

Parenting Behaviors and Their Relationship with a Child's Weight Status

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PARENTING BEHAVIORS AND THEIR RELATIONSHIP
WITH A CHILD'S WEIGHT STATUS

by

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ABSTRACT
PARENTING BEHAVIORS AND THEIR RELATIONSHIP
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Marquette University, 2010

Pediatric obesity is a critical healthcare problem that has continued to increase in prevalence. It has been well established that pediatric obesity is a multifactorial problem with no easy solution. Complicating matters has been the fact that there has been a disproportionate increase across ethnicity and socioeconomic status. Parents have been found to play a critical role supporting a child's behavior through environment, role modeling and ongoing parenting practices.

This study utilized a cross sectional correlational study design to determine what the relationship is, if any, between a child's weight status and parenting behaviors. In addition the study examined if the relationship was influenced by ethnicity, socioeconomic status, child's activity level, child's nutritional behaviors, and the parent's body mass index. Parenting behaviors were assessed both by the child and by the parent to identify if the two perspectives were congruent with one another.

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CHAPTER 1

Introduction

The prevalence of childhood obesity has been steadily increasing and it is now regarded as one of our country's foremost healthcare problems or has even been referred to as a public health crisis (Wang & Beydoun, 2007). Unlike many health problems, the attempts to treat childhood obesity is complicated by the fact that it is a multifactorial problem stemming from a combination of environmental and genetic factors (O'Brien et al., 2007). Acknowledging that there is not an easy solution, research needs to continue in attempts to address this health care epidemic.

The prevalence of overweight in our country's youth increased between 1980 and 2004 and the percentage of children, who had a body mass index (BMI) that measured above the 95th percentile or within the obese category, continued to increase (Ogden, Carroll, & Flegal, 2008). Between 1980 and 2002, the prevalence of obesity tripled in children and adolescents between six and nineteen years of age (Ogden, Carroll, Curtain et al., 2006). Among children and adolescents between the ages of two through nineteen years of age, 31.9% were considered heavier than their ideal body weight with their BMI being at or above the 85% (Ogden et al., 2008).

The increase in pediatric overweight and obesity has not been proportionate across race or socioeconomic status. African American females and Mexican American females were more likely to have a higher BMI for age than non-Hispanic Caucasian females (Ogden et al., 2008). Mexican American males were significantly more likely to have a higher BMI for age than non-Hispanic Caucasian males and African American

males were more likely to have a higher BMI for age than non-Hispanic Caucasian males, but only at the highest BMI for age levels (BMI \geq 97 percentile) (Ogden et al., 2008). The prevalence of pediatric overweight and obesity among Native American children has been shown to be higher than the national average (Wang & Beydoun, 2007).

There has been an increase in obesity in all socioeconomic groups with lower socioeconomic status (SES) African American men, Caucasian women and children, Native Americans, and Pacific Islanders being disproportionately affected (Wang & Beydoun, 2007). Additional studies have found some inconsistencies regarding the relationship between pediatric obesity and SES. When the United States National Health and Nutrition Examination Surveys (NHANES) were used to examine the trends in adolescent obesity from 1971-2004 there was an increased disparity in adolescent overweight status based on family poverty status among 15-17 year olds, but not among the 12 to 14 year olds (Miech et al., 2006). The disparity of increased obesity in the older adolescents was similar across the demographic subgroups of males, females, Caucasian, and African Americans (Miech et al., 2006). Another study that utilized the National Longitudinal Study of Adolescent Health found that families of Caucasian females who had a higher SES were associated with a lower obesity prevalence (Gordon-Larsen, Adair, & Popkin, 2003). This finding was not replicated when assessing African American females (Gordon-Larsen et al., 2003).

Childhood obesity has been linked to multiple medical complications that can involve almost every organ within the body. Many of these complications can have a devastating effect and previously have not been seen in children at the rate that they are

currently being documented. Sleep apnea and gallbladder disease tripled in children between 1979-1981 and 1997-1999 (Dietz & Robinson, 2005). Cardiovascular disease, fatty liver disease and type 2 diabetes have dramatically increased with type 2 diabetes accounting for up to 45 percent of all new diabetes diagnoses in the pediatric population (Dietz & Robinson, 2005). Equally as important as the associated disease processes are the negative psychological concerns such as depression, poor body image and low self-concept (Davison & Birch, 2001). Understanding the health concerns and associated co-morbidities illustrates the need for treatment and prevention of childhood obesity.

Because weight gain occurs when there is an excess of calories taken in and a decrease in expended calories, the treatment plan will usually focus on improving diet, decreasing sedentary activity and increasing physical activity. While this approach appears simple, the opposite is often the case. Treating overweight children has been complex and with the increasing prevalence in childhood overweight and obesity it is clear that we are not succeeding.

Treatments that focus on diet and activity along with behavioral therapy appear to be the most successful approaches (Spear et al., 2007). At the same time, the child's environment has to be assessed and the family must be included in the changes for the best chances at success (Golan, Kaufman, & Shahar, 2006). Parents are the primary caregivers, disciplinarians, and moderators of a child's day-to-day life. The parents control the family's home environment and can promote, support and role model healthier lifestyle changes (Golan & Weizman, 2001; Stein, Epstein, Raynor, Kilanowski, & Paluch, 2005). At the same time it should be noted that the opposite can occur and parents can impede the child's success regarding weight loss.

It has been demonstrated that by just having an overweight parent there is a direct risk factor for pediatric obesity to occur in the child (Agras, Hammer, McNicholas, & Kramer, 2004; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Explanations for this include genetics, but also note the potential for a parent's actions to negatively impact the child's weight. The negative impact can occur through excessive prompting or use of food to control a child's behavior or over controlling the food that is eaten. These attempts to curb weight gain inadvertently disrupt the child's learning of self-control which subsequently can increase food intake (Agras et al., 2004). At an early age parents are responsible for determining the food and portion sizes provided, the frequency of meals and the social contexts in which the food is offered (Birch, 2006).

An additional mechanism through which a parent can negate weight loss or maintaining a healthy weight in a child is by expecting them to have self-control and to take responsibility to change their health behaviors on their own. This was illustrated in a study that compared the efficacy of a family based approach that focused on treating the child as the agent of change versus a parent focused program, that treated the parent as the agent of change (Golan, Weizman, Apter, & Fainaru, 1998). The children who were expected to be primarily responsible for their actions toward weight loss and were not adequately supported by their family found it difficult to avoid temptations left in the house and had increased frustration when they could not meet their goals (Golan et al., 1998).

The child's propensity towards obesity is influenced by multiple contexts of development (Kitzmann & Beech, 2006). Family based programs have been utilized and found successful in other chronic illnesses such as asthma and cystic fibrosis (Kitzmann

& Beech, 2006). It has been well accepted that incorporating and understanding the importance of the family unit is a necessity. Limitations to finding successful evidence based treatment strategies include the fact that many studies are correlational thus cannot imply causality, do not include ethnically diverse samples and are not intervention based.

The role of parents and parenting is instrumental in regards to a child's socialization process. Socialization is the adult initiated process in which developing children adapt to their culture and become individuals with their own unique values and habits (Baumrind, 1980). In the psychology literature, parenting style has been extensively studied and has evolved in how it has been conceptualized since it was initially discussed in the 1930's and 1940's (Darling & Steinberg, 1993). Initially it was a "heuristic device to describe the parenting milieu" (Darling & Steinberg, 1993, p. 493). Diana Baumrind took the study of parenting style to the next level where she described three family parenting styles (authoritative, authoritarian, and permissive) and linked them to the child's cognitive and social competence (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). Throughout the years a fourth parenting style, neglectful, was included (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006).

Diana Baumrind defined a permissive parent as one who "attempts to behave in a nonpunitive, acceptant, and affirmative manner toward the child's impulses, desires, and actions" (Baumrind, 1966, p. 489). The permissive parent does not place high demands on the child for chores or behavior and does not see the parent as a role model or active agent in the development of the child but as a resource for the child to use as the child would like (Baumrind, 1966). The child regulates their own behaviors as much as

possible and the parent will use reason and manipulation, but not overt power, to get what they would like accomplished (Baumrind, 1966).

The authoritarian parent is one who “attempts to shape, control, and evaluate the behavior and attitudes of the child in accordance with a set standard of conduct, usually an absolute standard, theologically motivated and formulated by a higher authority” (Baumrind, 1966, p. 490). The parent expects obedience and will punish or use force when the child is not behaving appropriately. The child’s autonomy is restricted, chores are expected to be performed and questioning of the parent is not accepted (Baumrind, 1966).

The authoritative parent is a parent who “attempts to direct the child’s activities in a rational, issue-oriented manner” (Baumrind, 1966, p. 491). The child is encouraged to ask questions and will even be requested to share their thoughts when they do not agree with the parent. In return the parent will share their reasoning and recognize the child’s thoughts and individual interests in their decision-making. The parent will exert firm control when parent and child do not agree, but will not overwhelm the child with restrictions. The authoritative parent will use reasoning, power, and shaping of behavior through reinforcement to accomplish objectives (Baumrind, 1966). The authoritative style of parenting has consistently been seen as the superior parenting style with children emerging as socially responsible and more independent than other children parented with the other styles (Baumrind, 1966; Dornbusch et al., 1987).

Throughout the definitions, there has been the ability to delineate each style by the level of demandingness and level of responsiveness and sensitivity that the parent has toward the child (Baumrind, 1966; Darling & Steinberg, 1993). For many years the

construct of parenting style was operationalized by defining it in two dimensions, based on the demands placed on the child for self-control and the sensitivity and emotional involvement of the parent (Baumrind, 1966; Rhee et al., 2006). In more recent years the research has acknowledged the finding that authoritative parenting is consistently related to healthy child development and for this reason has moved from focusing on the general parenting style and has begun to address the individual behaviors that define authoritative parenting: behavioral control, psychological control and acceptance (Barber, Stolz, & Olsen, 2005).

While parenting styles directly affect the parenting behavior, it is then through the parenting behavior or distinct parenting practices that the child is directly influenced. Darling and Steinberg (1993) proposed that both the parenting styles and parenting behaviors result from the parent's goals and values, but the parenting behavior has a direct effect on the development of specific child behaviors and characteristics. It is thought that the parenting style has an indirect effect on child development and can change the effectiveness of the parenting practices (Darling & Steinberg, 1993). Darling and Steinberg (1993) describe the parenting styles as a "contextual variable that moderates the relationship between specific parenting practices and specific developmental outcomes" (p. 493). By focusing on the parenting behavior there is an increased benefit to researchers by increasing opportunities where change or intervention can occur focusing on specific behaviors or practices versus attempting to change a style of parenting as a whole.

Parenting styles and to a lesser degree parenting practices have been studied within many contexts. Parenting styles and practices related to child feeding have been

addressed, although the majority of studies have included parents of younger children (preschool and early school age) and lacked diversity. In the educational context there has been literature published that has included school age children and adolescents with diverse backgrounds. These studies have examined academic success, peer group affiliation, changes in adolescent adjustment and competence related to parents involvement in child's education and encouragement provided to child to succeed in school (Brown, Mounts, Lamborn, & Steinberg, 1993; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Steinberg, Lamborn, Dornbusch, & Darling, 1992).

The consistent finding within the academic studies is that the child who has an authoritative parent or parent with authoritative parenting behaviors had more positive, although indirect, outcomes within the study. Specific findings regarding academic success found that the child who described their parent as someone who treats them warmly, democratically and firmly were more likely to have a positive attitude toward school and consequently academic success (Steinberg et al., 1989). Regarding peer group affiliation, parental behaviors had a significant impact on the child's behaviors, which then was associated in an indirect manner with crowd affiliation (Brown et al., 1993). Examples of this include parental monitoring being inversely related to drug use and directly associated with self-reliance that improved crowd affiliation. What has not been established is the relationship between parenting behaviors and childhood overweight and obesity.

Statement of the Problem and Study Need

The prevalence of childhood obesity has increased dramatically and has been referred to as a healthcare epidemic (Ogden, Carroll, Curtain et al., 2006; Ogden et al., 2008; Regber, Berg-Kelly, & Marild, 2007). Despite the rise in obesity rates and the increased risk it puts on the medical and psychosocial health of our youth, there is not a well-documented plan for treating or preventing childhood obesity. The American Medical Association collaborated with the Department of Health and Human Services and Centers for Disease Control and Prevention to convene an expert committee that developed recommendations on the assessment, prevention and treatment of childhood overweight and obesity which was endorsed by multiple lead organizations involved with obesity efforts, including but not limited to, the American Academy of Pediatrics, American Dietetic Association, National Association of Pediatric Nurse Practitioners, American Heart Association, The Endocrine Society and the Obesity Society (John-Sowah, 2007). In these recommendations the importance of partnering with parents is noted, recognizing the critical role that the family plays on influencing the child's health. Parenting style is seen as an important aspect of prevention (M. Davis et al., 2007).

While childhood overweight and obesity is a complicated and multifactorial problem, continued research needs to be performed in an attempt to understand factors that may curb or decrease this epidemic. Utilizing the family as a target in treating or preventing childhood obesity has been well established in the literature (M. Davis et al., 2007; Golan & Crow, 2004b; Kitzmann & Beech, 2006). The relationship between parenting behaviors and the children's weight status has not been well established. The

limited research that has been published focuses on younger Caucasian samples. Further studies need to be performed to include a diverse sample of ages and ethnicities.

