writing or _____ the county where I applied.

- a. counting
- b. reading
- c. calling
- d. smelling

If you _____ TANF for any family _____, you will have to

- | | |
|----------|--------------|
| a. wash | a. member, |
| b. want | b. history, |
| c. cover | c. weight, |
| d. tape | d. seatbelt, |

_____ a different application form. _____, we will use

a. relax	a. Since,
b. break	b. Whether,
c. inhale	c. However,
d. sign	d. Because,

the _____ on this form to determine your _____.

a. lung	a. hypoglycemia.
b. date	b. eligibility.
c. meal	c. osteoporosis.
d. pelvic	d. schizophrenia.

**STOFHLA: Reading Comprehension
Scoring Key**

14 Point Font

Passage A	Passage A	Passage A	Passage B	Passage B	Passage B
A1 a	A6 a	A12 c	B17 c	B24 d	B33 d
A2 b	A7 c	A13 b	B18 a	B25 b	B34 c
A3 d	A8 b	A14 c	B19 d	B26 c	B35 b
A4 a	A9 d	A15 d	B20 b	B27 d	B36 b
A5 c	A10 b	A16 a	B21 d	B28 d	
	A11 c		B22 c	B29 a	
			B23 a	B30 c	
				B31 b	
				B32 a	

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