Purpose of the Study

The purpose of this study was to examine the relationship of perceived parenting behaviors, parenting behaviors in an area of increased parental concern, family food practices related to restricting food, pressuring the child to eat and monitoring of food intake, demographic variables, and school age African American and Caucasian children's body mass index. Specific hypotheses and research questions were as follows:

Hypotheses

1. A child's assessment of their parent's parenting behaviors will be more strongly associated with weight status than a parent assessment of their own parenting behaviors.
2. At best, there will be a moderate correlation between a child's assessment of parenting behaviors and a parent's assessment of their own parenting behaviors.
3. Parents who have higher concerns about their child's weight will utilize higher restriction and monitoring of their child's nutritional intake.
4. Parents who have higher concerns about their child's weight will show parenting behaviors consistent with higher rejection, higher psychological control, and higher firm control.
5. There will be a positive association with general parenting behaviors and domain specific parenting behaviors and the child's weight status, but a stronger relationship will be seen with domain specific parenting behaviors.

6. A greater proportion of parents of youth with a BMI > 85% will display increased concern and control behaviors when compared to parents of the proportion of youth with a BMI < 85%.

Research Questions

1. Is the relationship between parenting behaviors and BMI influenced by:
 - a. Ethnicity
 - b. Socioeconomic status
 - c. Parent's BMI
2. What is the association between parent overweight and parent perceived child overweight with actual BMI and BMIz scores of parent and child?
3. Which child and/or parent perceived parenting behaviors are associated with:
 - a. A child's BMIz score >5 and <85%
 - b. A child's BMIz score >85%

Significance to Nursing

Nurses have the unique opportunity to work with individuals within multiple facets of the community. Traditionally nurses were thought to be hospital bound, but now nurses are found within businesses, schools, hospitals, universities, clinics, and health departments and work independently in many of these organizations. Nurses and advanced practice nurses intersect with our country's youth and often work directly with these children and their families. Nurses are often known for and are responsible for providing education to our patients and communities. As childhood obesity affects an

increased proportion of our youth, nurses have the golden opportunity to spread the message of prevention and treatment.

Examining and disseminating findings of this study that describes the relationship that exists between a child's weight status and parenting behaviors increases the limited knowledge base that currently exists and provides a foundation for additional research. This study has an increased relevance to the nursing field since it focuses on children and includes diverse samples, which are both representative of a vulnerable population.

Summary

This study offers a unique perspective on the long standing and increasing healthcare concern of childhood overweight and obesity. The information gained by examining the relationship between the child's weight status and parenting practices has lead to areas for future intervention in the prevention and treatment of childhood overweight and obesity. This study utilized previous research primarily found in sociology and psychology literature and merged it within the nursing realm while focusing on a vulnerable population.

CHAPTER TWO

Review of the Literature

Pediatric Obesity

Pediatric obesity is a growing concern that has been labeled a health care epidemic (Regber et al., 2007). The potential consequences of pediatric obesity are detrimental to our youth and subsequently our future generations. Pediatric obesity predisposes children and adolescents to multiple medical complications affecting every body system such as hypertension, dyslipidemia, type two diabetes, steatohepatitis, sleep apnea, intracranial hypertension and orthopedic concerns such as slipped capital femoral epiphysis (Daniels et al., 2005; Yanovski & Yanovski, 2003). As important as the body organ complications are the psychosocial ramifications of being an overweight or obese child. Among 107 children and adolescents, impairment in psychosocial health when compared to healthy weight counterparts was 5.9 times higher for the obese or overweight participant by child self report and 13.6 times by parent report (Schwimmer, Burwinkle, & Varni, 2003). Obese and overweight children had impaired school functioning and similar quality of life scores as children who had been diagnosed with cancer (Schwimmer et al., 2003).

The need to effectively treat pediatric obesity is evident, yet our society has not been successful in finding a treatment that has proved triumphant. Between 1980 and 2004 the prevalence of overweight among children in the United States increased and the most obese children became even heavier (Ogden, Carroll, Curtain et al., 2006; Ogden et al., 2008). Most recently 16.3% of children age two through nineteen years old had a

body mass index (BMI) at or above the 95th percentile and 31.9% were at or above the 85th percentile (Ogden et al., 2008). Within this same study, BMI was found to differ significantly by racial group. African American and Mexican American females were more likely to have a higher BMI for age than Caucasian females (Ogden et al., 2008; Wang & Beydoun, 2007). Mexican American and African American males were more likely to have a higher BMI than Caucasian males, although for African American males this was only seen at the highest BMI for age level (BMI >97%) (Ogden et al., 2008). Not only is there a disproportionate prevalence of obesity with minorities but also within SES. Low SES African American males and Caucasian females and children have been shown to have a higher rate of obesity (Wang & Beydoun, 2007).

Substantiating the need to decrease the prevalence of pediatric obesity and providing support that early prevention is needed is related to the fact that one third of obese preschool children and about one half of obese school age children will become obese adults (Wang & Beydoun, 2007). The older the obese child is the higher the probability that the child will remain obese as a young adult (Whitaker et al., 1997). The risk for adult obesity is significantly higher if the mother or father were obese themselves (Whitaker et al., 1997).

Definition of Overweight and Obesity

Terminology and diagnosis of childhood overweight and obesity has been problematic secondary to the stigma associated with these terms. BMI should be utilized when measuring children (August et al., 2008; Barlow & Expert Committee, 2007). BMI is a measurement of body weight adjusted for height and is defined as weight (in kilograms) divided by the square of height (in meters) and has been shown to correlate

with body fat. Due to the distribution of BMI changing with a child's age, an absolute BMI number is not recommended, but use of BMI percentiles are appropriate to utilize in ages two through nineteen years of age (Barlow & Expert Committee, 2007). If a child's BMI is below the 85% it is considered safe or unlikely to pose a great health care risk. If BMI is between the 85% and 94% the child is termed overweight and if above the 95% is considered obese (August et al., 2008; Barlow & Expert Committee, 2007).

Causes – Environment versus Genetic

The genetic predisposition to obesity has always been acknowledged, but with the steep increase in prevalence it is also noted that environment and behavior play a major role in predicting obesity. Supporting the role of genetic risk have been studies that have assessed twins and shown their similar risk for obesity (Maes, Neale, & Eaves, 1997). Additional research has been performed that studied hormones such as leptin, ghrelin, and adiponectin. The research has illustrated that these hormones play an instrumental part in the development of obesity by influencing appetite, satiety and fat distribution (Barlow & Expert Committee, 2007; Daniels et al., 2005; Farooqi et al., 2002; Gale, Castracane, & Mantzoros, 2004).

While the genetic component is an important aspect of an individual becoming obese, it is also recognized that an individual's environment and behavior strongly influence the propensity towards obesity. The society's changes that have affected an individual's energy intake (nutritional intake and eating habits) and energy expenditure (physical activity and sedentary activity) are thought to be the cause of the rapid increase of the obesity crisis (Barlow & Expert Committee, 2007; O'Brien et al., 2007).

Obtaining accurate information regarding nutrition has been a difficult task, especially in a child. Dietary assessment tools such as dietary recalls and food frequency questionnaires are often inaccurate due to their susceptibility to underreporting (Bandini, Schoeller, Cyr, & Dietz, 1990; M. Davis et al., 2007). Attempts made at assessing the relationship of the frequency of consumption of dietary fat, calcium and dairy products, and fruit and vegetables to pediatric obesity have shown inconsistent findings (August et al., 2008; M. Davis et al., 2007). This may be due to sample sizes of studies, inaccurate recall of nutritional intake or measurement tools. When examining vegetables it may be related to the broad range of nutritional value of vegetables consumed. Within the United States vegetables that are largely consumed are iceberg lettuce and frozen potatoes, such as French fries, which have little nutritional value (August et al., 2008; M. Davis et al., 2007). Sweetened beverage intake has been linked to childhood obesity. A large intake of 100% fruit juice or any consistent intake of sweetened beverages such as juice drinks and sodas is related to obesity in children (M. Davis et al., 2007; Dietz, 2006; Ludwig, Peterson, & Gortmaker, 2001).

Behaviors surrounding nutrition also play a large part in an individual's risk of obesity. Skipping breakfast, eating out, fast food, portion sizes and snacking have been studied and have been found to have a relationship to obesity in children (M. Davis et al., 2007; McConahy, Smiciklas-Wright, Birch, Mitchell, & Picciano, 2002; Singleton & Rhoads, 1982). The interaction of the family during meals has also been studied and frequency of family dinners was found to be inversely associated with a child's overweight status (M. Davis et al., 2007; Videon & Manning, 2003). When assessing if a parent controlling the nutritional intake of the child plays a role in obesity, inconsistent

findings were found (M. Davis et al., 2007; Johnson & Birch, 1994; Robinson, Kiernan, Matheson, & Farish Haydel, 2001).

The contribution of physical activity and sedentary activity to an individual's obesity status has been examined and can be broken down into assessing an individual's resting metabolic rate, thermogenesis, and amount of physical as well as sedentary activity performed. The physical and sedentary activity level is a modifiable aspect. Similar to nutrition, energy expenditure can be difficult to measure due to an individual's, especially a child's, capacity to understand and recall time, duration and intensity of past activity. Sedentary activity such as television viewing, video game and computer use, has been shown to be related to obesity with children and should be measured (August et al., 2008; Latzer et al., 2009; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002; Viner & Cole, 2005).

Trying to intervene and slow down or decrease the rates of childhood obesity is a daunting task. The obvious discussion of diet, physical activity and sedentary activity cannot be ignored, but unfortunately these are not the foremost or the only predictors of a child's obesity risk. The larger picture needs to be explored when working with children in any context. How a child acquires their health habits and values is critical to understanding before we are able to help them change.

It has been discussed that individuals become who they will be through reciprocal interaction with their environment and for young children the crucial environment is their immediate family (Baumrind, 1980). Young children are dependent on the adults in their life to provide a stimulating, nurturing and safe environment. As parental figures, they will either consciously or subconsciously role model habits, provide access to healthy or

unhealthy habits and largely determine their child's development (Golan & Crow, 2004a). To assess how a child gains their dietary, physical activity and sedentary activity habits it would make sense to examine these behaviors within the parental unit of the child.

Parenting Literature

Parenting itself is a process of complex two-way interactions that occur between the child and the parent (Luther, 2007). In the early 1970's, Diana Baumrind examined the amount of parental control and parental responsiveness and how it affected the child's socio-emotional development (Luther, 2007). Responsiveness refers to the extent to which the parent fosters individuality and self-assertion by being attuned, supportive, and accepting to the child's request (Baumrind, 2005). Responsiveness would include warmth, support of child's autonomy, and reasoned communication. Demandingness refers to the demands that the parent makes on their child to become socialized through behavior regulation, direct confrontation, and maturity demands (behavioral control) along with monitoring or supervising of the child's activities (Baumrind, 2005).

Initially three parenting typologies, permissive, authoritarian, and authoritative, were used to categorize the parenting styles based on the parent's level of responsiveness and demandingness. A fourth parenting style, neglectful, was added shortly after (see Figure 1).

- Permissive parents are more responsive and less demanding of their children.

Permissive parents allow children to make their own decisions, regulate their own activities, avoid exercising control and do not encourage the child to follow set rules. They provide minimal punishment and act more as a friend to the child.

Lower levels of self – regulation has been found in children with permissive parents (Baumrind, 1966; Golan & Crow, 2004a).

- Authoritarian parents are very direct and demanding. They value unquestioning obedience in their children while demonstrating low levels of responsiveness. They will punish the child and restrict the child's autonomy. The parent values order and traditional structure. No verbal give and take is performed with the child in decision making, with the understanding that the parent's word should be accepted without question (Baumrind, 1966; Golan & Crow, 2004a).
- Authoritative parents provide clear and firm direction to their children. When disciplining, they moderate it with warmth, reason, flexibility and verbal give and take. This parent recognizes the child's individual interests, affirms the child's qualities, but will also set standards for future behavior. Authoritative parents are assertive but not intrusive and restrictive (Baumrind, 1966; Golan & Crow, 2004a).
- Neglectful parents are low in both responsiveness and demandingness as well as low in control and affective expression (Baumrind, 1966; Golan & Crow, 2004a).

	High Demandingness	Low Demandingness
High Responsiveness and Sensitivity	Authoritative Respectful of child's opinions, engages in verbal give and take but sets clear boundaries	Permissive Indulgent and does not provide discipline
Low Responsiveness and Sensitivity	Authoritarian Strict disciplinarian with high expectations to follow rules	Neglectful Emotionally uninvolved without rule setting

Figure 1: Parenting Styles

Parenting Style Findings

Authoritative parenting has consistently been shown to correlate with better outcomes including increased cooperation with peers, psychosocial maturity, academic success and lower levels of involvement in delinquent behavior (Darling & Steinberg, 1993; Steinberg, Dornbusch, & Brown, 1992; Steinberg et al., 1994; Steinberg, Lamborn et al., 1992; Steinberg, Mounts, Lamborn, & Dornbusch, 1991). When parenting styles were specifically utilized to examine adherence of regimen and glycemic control in four to ten year old children with diabetes, authoritative parenting, characterized by support and affection, was beneficial (C. Davis et al., 2001).

Permissive parenting has been associated with child alcohol abuse, impulsivity, gambling and aggression, while authoritarian parenting has been related to increased children's aggression and internalized distress (Eneli, Crum, & Tylka, 2008; Steinberg et al., 1994). In a longitudinal study, adolescents from neglectful households initially were

seen to have a psychological and behavioral disadvantage and by the end of the study showed increasing academic disengagement and problem behavior (Steinberg et al., 1994).

Limitations of Previous Work

Previous studies performed that related to weight status and parenting styles were primarily focused on feeding practices such as food restriction or pressure to eat, were performed with white middle class families of mainly preschool or young school age children and only utilized parental self-report.

In previous studies the majority of the instruments utilized parental self report, which has been shown to exaggerate parental acceptance and firm discipline and have been criticized as unreliable (Steinberg, Lamborn et al., 1992). Previous research has shown that the child may be a better rater of parenting than the parent (Schwarz, Barton-Henry, & Pruzinsky, 1985). When parents are assessing their own parenting, there tends to be a bias toward presenting a favorable image of their parenting behaviors (Schwarz et al., 1985). In early research it was stated, “a child’s perception of his parents’ behavior may be more related to his adjustment than is the actual behavior of his parents” (Schaefer, 1965a, p. 413). When a child versus parent report of parental influences was studied, there was considerable disagreement found between the parent and child report of direct and indirect weight related behaviors such as commenting to child about weight or encouragement of child to diet (Haines, Neumark-Sztainer, Hannan, & Robinson-O’Brien, 2008).

Even in other areas related to weight, such as perception of maternal and adolescent weight related behaviors, there was a discrepancy between the adolescent ‘s

reports of maternal dieting when compared to the mother's reports, but it was the adolescent's perceptions that affected their own weight related behaviors (Keery, Eisenberg, Boutelle, Neumark-Sztainer, & Story, 2006). The importance of this finding is that the child's perception is stronger than what the parent may actually be doing indicating that it may not be as important about who gives the accurate report but what affects the outcomes (Keery et al., 2006).

When examining general parenting styles, Steinberg and colleagues have been successful in starting to assess adolescents and attempting to include diverse populations; however their work has not concentrated on weight status but more on delinquent behaviors, academic status and psychosocial well being (Steinberg, Dornbusch et al., 1992; Steinberg et al., 1994; Steinberg, Lamborn et al., 1992; Steinberg et al., 1991). It is understood that adolescents are transitioning to adulthood and attempting to exert their independence. As they establish their own identity they begin to experiment with choices that they are in control of, including nutritional intake choices (Kaur et al., 2006). Adolescents have been found to increase consumption of sweetened beverages, salty snacks and decrease milk intake (Demory-Luce et al., 2004). Although mixed findings are found in the literature, it appears that parents still do influence what the adolescent eats along with food cravings, convenience of food and time available to eat (Neumark-Sztainer, Story, Perry, & Casey, 1999). By using the report of older children or adolescents, the ability to gain the child's perspective of the situation is present. Having a child and parent's perspective can strengthen the study and balance against the potential of a parent providing a more favorable presentation.

Another concern is that fathers' parenting styles or mother/father dyads have not been included in many of the previous studies (Forehand & Nousiainen, 1993). In the studies that have included fathers or parenting dyads, differences in the parenting experience between mothers and fathers is common. In a previous study that included both the mother and father's report, mothers reported having more intense discussions, increased number of conflicts and having a poorer relationship with their adolescent than the father (Forehand & Nousiainen, 1993).

Alternative Approach to Assess Parenting

Building on Baumrind's work with the four parenting style typologies, parenting styles began to be assessed by breaking down the styles into their individual domains. Recognizing that authoritative parenting was consistently seen as the superior parenting typology, the focus began to assess the dimensions of which it was comprised of (Barber et al., 2005). Authoritative parenting style was broken down into three critical dimensions: 1) Parental acceptance, involvement or warmth versus rejection 2) Psychological control or strictness versus psychological autonomy 3) Behavioral supervision or firm versus lax control (Barber et al., 2005; Steinberg, Dornbusch et al., 1992; Steinberg et al., 1991).

Costanzo and Woody (1985) went on to suggest that a parent may change parenting behaviors based on the specific problem so the parenting patterns within parenting should be assessed. The two main areas assessed included the level of concern and the level of constraint that the parents had in the specific domain. High levels of concern would be shown through parental anxiety, verbal warnings and constant reminders about the domain. High levels of constraint would be seen through increased

amounts of control, monitoring and rewarding/punishing of the child's behaviors related to the domain. High levels of concern and constraint would lead to interference with the child naturally learning to self mediate, self control and could lead to decreased abilities in an external environment when parents are not present to self mediate which could lead to self loathing as they age.

The parent's behaviors would be decided based on the parent's own values and their perception of long-term consequences associated with that domain. The proposed assessment strategy did not discount Baumrind's typologies or the fact that authoritative parenting was beneficial, but pointed out that parents may change into a domain specific strategy when having increased concerns about negative developments in their children and this may differ from their general parenting style (Costanzo & Woody, 1985). This thought process would support the need to assess a parent's behaviors versus studying the general parenting style since variations may be seen depending on the situation.

Costanzo and Woody (1985) performed four studies associated with this idea. One of their studies had 8-11 year old children thinking of an emotional event with an adult in the room along with a dish of unshelled peanuts available to them for a snack with the invitation to eat if they wanted. The adult would either stay in the room while they continued to think about the emotional event or would leave to do some other work. When comparing the obese to normal weight groups, obese girls ate more peanuts when left alone than any other group and ate less peanuts than any other group when the adult remained in the room (Costanzo & Woody, 1985).

Another study had parents (41 mothers and 1 father) of 42 children of varying weights ages 8-11 evaluate their children's emotionality, esteem, social tendencies,

activity levels, and eating habits/preferences. Overweight girls were perceived as emotionally embattled, sensitive to peer rejection, and emotionally driven to eat. Parental constraint and concern was highly correlated with daughters' overweight level, with higher weight status having parents exhibit higher concern and constraint (Costanzo & Woody, 1985). Overweight boys were seen as less emotional, less emotionally driven to eat, and not particularly sensitive to peer rejection when compared to their normal weight counterparts. The more overweight the boy the more likely he was to be thought of as obedient and compliant. The parent's perception of the origin of the weight problem in boys was an energy balance problem but with the girls seemed to be an emotional origin (Costanzo & Woody, 1985)

Findings supported Costanzo and Woody's theory that obese children showed evidence of external reactivity to the food domain, yet did not have problems reacting to other external events. This would support the hypothesis that a parent who shows high concern and high constraint interferes with the child's self-control in an external environment. Limitations with this work have been small sample sizes, not including the child's perspective and decreased inclusion of diversity within a limited number of studies.

The parenting style can be a moderator to the specific parenting behavior and should not be discounted. Steinberg et al. (1992) discussed the fact that parenting style plays a moderating role on specific parenting behaviors and that the specific behavior will mediate the parenting style. The example provided was acknowledging involvement in school as an important behavior in determining academic success with a child, but the specific behavior of involvement in school will be more effective in the context of an

authoritative household (Steinberg, Dornbusch et al., 1992). As parenting research continues to evolve, the parenting style still plays an important role. Researchers are recognizing and focusing on the individual behaviors that make up the style along with being open to the fact that parenting behaviors may change based on the domain that is being assessed. This has allowed for increased research opportunities and potential areas for intervention.

Demographics and General Parenting Styles Literature

Mixed findings have been observed within the limited research performed including diverse populations and parenting styles. Steinberg (1992) noted that authoritative parenting varied as a function of ethnicity, parental education, and adolescent sex but not with adolescent age. With other studies involving adolescents and parenting styles, it was found that the positive correlates of authoritative parenting transcend ethnicity, socioeconomic status, and family structure (Steinberg et al., 1991). In this particular study, regardless of these correlates, adolescents from authoritative parents earned higher grades, were more self reliant, reported less anxiety and depression and were less likely to engage in delinquent behavior (Steinberg et al., 1991).

In another study, several of the effects of the parenting style were moderated by the adolescent's ethnicity and were strongest among European-American youth (Steinberg et al., 1994). The study explained these findings by the fact that authoritativeness is more prevalent among European-American and middle class families and that these children were more likely to have these practices echoed in their neighborhoods and social networks than are authoritatively raised children from other ethnic or class backgrounds (Steinberg et al., 1994).

Regarding the negative associations related to authoritarian parental style, Steinberg et al. (1994) did suggest that a subset of the population might benefit slightly from having an authoritarian style. A minority child from an economically disadvantaged background may benefit from a relatively more authoritarian style of parenting since living in those circumstances warrants stricter, more vigilant control. Another theory included that the authoritarianism is moderated by the cultural context in which it occurs. An example would be that one adolescent may interpret parental intrusion while another may perceive it as concern (Steinberg et al., 1994). As noted previously, Steinberg's work has primarily been within the academic performance domain.

Relating Parenting Behaviors to Obesity

While biological and behavioral make up influences the child's risk for obesity, the immediate context or environment of the family plays a large role (Regber et al., 2007). It has been argued that parents provide the largest influence on the child not only through role modeling but through supplying and shaping the household environment surrounding the child (Birch, 2006; Hodges, 2003).

Acknowledging the importance of the parent role, parents have been specifically named as targets of intervention programs when treating pediatric obesity (Decaluwe, Braet, Moens, & Van Vlierberghe, 2006a, 2006b; Golan & Weizman, 2001; Kitzmann & Beech, 2006). The expert recommendations recommend parents participate and be included in the treatment program (Barlow & Expert Committee, 2007). This has been taken even further by having the parents be the only target of intervention with recommendations of leaving the child out of the intervention program completely (Golan

& Crow, 2004b; Golan et al., 2006). Studies that intervene with the parents, but do not simultaneously treat the child, have shown that when treatment is able to change the parent's behavior toward the child the behavior and consequently the weight of the child will also change (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2001; Golan & Crow, 2004b). Approaching parents exclusively shifts the focus of the group from weight issues to parenting issues.

Programs have incorporated parenting styles as part of the treatment intervention. Regber et al. (2007) recommended during parent group counseling to make the parents aware of their parenting styles and to have parents share their experiences with other parents. This creates the opportunity for open dialogue amongst the parents on perceptions of their parenting styles and allows discussion of what has been shown to work best with children. At this point case studies can be incorporated, allowing families to apply different parenting styles to the vignettes (Regber et al., 2007).

Parenting Styles and Feeding Practices

Breaking down parenting styles to the level of responsiveness and demandingness of the parent has been done when assessing feeding practices. Restrictive feeding practices tend to be associated with overeating and poorer self-regulation in preschool age children (Savage, Fisher, & Birch, 2007). Rewarding the child for eating "healthy" foods with energy dense foods often results in the child learning to dislike the "healthy" food. Excessive parental control and pressure to eat may influence dietary intake and disrupt children's short-term behavioral control of food intake (Savage et al., 2007). Savage et al. (2007) summarized several studies and noted that parents with authoritarian feeding practices have fewer fruits and vegetables available in their homes and their

children consume smaller amounts of these. Authoritative feeding was positively associated with consumption of dairy and vegetables (Moens, Braet, & Soetens, 2007). The authoritative parent had high expectations on their children while eating, but also was highly responsive to the child's eating cues and behaviors. The balance of setting limits and having clear expectations regarding the child's needs promoted appropriate nutrition and growth (Savage et al., 2007).

To summarize the link between feeding style and parenting style, authoritarian would be described as attempting to control the child's eating with little regard for the child's choice and preferences. Permissive feeding would be characterized by allowing the child to make his or her own decisions regarding what and how much is eaten. Permissive feeding styles or styles with low response and low demandingness have not been well studied. Authoritative feeding would show a balance between the previous two styles encouraging the child to eat healthy foods but giving choices (Moens et al., 2007).

Eneli, Crum and Tylka (2008) stated that the child's inability to internally self regulate food intake is a consequence of indulgent, uninvolved or authoritarian parenting. The uninvolved or indulgent parent would likely under support their child's feeding by not providing regular feeding opportunities or appropriate role modeling of healthy eating (Eneli et al., 2008). Authoritarian parents may encourage dieting because it involves a high level of punitive control. They are also associated with higher levels of food restriction and pressures to eat which can lead to difficulty with regulating energy intake. In contrast, authoritative parenting is related to child behavioral adjustment and positive feeding interactions. Authoritative parents utilize appropriate but not highly restrictive controls of high density food in the feeding environment relying on child centered

techniques such as allowing the child to participate in choice of foods to be prepared (Eneli et al., 2008). Many of these studies do not differentiate between parenting styles and parenting feeding practices.

Recently a study of 239 parents of first grade children enrolled in rural public schools attempted to predict parenting styles from feeding practices (Hubbs-Tait, Kennedy, Page, Topham, & Harrist, 2008). They obtained self-report from the parents and found that parental perceptions of responsibility and parental monitoring, modeling, and restriction significantly predicted authoritative parenting. Pressure to eat and restriction predicted authoritarian style. Parental modeling significantly predicted general permissive parenting. Overall there was a relationship between feeding practices and general parenting styles being the most obvious for authoritative style with feeding practices explaining 21% of the variance. For the authoritarian and permissive parenting the amount of variance shared with parental feeding practices were 15% and 8% respectively.

Additional Parenting Style Studies

There are limited studies that specifically assess parenting styles and weight status. When assessing overweight status in an Australian sample of 872 first grade children from socio-economically and ethnically diverse families with young children, authoritarian families were found to be almost five times more likely to have an overweight child when compared to authoritative families after adjusting for race and income (Rhee et al., 2006).

Another large study contradicts the above findings of overweight status and authoritarian parenting style. This study assessed the BMI of Australian children, four to

five years of age, and correlated it to the mother and father's parenting dimensions and parenting styles while adjusting for parents' BMI status (Wake, Nicholson, Hardy, & Smith, 2007). The mothers' parenting behaviors and styles were not associated with the child having a heavier BMI in this sample of 2537 boys and 2446 girls with a mean age of 56.9 months. Within the same study, if the father had higher control scores there was an association with lower odds of the child having a higher BMI. When compared to the authoritative style, children of fathers with permissive and disengaged parenting styles had higher odds of having a high BMI.

The above studies illustrate two different findings. Differences that may have led to the different outcomes was the fact that the second study had a larger sample size, included mother and father surveys and adjusted for parent BMI status. Further studies need to be performed to understand the importance of these findings.

Within a pediatric obesity program, parenting style was studied in fifty obese children to assess how the change in parenting style would affect success in the program (Stein et al., 2005). The only parenting variable that was related to the child having a change in weight was the father's change in acceptance versus rejection. Their instrument had the children report on the parenting styles but did not have parents complete an assessment to compare to the children's surveys.

In a school age (ages 7-13) sample of 28 Caucasian families with an overweight child and 28 Caucasian families with a normal weight child, observations and self reports of mealtime family functioning were administered and analyzed (Moens et al., 2007). Three aspects of control in feeding (restriction, pressure to eat and monitoring) and 2 aspects of supporting the child (showing interest and giving positive attention to the

child) were measured. The parents of the overweight children reported to exert more control on their child's feeding behavior and equal amount of parental support in comparison to the parents of the normal weight children. The observations did not correlate with these findings and families of overweight children were observed utilizing maladaptive control strategies two times as often and less parental support was shown.

A study of 96 cohabitating parents of 48 children with the mean age of 42 months were given a series of self-report questionnaires assessing parenting styles, feeding practices, eating psychopathology and demographic information (Blissett & Haycraft, 2008). Findings once again contradicted previous findings and no relationship was found between authoritarian parenting and controlling feeding practices. In both mothers and fathers, permissive parenting styles was related to lower monitoring of children's unhealthy food intake and was associated with increased use of restriction by mothers and pressure to eat by fathers. Authoritative parenting style was related to lower use of pressure to eat by fathers only. Overall parenting styles were not related to children's BMI. Higher BMI in the children was predicted by lower paternal application of pressure to eat and greater paternal reports of drive for thinness. This could have been related to the young age of the children studied.

Another study that assessed controlling feeding practices utilized a sample of 49 Caucasian preadolescent boys and their parents (Brann & Skinner, 2005). Mothers and fathers of boys, with a high BMI, used pressure to eat with their sons less often than mothers and fathers of boys with an average BMI. The fathers of the boys with a high BMI monitored their sons' eating less often than fathers of boys with an average BMI.

No differences were found in parenting when associated with the boys' BMI status for either the mothers or the fathers.

Two studies that examined parenting styles and children's eating did include minority populations. In a community sample of 812 Latino parents and their children who were in kindergarten to second grade, it was found that parents' use of positive reinforcement, monitoring and appropriate discipline styles was associated with children's healthy eating and exercise (Arredondo et al., 2006). The daughters of the parents who utilized controlling styles ate more unhealthy foods than did the sons. With this Latino sample the older employed and more acculturated parents used less controlling styles than their counterparts.

The next culturally inclusive study had a sample of 231 parents (130 Hispanics and 101 African American) of three to five year old children complete questionnaires on feeding practices and parenting styles (Hughes, Power, Orlet Fisher, Mueller, & Nicklas, 2005). Through the self-report from the parents, authoritarian feeding styles were associated with higher levels of general parental control and authoritarian feeding practices. Authoritative feeding styles were associated with higher levels of general parental responsiveness. Hispanic parents were more likely to be indulgent and African American parents were more likely to be uninvolved. Other studies have shown that Hispanic parents have a higher level of permissive parenting and African American parents have a higher level of authoritarian parenting styles (Rhee et al., 2006).

As evidenced by the above studies, conflicting data and outcomes are not uncommon in the area of parenting styles and weight status. Research has been focused on younger and non-diverse samples. Further research would be beneficial that would

incorporate diverse samples, older children and when feasible including the second parent.

Theoretical Framework(s)

When addressing obesity in children there are two theoretical frameworks that provided the basis for this study. Bronfenbrenner's ecological systems theory emphasized that the child or the developing person is imbedded in a series of systems that interact with one another and with the individual in influencing the child's development. When discussing the ecological system's theory, five systems are included within this theory ranging from direct interactions with social agents to broad based cultural interactions (Bronfenbrenner, 1986; Huitt, 2003).

Systems included the microsystem, which encompasses the setting in which the individual lives including their family, peers, school and neighborhood. Microsystems exert the most proximal influences on child adjustment according to Bronfenbrenner (Bronfenbrenner, 1986). The mesosystem includes the relationship between each microsystem piece. An example would be assessing the relation between the family and the peers or family and the school experiences. The exosystem includes outside settings that the child does not have direct interaction with but that nonetheless will affect the child. An example would be that the parent's job experiences (level of pay, job security, hours of work) would affect the family life, which will affect the child. The macrosystem is the culture that the child is a part of – ethnicity, social class, laws and customs of community they live within. The fifth system is the chronosystem, which includes the changes in the individual or environment over time such as death within the family or

divorce and the future effects that occur after the disruption (Bronfenbrenner, 1986; , "Urie Bronfenbrenner"). See Figure 2.

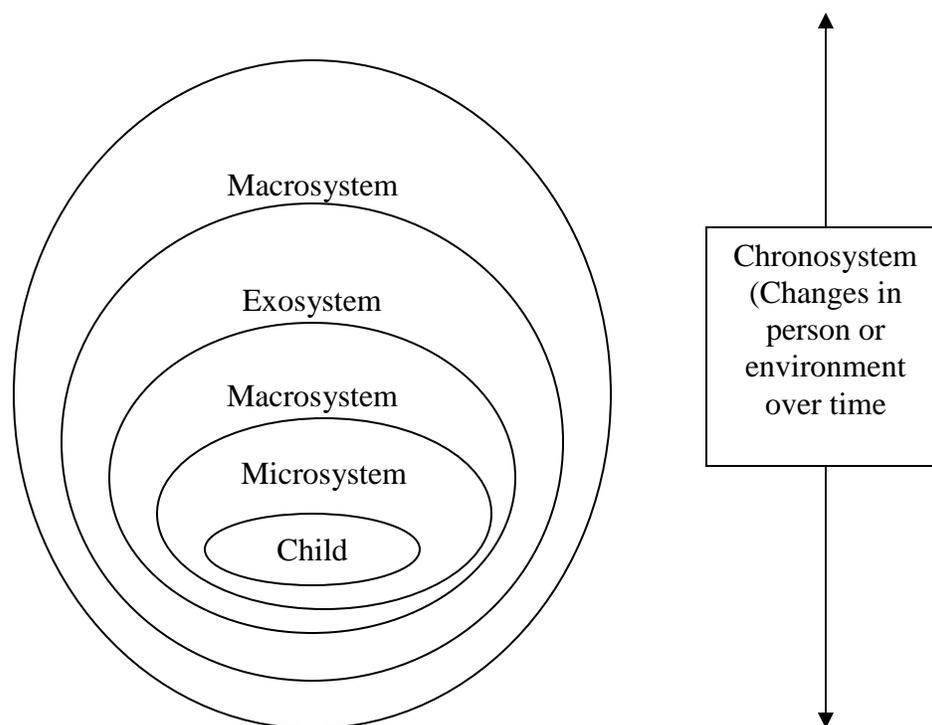


Figure 2. Ecological Systems Theory

In regards to pediatric obesity, the ecological systems theory is easily adapted. Each system plays a part within the socialization of the child and will have an affect on a child's weight. The microsystem and the mesosystem incorporates the immediate environment and interactions of the players within the immediate environments in which the child lives which will directly affect the day-to-day lifestyle behaviors such as food options, physical activity options, safety or opportunities to be physically active, food and education offered within the school system and parent's role modeling of behaviors. While the mircosystem and mesosystem are the most commonly studied the exosystem,

macrosystem and chronosystem will also impact the child's weight, but may be harder to discern within a research study. While this paper utilized the ecological systems viewpoint it also noted that nature, in the form of genetic makeup, plays a role in pediatric obesity but the assumption was that nurture or the daily behaviors and environment in which the child lives plays a more crucial role in the development of pediatric obesity. For this reason, the study will focus on the parenting behaviors with the assumption that the parent's are largely responsible for shaping the child's behaviors.

A second theory that is included within this study is the cognitive social learning theory by Albert Bandura. This theory can be seen as complimentary to the ecological systems theory. While the ecological systems theory stresses the powerful influence of the child's environment in which they live, the cognitive social learning theory highlights two aspects that are not as well distinguished in the systems theory – observational learning through role modeling and reciprocal determinism (Bandura & Jeffery, 1973). It also distinguishes the importance of overt behaviors that can be modifiable within an individual. Within reciprocal determinism, human development is an active process based on interactions among the child, the child's behavior and the environment (Bandura, 1978).

In the social learning theory, Bandura states that as individuals transact with the environment, people do not just react to the external stimulation. Individuals utilize intermediary cognitive processes to determine which external events will be observed, how they will be perceived, give value to the event and how the individual will use the information for future (Bandura, 1978). This theory allows the individual to have some influence over his or her own behavior. Similar to the ecological systems theory, the

behavior is influenced by the environment in which one resides, but the individual plays a role in creating parts of their environment so there is a “continuous reciprocal interaction between behavioral, cognitive and environmental influences” (Bandura, 1978, p. 345).

See Figure 3.

Personal Factors (cognitive, affect, and biological events)

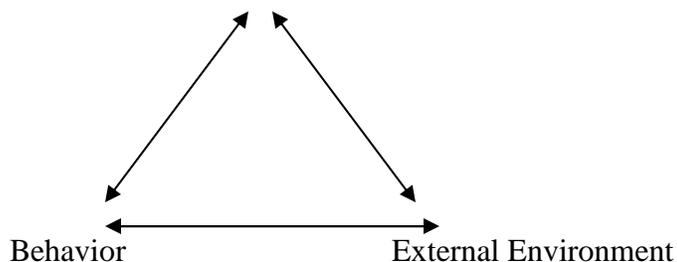


Figure 3. Social Learning Theory

Philosophical Underpinnings

Phenomenology provides the philosophical underpinning for this study. While phenomenology can be a qualitative research approach it also is a philosophy.

Phenomenology recognizes that there is not “one” objective reality that is independent of an individual’s consciousness, but an individual constructs their own social reality by how they think about the experience (Hesse-Biber & Leavy, 2006).

Phenomenology was initially discussed in the first half of the 20th century and was developed as an alternative to the empirically based positivist paradigm (McConnell-Henry, Chapman, & Francis, 2009; Smith, 2009). There are two different types of phenomenology. Edmund Husserl is considered the father of phenomenology and

created transcendental phenomenology while Martin Heidegger, one of Husserl's students, subsequently developed hermeneutic phenomenology.

This study utilized Heidegger's hermeneutic phenomenology. Heideggerian hermeneutic phenomenology focuses on moving away from the description of the event to the interpretation of the event and believes that the researcher is a legitimate part of the research versus the observer (McConnell-Henry et al., 2009). Heidegger promotes the subjective nature of human existence and believes that individuals are interpretive beings. This aspect of phenomenology states that the meaning of being is subject to the context of that being, which is similar to the meaning of an event will depend on the environment that the individual is in and will shape the meaning.

The choice to examine the child's perspective of parenting behaviors versus only assessing the parent's perspective is directly based on phenomenology. The parent and the child each have their own reality in what they perceive the behaviors are and neither would be considered wrong. Heidegger would explain that the truth about an experience as seen by one individual may differ greatly from another person, so truth is not the opposite of false but is intertwined with the individual's perception (McConnell-Henry et al., 2009).

Conceptual Framework

The conceptual framework that this study is based on has the underlying belief that general parenting styles are consistently present but parenting behaviors within that style will increase and decrease based on the situation or domain. The level of parenting behaviors exhibited will differ depending on the domain. With each parenting interaction an iterative process occurs where a parent actively observes a situation, frames the

situation with their internal values and assessment of short and long term consequence associated with the situation that child will have. Based on this process, parents will react with a level of acceptance/rejection, psychological control/psychological autonomy and firm/lax control, which is an aspect of their general parenting style but may be exaggerated in a domain where the parent has increased concern. These interactions over time will determine the child's outcome in this domain.

In this situation the domain is related to childhood obesity. A parent may have personal experiences that cause them to have increased concern when thinking that their child is or will become obese. This causes them to parent in an exaggerated fashion than in another domain where they are not as concerned. The parent still has the same underlying parenting style but as mentioned reaction will be increased when compared to baseline. Children who are parented with higher acceptance, psychological autonomy and firm control will have improved weight control and a healthier BMI. Children who are parented with higher levels of rejection, psychological control, and lax control in regards to limit setting will experience poor weight control and an unhealthy BMI.

Acceptance is shown through parental demonstration of love and support. Rejection is seen through lack of love and support. Psychological autonomy will be seen when a parent allows their children to form their own thoughts and opinions. Psychological control is illustrated through a parent using guilt and criticism to regulate the child's thoughts and opinions. Firm control is when a parent manages the child's behavior by closely monitoring their activities and setting behavioral limits whereas lax control would be seen with no limit setting or parental monitoring (Barber et al., 2005; Darling & Steinberg, 1993).

Assumptions of Study

1. Parents have their general parenting style, but within domains where they have increased concern their parenting behaviors will be exaggerated (Costanzo & Woody, 1985).
2. Parents play an important role in the development of health habits of their child through parenting behaviors such as preparation of food, restriction of food, monitoring of food intake (Benton, 2004; Birch, 2006; Birch et al., 2001; Golan & Weizman, 2001).
3. Parenting behaviors related to food such as restriction of food, increased pressure to eat and increased monitoring of food will be associated to an inability of the child to self regulate their appetite (Agras et al., 2004; Birch et al., 2001).
4. A child will have their own perception of their parent's parenting behaviors and will be willing to share them through questionnaire completion (Schaefer, 1965a).
5. Parents will present their parenting in a more favorable context on a measurement instrument when compared to the child's perception (Schwarz et al., 1985).

Hypotheses

1. A child's assessment of their parent's parenting behaviors will be more strongly associated with weight status than a parent assessment of their own parenting behaviors.
2. At best, there will be a moderate correlation between a child's assessment of parenting behaviors and a parent's assessment of their own parenting behaviors.

3. Parents who have higher concerns about their child's weight will utilize higher restriction and monitoring of their child's nutritional intake
4. Parents who have higher concerns about their child's weight will show parenting behaviors consistent with higher rejection, higher psychological control, and higher firm control
5. There will be a positive association with general parenting behaviors and domain specific parenting behaviors and the child's weight status, but a stronger relationship will be seen with domain specific parenting behaviors.
6. A greater proportion of parents of youth with a BMI > 85% will display increased concern and control behaviors when compared to parents of the proportion of youth with a BMI < 85%.

Research Questions

1. Is the relationship between parenting behaviors and BMI influenced by:
 - a. Ethnicity
 - b. Socioeconomic status
 - c. Parent's BMI
2. What is the association between parent overweight and parent perceived child overweight with actual BMI and BMIz scores of parent and child?
3. Which child and/or parent perceived parenting behaviors are associated with:
 - a. A child's BMIz score >5 and <85%
 - c. A child's BMIz score >85%

CHAPTER THREE

Research Design and Methods

Research Design

The study conducted was a quantitative study that used a cross sectional correlational study design. A cross sectional study was chosen for its ability to examine associations between variables. Another strength of the cross sectional design is its compatibility with funding and time constraints since it is less expensive than a case control study and eliminates loss of participants in a prospective study design (Hulley, Cummings, Browner, Grady, & Newman, 2007). At the same time that this benefit is noted, the author understands that the cross sectional design does have limitations such as inability to establish a causal relationship (Hulley et al., 2007).

Study Subjects

A convenience sample was used for this prospective study with a goal of 170 biological parent and child dyads being enrolled with 85 being African American and 85 being of Caucasian descent.

Inclusion criteria included that the participants were:

1. alert and oriented.
2. able to speak and read the English language.
3. willing to have a height and weight performed.
4. without communication or cognitive impairment that would preclude completion of study questionnaires.

5. either African American or Caucasian.
6. CHILD: was between the ages of 9 and 15 years old.
7. PARENT: needed to be a biological parent of the child and lived with that child at least 50% of the time.

The parent was asked to complete a demographic information sheet and two questionnaires and the child was asked to complete one questionnaire sheet. Only one child per family was included into the study. If more than one child was interested in participating in the study, the child with the birth date closest to January first was included. If more than one parent wanted to participate, the other parent was allowed to participate but there was no additional reimbursement.

Children needed to be between the ages of nine to fifteen. This age range has not been well assessed when examining parenting behaviors and allowed children to independently complete questionnaires to document their perception of their parent's parenting behaviors. Assessing the correlation between the child and parent's perception of the parenting behaviors was important since this allowed for further understanding on how the behavior relates to the child's weight status. It also allowed insight into whether the parent's practices were congruent with the message that the child receives.

A \$10.00 gift certificate to a local department store (Wal-Mart) was provided to each individual (parent and child) who completed the questionnaires and had a height and weight performed. Total reimbursement for parent child dyad was \$20.00. This was reimbursement for their time that they committed to completing study requirements. Estimate of time used was 30 minutes including the consenting and assenting process. Wal-Mart was chosen due to the variety of offerings of food, toys and general day-to-day

needs. Compensation was chosen based on literature stating that financial incentives have been shown to increase participation rates and that an average of \$10.00 per hour of work has been previously utilized (Rudy, Estok, Kerr, & Menzel, 1994; Steinke, 2004).

Sample Size

Determining the sample size was critical to the success of answering the proposed research questions. If the sample size was too small there would be an increased chance of making a type II error, where a true difference was missed due to size of sample being too small to detect it (Declan, Begley, & Clarke, 2004). If the sample size was too large there would have been a waste of resources and participants would unnecessarily be participating for no added purpose (Declan et al., 2004). A type I error would also be a risk was avoided. A type I error occurs when the researcher states that there is a difference between the groups being studied when in actuality there is not (Rudy & Kerr, 1991).

For the proposed study it was decided to utilize the level of significance or alpha error of 0.05, which would correlate with a 95% confidence level. This did correspond with a 5% chance of rejecting the null hypotheses when it should not be rejected. Since this specific study focus has not been well examined in previous literature the researcher felt comfortable that a 95% confidence level was adequate.

To decrease the risk of a type II error, or missing an actual difference between groups when there is one, the researcher put increased emphasis on power or the probability that the statistical test would support the hypothesis when it should be supported or refute the null hypothesis when it should be rejected (Rudy & Kerr, 1991). An effect size of 0.30 was chosen. In previous studies, effect size has not been well

documented. Based on literature utilizing a younger age group a medium effect size has been shown. In statistical literature, Cohen has provided rough guidelines of a small effect size being 0.20, medium effect size being 0.50 and large effect size being 0.80 (Ender, 2003). While a medium effect size has some room for variation, 0.30 was decided since this specific question has not been well studied within the age group being utilized. With a beta of 0.20, two sided alpha of 0.05 and estimated effect size of 0.30, goal of the sample size was 85 guardian/child dyads for each group – Caucasian and African American (Hulley et al., 2007).

Study Setting

Initially three sites were utilized for the study. Sites included the Boys and Girls Club of the Fox Valley (Appleton, Wisconsin), Marquette Neighborhood Health Center (Milwaukee, Wisconsin) and Quad Graphics Medical Clinic (West Allis, Wisconsin). Initial discussion and commitment to participate within study was achieved. Sites were chosen due to increased likelihood of meeting demographic needs of the sample. For each facility African American and Caucasian were the main ethnicities of the participants at the site.

The Boys and Girls Club of the Fox Valley is a dedicated youth facility with associated sites that is open daily during weekdays year round. It has professional staff and volunteers who provide a safe environment to the children of the Fox Valley, located in Northeastern Wisconsin. Average daily membership in 2007 was 665 (Werner, 2007). Fees to attend are kept low (\$15.00 per year or 2 hours of community service) to remain available and affordable to all families. Of the children served in 2007, 80% were from a low income household and 40% were living in poverty (Werner, 2007).

The Marquette Neighborhood Health Center is a nurse managed health center affiliated with Marquette University. Services include primary care, health promotion, physical examinations, and diagnosis and treatment of common illnesses. The vision of this center is to reduce health disparities by delivering quality health care to adults and children living in the Milwaukee area ("Marquette Neighborhood Health Center", 2009).

Quad Graphics is a printing company that created Quad Med in 1990, which had a goal to provide affordable high quality healthcare to its employees. Since that time, Quad Med clinics are now located within five of their Wisconsin work sites and employ their own primary care services to their employees and their families ("Quad Med: Wellness at Work", 2009).

These three sites were chosen to provide a wide range of socioeconomic status among potential participants. There was also the belief that families attending these facilities would offer a large sample of Caucasian and African American families that would fit the inclusion criteria for this study and will assist in meeting the goal of 85 Caucasian and 85 African American parent/child dyads for this study.

Additional sites were added after study initiation to ensure timely completion of project. Additional sites include: Children's Hospital of Wisconsin – Fox Valley Specialty Clinics, Marquette University Pediatric Dental Clinic, Mary Ryan Boys and Girls Club, and the NEW (Nutrition, Exercise, and Weight Management) Kids orientation evenings held monthly at Children's Hospital of Wisconsin.

Data Collection Methods

General advertisements were printed and either handed out by staff or hung up in an open area to allow public viewing. At the Boys and Girls Club of the Fox Valley and

the Marquette Neighborhood Health Center, there were set times when the investigator was present to consent, assent and provide questionnaires to the families. The set times were listed on the above mentioned advertisements so families would have the option to perform the study at time of their visit or picking up of their child or can plan on returning at another time. At the Boys and Girls Club of the Fox Valley, group leaders verbally discussed the study with attendees and flyers were sent home with the child with available times offered and a phone number to answer any questions that potential participants may have. At additional sites that were added, word of mouth and flyers were utilized for advertising.

A set area was utilized to obtain accurate height and weights on a calibrated scale and stadiometer. At the Boys and Girls Club of the Fox Valley, a privacy curtain was utilized to reduce potential embarrassment. At the NEW Kids orientation and the Mary Ryan Boys and Girls Club a private area was utilized for height and weight assessment. At the Marquette Neighborhood Health Center and Marquette University Dental Center the calibrated scale and stadiometer was in a private location. Sets of tables and chairs were available for families to sit at comfortably to complete questionnaires. The child and the parent were seated with sufficient distance between them to decrease risk of discussion or oversight of answering of questions. The investigator or assistant was present to assist with questions that participants had.

At the Quad Med site there was assistance from a registered nurse who works there. She discussed the study with families who met inclusion criteria at time of their medical visit. The Quad Med clinic had a calibrated scale and stadiometer that was utilized for their participants. Nursing staff performed calibrations. They had a separate

room that participants utilized when completing questionnaires. The investigator was in close contact with Quad Med staff to discuss concerns. Having a nurse who works within the collection site assisting with the study increased the opportunity to reach more families at times of their appointments when the investigator was not available.

Equipment utilized included a Seca 869 portable medical grade scale and Seca 214 portable stadiometer. At Quad Med and the Marquette Neighborhood Health Center, a Seca Digital Medical scale and stadiometer was utilized. Each scale and stadiometer was calibrated to ensure consistency of measurements. Instruments were in typed paper format with a pencil and paper method of completion. Each site had a separate area where questionnaires were completed for privacy. Prior to the study, the primary investigator trained and observed the nurse from the Quad Med site to ensure reliability of measurements and to assure that she was comfortable with the study protocol. The assisting nurse and research assistant completed the National Institutes of Health (NIH) and CITI training prior to implementation of the study and provided documentation of completion to the investigator. During interactions with potential study participants, families were reminded that their choice of participating or not participating had no effect on their care within the clinic at time of study or in the future.

Instruments

Demographic Questionnaire: A demographic questionnaire was utilized that asked the adult participants to confirm that they were the biological parent of the child, gender of parent and child, whether or not the child qualified for free or reduced meals at school, age of parent and child, ethnicity of parent and child, annual household income (adult) and highest grade of schooling completed for parent and child.

Children's Report on Parenting Behavior Inventory (CRPBI-30) – Child and

Parent Version: The Children's Report of Parent Behavior Inventory (CRPBI) was originally developed by Earl Schaefer and published in 1965 (Schaefer, 1965a). Based on factor analyses of psychologist's ratings of parental behavior, Schaefer formulated a hierarchical conceptual scheme for parental behavior. His goal was to develop a reliable scale to measure molar and abstract concepts such as love versus hostility and autonomy versus control (Schaefer, 1965a). The initial instrument was comprised of 260 items that included ten items for each of the twenty-six concepts that were chosen to measure the dimensions. The child completed the questionnaire by specifying whether the chosen parent is "like", "somewhat like", or "not like" each of the items listed (Margolies & Weintraub, 1977). A separate form is available for the child to complete on the mother and/or father.

Internal consistency reliabilities were computed with the Kuder Richardson Formula 20. Median reliabilities were as follows: love (.84), hostility (.78), autonomy (.69) and control (.66) (Schaefer, 1965a). Discriminant validity was tested by comparing a group of normal boys with a group of delinquent boys. The Mann-Whitney test was utilized to test the significance of differences between the two groups of boys and all were significant beyond the .05 level (Schaefer, 1965a). In additional studies, significant differences were found in scores between the children's reports of maternal and paternal behavior (twenty of the twenty six tests were significant beyond the .01 level) and between reports of two groups of boys who differed in adjustment, age, and socioeconomic class (Schaefer, 1965b).

Throughout the years the CRPBI has gone through multiple revisions along with a revision of the hypothetical conceptual model for parent behavior with three dimensions making up the revised model: acceptance versus rejection, psychological autonomy versus psychological control and firm control versus lax control (Kawash & Clewes, 1988; Margolies & Weintraub, 1977; Schaefer, 1965b; S. Schludermann & Schludermann, 1983). In an effort to reduce the size of the instrument and time it took to complete, Schludermann and Schludermann selected eighteen of the original twenty six scales with the criteria that they were high in reliability, variability and applicability to parental behavior (E. Schludermann & Schludermann, 1970). In the reduced version items were chosen that had the highest item-reliability and to make it suitable for cross cultural studies the investigators eliminated any items that were inappropriate to ethnic, social and religious minority groups. These changes resulted in 108 items with six scales having eight items and the other twelve having five items per scale (E. Schludermann & Schludermann, 1970). Data from the subscales of the 108 item version have been used with children with spina bifida and show appropriate internal consistency with Cronbach alpha's of .74-.80 (Alderfer et al., 2008).

Schludermann and Schludermann recognized that the length of the CRPBI-108 was a major disadvantage, so they created the CRPBI-30 with continued intent to assess children's perspectives of their parents' parenting behavior (Alderfer et al., 2008). When developing the CRPBI-30, the CRPBI-108 was administered to 444 17-18 year old university students on two different occasions with a one-month time difference between test administrations. Data were pooled from the males and females on the mothers and fathers. Item analyses involved the calculation of the test-retest reliabilities of individual

items, the correlations between items and the eighteen scales they distributed to, and the correlations of the items to the three dimensions of acceptance versus rejection, psychological control versus psychological autonomy and firm control versus lax control (E. Schludermann, personal communication, December 9, 2008). Each of the three dimensions was assessed and the authors selected the ten items that had the highest correlations with the given dimension. These items now make up the thirty questions in the CRPBI-30. Similar to the original instrument there is a separate form to utilize when describing the mother and the father, but they are almost identical with only grammatical adjustment for the gender of the parent being reviewed (E. Schludermann, personal communication, December 9, 2008).

Factor analysis of the ten Acceptance/Rejection scale items describing the mother loaded significantly (loadings between .61 and .77) on a single principle axis factor with an eigenvalue of 5.01 accounting for 96% of the common variance and for the father loaded significantly (loadings between .67 to .79) on a single principle axis factor with an eigenvalue of 5.16 accounting for 96% of the common variance. The Cronbach alpha value of the Acceptance/Rejection scale was .75 for the mother's form and .73 for the father's form (E. Schludermann, personal communication, December 9, 2008).

Factor analysis of the ten Psychological Control/Psychological Autonomy scale items describing the mother loaded significantly (loadings between .59 to .73) on a single principle axis factor with an eigenvalue of 4.35 accounting for 94% of the common variance and for the father loaded significantly (loadings ranged from .53 to .71) on a single principle axis factor with an eigenvalue of 3.75 accounting for 94% of the common variance. The Cronbach alpha value of the Psychological Control/Psychological

Autonomy scale was .72 for the mother's form and .63 for the father's form (E. Schludermann, personal communication, December 9, 2008).

Factor analysis of the ten Firm Control/Lax Control scale items describing the mother loaded significantly (loadings between .52 to .70) on a single principle axis factor with an eigenvalue of 3.49 accounting for 87% of the common variance and for the father loaded significantly (loadings ranged from .50 to .69) on a single principle axis factor with a an eigenvalue of 3.47 accounting for 95% of the common variance. The Cronbach alpha value of the Firm Control/Lax Control scale was .65 for the mother's form and .63 for the father's form (E. Schludermann, personal communication, December 9, 2008).

The CRPBI – 30 and CRPBI – 108 were compared within a sample of 1837 data sets and correlated. The correlations between the CRPBI – 30 and CRPBI – 108 subscales were: Acceptance versus Rejection $r = .95$, Psychological Control versus Psychological Autonomy $r = .94$ and Firm Control versus Lax Control $r = .94$ (E. Schludermann, personal communication, December 9, 2008).

Test – Retest reliability was measured by giving the CRPBI 30 to a sample of 443 males and females on two separate occasions over a one-month time frame. The test-retest reliability was calculated for each of the three subscales and separate analyses were made for fathers and mothers (E. Schludermann, personal communication, December 9, 2008).

Test-Retest Correlations of CRPBI-30		
	Fathers	Mothers
Acceptance/Rejection Scale	.89	.84
Psychological Control/Psychological Autonomy Scale	.80	.84
Firm Control/Lax Control	.83	.79

Table 1 Test-Retest Correlations of CRPBI-30

Chronbach's Alpha Reliability Coefficients of CRPBI - 30		
Initial Testing	Mother	Father
Acceptance/Rejection	.75	.73
Psychological Control/Psychological Autonomy	.72	.63
Firm Control/Lax Control	.65	.63
Retesting	Mother	Father
Acceptance/Rejection	.74	.76
Psychological Control/Psychological Autonomy	.69	.66
Firm Control/Lax Control	.64	.65

Table 2 Chronbach's Alpha Reliability Coefficients of CRPBI – 30

The CRPBI-30 Parent Version was utilized to assess the parent's perception of their parenting. Having the parent and child's perception of the parenting behaviors allowed the researcher to compare the amount of discrepancy between the dyad. Schludermann states that this is best done by administering an instrument with analogous items to both the child and the parent (E. Schludermann, personal communication,

December 9, 2008). The CRPBI-30, through minor changes in the stem and adjustments in the items, can be utilized as a parent version. Making these changes allows for the adolescent and parent version of the instrument to refer to exactly the same parenting behaviors while allowing for the change in the subject's perspectives (E. Schludermann, personal communication, December 9, 2008).

Supporting the need to assess both the parent and the child's perception is the fact that examining both will improve construct validation. Assessing only the child's perception will result in a lower reliability and potential validity of the ratings by a single respondent (Schwarz et al., 1985). Reliability and validity has been assessed when utilizing the CRPBI with children and parents. Individuals ($n = 680$) from 170 families were included in the study, including a child, sibling, mother and father. Moderate internal consistency ($M = .71$) for all rater types was noted. Through factor analysis, the same factor structure was observed across all rater types. Aggregation of factor scores across two raters yielded a higher convergence ($M = .51$) (Schwarz et al., 1985).

Other studies utilizing the CRPBI with the parent version have found acceptable reliability and validity. Internal consistencies within a study of 78 mother child dyads ranged from excellent for the Acceptance/Rejection ($\alpha = .90$) and adequate for the psychological control/psychological autonomy and firm control/lax control subscale ($\alpha = .81; .77$ respectively) (Butler, Skinner, Gelfand, Berg, & Wiebe, 2007). In another study comprised of 136 families (68 families of children with spina bifida and 68 families as the control group) the child and parent version of the CRPBI was completed. The child report and the parent report were combined to form composite questionnaire ratings of parenting behavior that the author justified based on the moderate positive

correlations between child and parent reports with an average correlation of $r = 0.24$ for mother/child report and $r = 0.22$ for father/child report. Alpha for the composite ratings of maternal parenting ranged from .67 to .82 in the spina bifida group and .64 - .91 in the control group. Alpha values for the composite ratings of the paternal parenting ranged from .66 to .89 in the spina bifida group and .73 to .90 in the control group (Greenley, Holmbeck, & Rose, 2006).

The three constructs that the CRPBI-30 measured were acceptance/rejection, psychological control/psychological autonomy and firm control/lax control. An example of a question related to acceptance/rejection includes “my mother is someone who makes me feel better after talking over my worries with her.” An example of a question related to psychological control/psychological autonomy would be “my mother is someone who tells me all of the things that she has done for me.” An example of a question related to firm control/lax control would be “my mother believes in having a lot of rules and sticking to them.” Each question was answered with NL for Not Like, SL for Somewhat Like, and LL for a Lot Like.

There was a scoring sheet provided with directions to score NL with a “1” and SL with a “2” and LL with a “3”. There was then a grid separating the answers into A-30 subscale (Acceptance versus Rejection), P-30 subscale (Psychological Control/Psychological Autonomy, and F-30 subscale (Firm Control/Lax Control). The A-30 and P-30 scores are the total of the respective columns. The F-30 score is found by taking the sum of the specified answers and adding 24 and then by subtracting the total of the designated remaining answers. Each subscale can have a score between 10 and 30.

Higher scores in A-30 equal higher acceptance, in P-30 equal higher psychological control and in F-30 equal higher firm control.

Child Feeding Questionnaire: The Child Feeding Questionnaire (CFQ) was “designed to measure a parent’s perception and concerns regarding child obesity, as well as child-feeding attitudes and practices” (Birch et al., 2001, p. 202). It initially was developed based on Costanzo and Woody’s work with the theory that parenting behaviors are domain specific (Birch et al., 2001; Costanzo & Woody, 1985). The premise was that a parent who was; highly invested and health, fitness or weight issues, perceived their child to be at risk of having a weight problem, or did not believe their child was capable of self regulating their food intake would use higher amounts of control regarding food when dealing with their child (Birch et al., 2001). Utilizing the higher amount of control regarding food would counteract the child’s own self-regulation of food and by losing their ability to control hunger and satiety a rebound weight gain would occur.

Through multiple revisions, the final questionnaire was found to measure seven dimensions: perceived parent responsibilities, perceived parent weight, perceived child weight, concern about child weight, use of restriction with food, pressure to eat, and use of monitoring child’s food intake (Birch et al., 2001). The first four dimensions assessed the parent’s perceptions and concerns regarding their child’s weight (ex. “how often are you responsible for deciding what your child’s portion sizes are?” and the final three assess their attitudes and practices in feeding (ex. “My child should always eat all of the food on his/her plate” or “I have to be sure that my child does not eat too much of her favorite foods”) (Birch et al., 2001). There are a total of 31 items and all items are answered on a 5-point likert scale.

Constructs measured include parents' responsibility for feeding the child, parent's monitoring of the child's nutritional intake, parent's restricting the nutritional intake, parental practices of encouraging food intake, perceived teen weight, perceived parent self-weight, and parent's concern about their child's weight (Kaur et al., 2006). Parent's responsibility for feeding the child was defined by the parent's responsibility for feeding their child, deciding the child's portion sized and ensuring consumption of appropriate food (Kaur et al., 2006). Measurement of this construct occurred with three questions.

Parent monitoring of child was defined by the parent's perceptions of tracking their child's intake of sweets, snack foods and high fat foods (Kaur et al., 2006). Measurement of this construct will occur with three questions.

Parents restricting food was defined as parent behaviors that were in attempt to regulate or decrease the intake of "junk" food and use of food as a reward (Kaur et al., 2006). Measurement of this construct occurred with eight questions.

Parent's pressuring child to eat was defined as parenting behaviors that encourage food intake (Kaur et al., 2006). Four questions were utilized to measure this construct.

Perceived child weight was defined as the parent's perception of their child's weight throughout his or her years since the first year of life (Kaur et al., 2006). This construct was measured by five or six questions depending on the child's age. Perception of weight was given for first year of life, between age one and two, between age three and five, between kindergarten through 2nd grade, 3rd through 5th grade and between 6th through 8th grade (Kaur et al., 2006).

Perceived parent self-weight was defined by the parent classifying their own weight during their childhood, adolescence, 20's, and currently. Choices included "very

underweight”, “a little underweight”, “just right”, “a little overweight”, and “very overweight” (Kaur et al., 2006).

Concern of the child’s weight was defined as the parent’s concern about their child eating too much when parent is not around, child having to diet to maintain a desirable weight, and concern that child will become overweight (Kaur et al., 2006). Three questions were utilized to measure this construct.

Internal consistency with a Cronbach’s alpha was performed and were acceptable with scores ranging from alpha of 0.70 for pressure to eat to 0.92 for monitoring of food (Birch et al., 2001). Originally the CFQ was developed through use with school age Caucasian females but then was validated with a sample of Hispanic parents of school age children. In a more recent validation study the CFQ was used with parents of adolescents with 55% of the sample being African American. During this validation study the tool was modified minimally to make it appropriate for parents of adolescents. Small changes such as changing the word child to teen were made. Seven dimensions remained, as were in the original, but the addition of a question related to sweetened beverage consumption was added (Birch et al., 2001; Kaur et al., 2006).

Confirmatory factor analysis was performed with factor loadings ranging from 0.434 to 0.955 and all were significantly different from zero (Birch et al., 2001; Kaur et al., 2006). Cronbach’s alpha was again performed and items were reliable with findings as follow: restriction (0.72), monitoring (0.88), pressure to eat (0.71), concern (0.82), perceived teen weight (0.82), perceived parent weight (0.76) with responsibility measuring less reliable (0.60) (Kaur et al., 2006). Factor-factor correlations showed perceived parent weight was slightly correlated with perceived teen weight ($r = 0.26$),

parents' perception of teen's weight was most strongly correlated with concern ($r = 0.59$) meaning that parents who perceived their teen to have a higher weight were more likely to be concerned about it. Scores on concern factor correlated with restriction ($r = 0.61$), responsibility ($r = 0.33$) and monitoring ($r = 0.30$). Responsibility was correlated with all the factors except perceived parent weight (Kaur et al., 2006).

Within the feeding practices section, restriction was most strongly correlated with monitoring ($r = 0.65$), concern ($r = 0.61$), responsibility ($r = 0.50$) and perceived child weight ($r = 0.38$). The pressure to eat dimension was positively correlated to responsibility ($r = 0.32$), monitoring ($r = 0.28$) and negatively correlated with perceived teen weight ($r = -0.26$). Pressure to eat was somewhat correlated with restriction ($r = 0.20$) and monitoring was correlated with responsibility ($r = 0.47$) (Kaur et al., 2006). During validation the comparative fit index (CFI), Tucker-Lewis Index (TLI) and root mean square error of approximation (RMSEA) was performed with a cutoff value of above 0.9 on the CFI and TLI indicating acceptable fit and above 0.95 indicating adequate fit. The RMSEA assesses the degree of discrepancy between the sample and model covariance matrices and a cutoff value of 0.05 or less indicated a reasonable error of approximation (Kaur et al., 2006). Findings were CFI of 0.949, TLI of 0.938 and RMSEA of 0.046 illustrating a well fitting model (Kaur et al., 2006).

Scoring of the CFQ is broken down by each of the seven subscales. No reverse scoring was utilized. For the perceived feeding responsibility subscale, the three questionnaire items were summed and the mean of the three items became the score. The higher scores indicated higher levels of perceived parental feeding responsibility (L. Birch, personal communication, June 4, 2009). For the perceived parent overweight

subscale there were four items that were summed and the mean of the four items was the score. The higher the score indicated the parents' perception of greater overweight throughout their life (L. Birch, personal communication, June 4, 2009). The remaining five subscales followed the same protocol with perceived child overweight having six items, concerns about child overweight having three items, restriction having eight items, pressure to eat having four items and monitoring having three items. Each of the subscales items were specified within the scoring instructions and scores were summed and the mean was taken as the score for that subscale. The higher the score indicated the higher level of construct being measured for that subscale (L. Birch, personal communication, June 4, 2009).

Instrument	Adult	Child
Demographic Form	X	
Child Feeding Questionnaire	X	
Child Report of Parenting Behavior Inventory – Parent Version	X	
Child Report of Parenting Behavior Inventory – Child Version		X
Height and Weight	X	X

Table 3 Instrument Completion Table

Variables

Weight Status: For the purpose of this study weight status was measured by an individual's height and weight, which was converted to a measurement of Body Mass Index (BMI). During the weighing of the participants, shoes and any unnecessary additional clothing items or heavy objects were removed. Weights of both child and parent were obtained.

Weight status was operationalized by height measured on calibrated SECA stadiometer and weight measured by calibrated SECA scale.

Body Mass Index (BMI): BMI is a measure of body weight adjusted for height and utilized to assess body fat. Theoretical definition is weight (in kilograms) divided by the square of height (in meters). BMI that is between the 85% and 94% for age and gender will be classified as overweight and BMI that is greater than the 95% for age and gender will be considered obese (Barlow & Expert Committee, 2007). Height was obtained through the use of a calibrated stadiometer. Heights and BMI calculation were obtained for both the child and parent.

BMI was operationalized by calculation of Kg/m^2 with weight and height measured on calibrated stadiometer and scale. BMI was then placed on Centers for Disease Control Growth Curve to determine BMI percentile. BMI % was a dependent variable.

BMIz Score: To assist with delineating the children's BMI at the higher end (>97%), BMI scores were converted to a BMIz score to increase accuracy. BMIz scores standardized for age and sex according to the national norms were obtained from the

USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine's website <http://www.bcm.edu/cnrc/bodycomp/bmiz2.html>.

Race: Race was defined as the individual's race as determined by that individual. African American or Caucasian were listed as options. If participant was of mixed descent they were not included in the study.

Race was operationalized on the demographic checklist by the participant circling either African American or Caucasian. Race was an independent variable.

Gender: Gender was defined as sex that individual was born as – either male or female.

Gender was operationalized on the demographic checklist by the participant circling either male or female. Gender was an independent variable.

Age: Age was defined as number of years the individual has been alive.

Age was operationalized on the demographic checklist as a write in answer. Age was an independent variable.

Marital Status: Marital status was defined as how the adult individual described his/her relationship with their significant other. Choices included married, divorced, widowed, single or separated.

Marital status was operationalized on the demographic checklist by the participant circling the answer that best describes their situation. Marital status was an independent variable.

Socioeconomic Status: Socioeconomic status (SES) was defined by household income that is brought in on a yearly basis. Options for answers were 0-\$24,999, \$25,000 to \$49,999, \$50,000 to \$74,999, \$75,000 to \$99,999, and > \$100,000.

SES was operationalized on the demographic checklist by the participant circling the answer that best describes their financial situation. SES was an independent variable. Free or Reduced Lunch: Free or reduced lunch was defined as child meets criteria to receive free or reduced lunch within the school system. Choices were listed as yes or no. This information assisted in determining SES.

Free or reduced lunch was operationalized on the demographic checklist by the participant circling the correct answer of yes or no. Free or reduced lunch was an independent variable.

Acceptance: Acceptance as a parenting behavior was defined as positive evaluation, sharing, and expression of affection, emotional support and equalitarian treatment (Schaefer, 1965b).

Acceptance was operationalized by the CRPBI – child and parent version. Acceptance was an independent and continuous variable.

Rejection: Rejection was defined by the parent ignoring the child, neglecting or rejecting the child. A detached, less involved type of hostile reaction to the child (Schaefer, 1965b).

Rejection was operationalized by the CRPBI – child and parent version. Rejection was an independent and continuous variable.

Psychological Control: Psychological control was defined by the parent displaying intrusiveness, controlling the child through guilt, and being possessive and overly protective of the child. Also seen as covert, psychological methods of controlling the child's activities and behaviors in a way that would limit the child from developing as an individual away from the parent (Schaefer, 1965b).

Psychological control was operationalized by the CRPBI – child and parent version. Psychological control was an independent and continuous variable.

Psychological Autonomy: Psychological autonomy was defined as the parent not being overly protective and allowing the child to be independent and develop as an individual away from the parent (Schaefer, 1965b).

Psychological autonomy was operationalized by the CRPBI – child and parent version. Psychological autonomy was an independent and continuous variable.

Firm Control: Firm control was defined by punishment and strictness with the parent making excessive rules and regulations and setting limits on the child's activities and enforcing the rules (Schaefer, 1965b).

Firm control was operationalized by the CRPBI – child and parent version. Firm control was an independent and continuous variable.

Lax Control: Lax control was defined as no limit setting by the parent. No rules and regulations being placed on the child and no enforcement of limits or rules (Schaefer, 1965b).

Lax control was operationalized by the CRPBI – child and parent version. Lax control was an independent and continuous variable.

Responsibility: Responsibility was defined as the parent's perception of the parent's responsibility for feeding their child, deciding on the portion sizes, and provision of the types of foods provided (Kaur et al., 2006).

Responsibility was operationalized by three questions (items 1, 2, 3) on the CFQ. Responsibility was an independent and continuous variable.

Monitoring: Monitoring was defined as the parent's perceptions of tracking their child's intake of sweets, snack foods, and high fat foods (Kaur et al., 2006).

Monitoring was operationalized by three questions (items 29,30,31) on the CFQ. Monitoring was an independent and continuous variable.

Restriction: Restriction was defined as the parent's attempts to limit or regulate the amount of junk food or use of food as a reward (Kaur et al., 2006).

Restriction was operationalized by eight questions (items 17 – 24) on the CFQ. Restriction was an independent and continuous variable.

Pressure to Eat: Pressure to eat was defined as the parent's practices of encouraging child to eat (Kaur et al., 2006).

Pressure to eat was operationalized by four questions (items 25-28) on the CFQ. Pressure to eat was an independent and continuous variable.

Perceived Child Weight: Perceived child weight was defined as the parent's perception of their child's weight across his or her lifetime (Kaur et al., 2006).

Perceived child weight was operationalized by six questions (items 8-13) on the CFQ. Perceived child weight was an independent and continuous variable.

Perceived Self-Weight: Perceived self-weight was defined as the parent's perception of their own weight during their childhood, adolescence, twenties, and currently (Kaur et al., 2006).

Perceived self-weight was operationalized by four questions (items 4-7) on the CFQ. Perceived self-weight was an independent and continuous variable.

Concern with Child's Weight: Concern with child's weight was defined as the parent's concern about their child eating too much when the parent is not present, the child

needing to diet to maintain desirable weight, or concern that the child will become overweight (Kaur et al., 2006).

Concern with child's weight was operationalized by three questions (items 14, 15, 16) on the CFQ. Concern with child's weight was an independent and continuous variable.

Threats to Internal and External Validity

Validity refers to the approximate truth on an inference that is being made and is never absolute (Shadish, Cook, & Campbell, 2002). In order to decrease the threat to statistical conclusion validity, the risk of having a type I or type II error were carefully thought out when deciding power, effect size and sample size. As previously mentioned alpha was set at .05, which would correlate with a 95% confidence level. These choices required a total sample of 170 child and parent dyads, with each ethnic group requiring 85 dyads. This allowed for comparisons of the two ethnic groups and limited type I and type II errors. Assumptions of statistical tests were monitored for any violations.

Threats to internal validity were minimized. Acknowledging that attrition can be a threat to internal validity this threat was reduced by having a one-time completion of questionnaires. The cross sectional design inhibited the study to state causality.

Threats to construct validity were decreased by choosing instruments that successfully measure their intended concepts. When measuring parenting styles it was acknowledged that these are difficult concepts to measure. The chosen measure, CRPBI had been utilized extensively and estimates of reliability and validity were discussed in the previous section. Other concerns with construct validity were confounding variables that may not be able to be accounted for that could have affected the children's weight

status. In an attempt to minimize the confounding variables, yet recognizing that all cannot be addressed, additional information was obtained through the demographic form assessing SES and by collecting the parent's BMI. Both SES and parent's weight status can contribute to a child's weight status and by obtaining this information they could statistically controlled.

Because questionnaires are self-report there was the risk of social desirability. In attempts to decrease social desirable responses, the investigator reviewed with the participants that there was no wrong answer and no identifying information would be associated with the questionnaires. Additionally, parents and children completed questionnaires independently in separate areas, also reducing any pressure that children may feel to report in a way that their parents want them to. In a final measure to reduce social desirability bias, the participants were assured of the confidentiality of their responses during the consenting process.

External validity was threatened due to use of a convenience sample and cross sectional design both of which decreased generalizability of findings and the ability to discern cause and effect. This was noted within the findings. Having multiple different recruitment sites was an attempt to decrease the threat to external validity by opening up the study to varied geographic areas and individuals. The offering of a gift certificate and participating in a research study may have limited participation to only individuals who had extra time, were in need of money or were eager to help with the research.

A specific strategy utilized to enhance external validity was openly acknowledging the study limitations in the findings. Multiple sites were utilized to collect data with each being from a different geographical location to enhance sample

selection. Purposive sampling to include equal numbers of African American and Caucasian subjects was used to provide information on a more diverse population than has been examined when assessing parenting styles and weight status. When disseminating the findings sufficient detail was presented so others could replicate the study.

Data Analysis Procedures

SPSS was utilized for the data analysis. Assistance was provided by Quantitative Health Services from Children's Hospital of Wisconsin. A codebook was created to coincide with the instruments administered that defined and labeled variables and assigned numbers to the possible responses (Pallant, 2005). No open-ended questions were included.

Screening and cleaning data was performed by initially assessing for any outliers. Frequencies were computed for each of the variables to assess if any of the answers fell outside of the range of possible values. The minimum and maximum values of the variables were also assessed. If concerns were found, the original answers were reviewed by examining the original questionnaire to see if the problem could be addressed. Valid and missing cases were also reviewed. If a variable had 15% or more subjects not completing it, then the variable was excluded from the analysis (Newton & Rudestam, 1999). If a participant had left a variable as missing and their missing values equaled 15% or less of the variables then mean substitution or mean imputation was performed. This involved entering the mean value of a variable for any subject with missing data on that variable. Depending on the frequency that this occurred it may have reduced the power of the study but was seen as a preferable solution to guessing the value or leaving

blank (Newton & Rudestam, 1999). If a subject had left more than 20% of the questions blank then they were omitted from the study. Reviewing the questionnaires when they were handed in and asking participants to complete any questions that they may have left blank minimized participants handing in incomplete studies.

Descriptive statistics were conducted to test assumptions and to describe the sample. Frequencies were computed on categorical variables and on continuous variables included the mean, median, standard deviation, skewness, and kurtosis. A secondary correlational analysis was examined to assess if there was a relationship between the child and parent's perception of the parenting behaviors. Multiple regression analysis was utilized to assess if the relationship between parenting behavior and weight status was influenced by ethnicity, socioeconomic status or parent's BMI.

Protection of Human Rights

Prior to the execution of the proposed study, approval was obtained from Marquette University and Children's Hospital of Wisconsin Internal Review Boards (IRB) boards. All questionnaires were pre-coded with an identification number to protect subjects' identity. Computerized information was password protected and was only shared between principal investigator, doctoral program committee and advisor, and statistician and his personnel working on study. All data gathered including demographic sheets and questionnaires was kept in a locked drawer located within the office of the primary investigator. All information will be destroyed three years after complete reporting of study results has occurred.

Only trained study personnel who had taken prerequisite NIH/CITI training via computer and provided documentation of this were allowed to assent, consent and execute questionnaire completion.

During assenting and consenting process it was explained that participation in the study was completely voluntary, did not influence their care or membership that they were receiving from site of data collection and that they could change their mind at any time regarding participation. The risk to subjects participating was low and no adverse reactions were anticipated and none occurred. The largest risk foreseen was that the participant might have been uncomfortable answering questions related to food intake or parenting practices or to having their weight measured. Participants were given the opportunity to ask questions regarding the study and a thorough explanation was provided to the potential participants in addition to having them read the consent and assent.

Limitations

Limitations to the study included decreased generalizability, decreased ability to state causality, possible effect of social desirability when responding to questions and potential of not having a large enough sample even though careful consideration was given to sample size.

CHAPTER 4

Associations Between Risk Taking Behaviors and Overweight or Obese Weight Status and Potential Protective Factors Among a Midwest Adolescent Population

Abstract

Introduction: The purpose of this study was to examine the relationship between risk-taking behaviors and overweight status in a sample of Midwestern adolescents, as well as assessing the role that parenting behaviors play in providing protection.

Method: Correlational and regression analysis was performed with the 2007 Wisconsin Youth Risk Behavior Survey dataset.

Results: Overweight adolescents were less likely to wear seatbelts as a passenger in a car, more likely to have smoked cigarettes and used chewing tobacco. Factors such as adolescent or parent perceiving harm associated with the risk-taking behavior or the perception that the adolescent was loved and supported by their family were found to be protective with certain risk behaviors.

Discussion: Acknowledging that overweight status is a predictor of certain health risk behaviors in adolescents, education, assessment and prevention is necessary. Prevention should include educating teens and their parents, while encouraging open communication, parental involvement and demonstration of support for the adolescent.

INTRODUCTION

Adolescence is a developmental period marked by physical, intellectual, and psychosocial changes, including a strong desire to fit in with peers (Ogden, Carroll, Curtin et al., 2006). Given this, it is not surprising that the initiation of risk-taking behaviors increases during this period. However, relatively little research has examined individual factors that might increase risk-taking behavior, nor has past research articulated factors that may serve to protect against risk-taking behaviors. Given increasing prevalence of overweight (defined as a body mass index [BMI] between the 85th and 94th percentile for age and sex) and obesity (a BMI for age and sex at or above the 95th percentile) in adolescence, understanding how this relates to risk-taking behaviors is of paramount importance. Thus, the aim of this study is to examine relationships between risk-taking behaviors and overweight status in a population of Midwest high school students as well as to examine the role that parenting behaviors can play in providing protection against these risk-taking behaviors.

OBESITY AND ASSOCIATED CONCERNS

The increasing prevalence of overweight and obesity in children and adolescents is a healthcare epidemic. In 2004, 17.1% of United States youth under 18 were overweight, and overweight prevalence tripled in children and adolescents aged 6-19 years (Ogden, Carroll, Curtin et al., 2006). Adolescent overweight and obesity is directly correlated with increased risk of overweight or obesity in adulthood.

Childhood overweight and obesity is also linked to multiple chronic disease processes, increased psychosocial concerns, and a negative social stigma (Zametkin,

Zoon, Klein, & Munson, 2004). Although results have been mixed, some studies have reported that, when compared with normal weight youth, obese adolescents have lower levels of self-esteem. Moreover, decreased self-esteem was associated with higher rates of sadness, loneliness and an increase in high-risk behavior, such as smoking or alcohol consumption (Strauss, 2000).

ADOLESCENT DEVELOPMENT AND PARENTING

As teens increasingly establish their independence, they are also developing patterns of behavior that influence their present and future health (Stewart-Fahs et al., 1999). Risk-taking behaviors have been shown to increase between childhood and adolescence as a consequence of changes in the brain's reward-seeking system and then to decline again during adulthood, due to an increase in self-regulatory capacity (Steinberg, 2008).

RISK FACTORS AND WEIGHT STATUS

Only a limited amount of research with adolescents has examined relationships between weight status and risky behaviors (e.g., sexual activity, unintentional injury and substance use). Regarding sexual activity, several studies have documented that overweight adolescents appear less likely to date or to engage in sexual activity compared with their healthy-weight counterparts (Cawley, Joyner, & Sobal, 2006b; Garriguet, 2005; Halpern, Udry, Campbell, & Suchindran, 1999).

Relationships between adolescent weight status and unintentional injury have not been well examined. However, in adults, obesity is an independent risk factor for non-use of seatbelts (Lichtenstein, Bolton, & Wade, 1989) with national population data

supporting a linear relationship between declining seatbelt use and increasing weight status (Schlundt, Briggs, Miller, Arthur, & Goldzweig, 2007)

Regarding substance use in adolescents, one study found that overweight girls may be at lower risk for alcohol use, relative to either girls who are not overweight or overweight boys (Neumark-Sztainer et al., 1997). This same study reported that associations between weight status and tobacco use were not statistically significant after controlling for demographics, and that overweight status was significantly associated with marijuana use in boys but not in girls (Neumark-Sztainer et al., 1997). Recently Pasch, Nelson, Lytle, Moe and Perry (2008) examined the cross-sectional and longitudinal associations between weight status and various risk factors in adolescents. In this case, BMI was positively associated with binge drinking, alcohol use, tobacco use, and other drug use in both genders; however, no association was apparent between BMI and marijuana use.

ROLE OF PARENTING PRACTICES IN RISKY BEHAVIOR

Parenting practices can be protective with respect to reducing the initiation or continuation of adolescent risk behaviors. Although a child's intention to use alcohol and the parent's use or abuse of alcohol is a predictor of substance use, factors that protect against substance use include positive parenting behaviors, such as open communication, consistent discipline, supportiveness, autonomy-granting, and parental engagement (Mogro-Wilson, 2008; Tildesley & Andrews, 2008).

Based on this discussion, it's feasible that adolescents who are overweight or obese may be at increased risk of engaging in risky health behaviors. As a result, it is

imperative to examine this possibility and to also attempt to understand the nature of any observed relationships, including a potential mitigating role for protective factors.

Using an epidemiologic sample from Wisconsin, this study will explore the relationship between adolescent weight status and participation in risky behaviors; specifically, alcohol use, tobacco use, marijuana use, sexual activity, wearing a bike helmet, wearing seatbelts, and riding with a driver who has been drinking. The study will also examine the relative importance of weight status in predicting risk behaviors before and after controlling for demographic factors as well as for potential cognitive protective factors (i.e., knowledge about the specific risk behavior), and family or adult protective factors (i.e., parental beliefs about substance use being harmful, quality of parent-child relationship; having other adults to talk to). We expect to find an increased likelihood of participation in most risk behaviors among overweight or obese youth.

METHODS

SURVEY AND STUDY POPULATION

Data for this study was taken from the 2007 Wisconsin Youth Risk Behavior Survey (YRBS), a cross-sectional survey administered every two years through the Department of Public Instruction (DPI). The study is part of the larger national effort by the U.S. Centers for Disease Control and Prevention to monitor health risk behaviors of the nation's high school youth (Wisconsin Department of Public Instruction, 2007). The sample is representative of public high school students in grades nine through twelve.

The current sample consisted of 2094 students attending 56 Wisconsin public schools in spring 2007. In total, 48.6% females and 51.4% males completed

questionnaires. The racial or ethnic group distribution was as follows: 79.1% Caucasian, 9.2% African American, 5.4% Hispanic/Latino, and 4.9% Other. Youth ranged in age from 12-18 years old ($M = 16.0$, $SD 1.2$). Participation was voluntary and parental permission was obtained prior to survey administration. All surveys were written and conducted anonymously.

YRBS QUESTIONNAIRE

The YRBS is comprised of 99 questions that address eight priority health risk areas: protective assets, traffic safety, weapons and violence, suicide, tobacco use, alcohol and other drug use, sexual behavior, nutrition and exercise. The questionnaire is available electronically: <http://dpi.wi.gov/sspw/pdf/yrbs07hsques.pdf>. Items were weighted for this current study to equally represent adolescent population within the state and missing data were eliminated from analyses. Except for demographics, all continuous or categorical variables were recoded as dichotomous variables prior to analysis. See Table 1 for variable interpretation, original question, and recoding explanation.

STUDY VARIABLES

Demographics: Youth provided information on their age in years, ethnicity, and gender.

Anthropometrics: Self-reported height and weight were utilized to calculate BMI percentiles as a part of the YRBS standard data management. In the present study, youth were grouped into normal weight (5th-84th percentile) or overweight (85th percentile or higher) categories based on standard growth curves for age and sex. Underweight youth ($BMI < 5^{\text{th}}$ percentile) were excluded (1.7% of the sample) due to the fact that this group may have a separate risk profile and because the primary intention here was to examine

differences between normal weight and heavier than ideal body weight youth. Also, overweight and obese youth were not distinguished because self-reported heights and weights often result in the underestimation of weight status category (Brener, Mcmanus, Galuska, Lowry, & Wechsler, 2003).

Alcohol and Substance Use: Several domains of substance use were assessed including how often, if ever the teen had drunk alcohol, tried a cigarette, used marijuana and if the teen had used chewing tobacco within the last thirty days.

Risk Behaviors with Potential Result of Unintentional Injury: Behaviors examined within this category include use of a seatbelt while being a passenger in a car, wearing a bike helmet when riding a bike in the last twelve months, and riding with a driver who had been drinking within the last thirty days.

Sexual Activity: Questions asked whether or not the teen had ever had sexual intercourse and if so, if the individual had used birth control during his or her last sexual encounter. Not having had sexual intercourse was treated as a form of birth control (abstinence) for this study.

Potential Protective Factors: The presence of cognitive protective factors was assessed via three questions concerning the perceived risk that individuals associated with smoking cigarettes, drinking alcohol and smoking marijuana. Social support was assessed by asking if the individual had adults, besides their parents, that they felt comfortable talking to or seeking help from. Family protective factors were assessed by asking teens to rate “how wrong” their parents would feel it would be for them to smoke cigarettes, drink alcohol or smoke marijuana. Additional questions asked if teens had

discussed HIV or AIDS with either their parents or other adult family members and whether or not they believed that their family loved and supported them.

STATISTICAL ANALYSIS

SPSS version 14.0 for Windows (Chicago, Illinois) was used for data management and statistical analysis. Chi Square tests were conducted initially to assess potential associations between health risk behaviors and weight status. For each variable, logistic regression was subsequently performed, to examine the potential relationship between weight status and specific risk factors, after controlling for demographic variables and potential protective factors.

For each dependent variable, hierarchical logistic regression was conducted by first including demographic and anthropometric information (BMI, Ethnicity, Age, and Gender) in block one. Block two subsequently included individual assessment of risk associated with a given behavior (if available). The third block included the potential protective mechanisms of social support and family factors. Because this was an exploratory approach, we considered it possible that a relationship between weight status and other risk behaviors might emerge after other independent variables were controlled. As a result, this same sequence was followed whether or not an original bivariate relationship was observed between weight status and a particular outcome variable.

For dependent variables with significant initial bivariate relationships with weight status, the addition of demographics variable in step one evaluates whether or not their relationship can be easily explained by differences in demographics between weight status groups. In steps two and three, we tested the potential importance of various

potentially protective factors on outcomes and also whether or not adding these factors reduced or eliminated the ability of weight status to predict that risk behavior.

Significance levels were set at $p < .05$. Missing data were eliminated from all analyses, and analyses were weighted so that risk estimates pertain to the general population of Wisconsin high school students attending public schools. All risk behaviors were coded such that higher values represented greater risk. As a result, odds ratios reflect the odds of engaging in the risky behavior, compared with the reference group for that independent variable.

RESULTS

Based on Chi-square tests, significant differences were noted between weight status and three risk behaviors: having ever smoked cigarettes $\chi^2(1, N=1917)=7.25, p < .01$, having chewed tobacco in the last thirty days $\chi^2(1, N=1960)=14.15, p < .01$, and not wearing a seatbelt while being a passenger in the car $\chi^2(1, N=1969)=9.02, p < .01$.

Logistic regression was then performed as described above for all risk behaviors. Due to limited space, full information will be provided for the significant behaviors and abbreviated information will be supplied for remaining risk factors.

RISK BEHAVIORS ASSOCIATED WITH UNINTENTIONAL INJURY: Not wearing a seatbelt, riding with a driver who had been drinking and not wearing a bike helmet were the dependent variables in this set of analyses.

Not Wearing a Seatbelt: In block one, BMI, ethnicity, and gender were predictors of not utilizing a seatbelt. Specifically, African Americans and Hispanics were considerably more likely, compared with Caucasians, to report that they did not use a seatbelt (OR 3.8;

CI 2.79 – 5.30 and OR 2.3; CI 1.49-3.47, respectively). Adolescent males were more likely than females were to avoid using seatbelts (OR 1.6; CI 1.30-1.98). Finally, compared with normal weight teens, overweight participants were significantly more likely to report not wearing a seatbelt, after controlling for demographic variables (OR 1.3; CI 1.04-1.64).

Since no assessment of perceived risk was available, the final block consisted of supportive and family protective factors. In the final model, BMI, African American and Hispanic race or ethnicity, and gender remained significant predictors of a lack of seatbelt use, to an extent comparable to that for the previous model (OR 1.3; CI 1.05-1.71, OR 4.1; CI 2.87-5.76, OR 1.6; 1.30-2.04 respectively). In addition, the adolescent's perception of family love and support showed a strong protective relationship such that teens who believed that their family loved and supported them were considerably less likely than those who did not have this belief to report not wearing seatbelts (OR .361; CI .241-.539).

Riding With a Driver Who Had Been Drinking in Last 30 Days: In block three, gender and individual perception of alcohol risk was predictive (OR .740; CI .594-.922 and OR .627; CI .422-.932 respectively). In addition, teens who had parents who thought it was wrong for the child to drink alcohol were significantly less likely than those whose parents did not think it was wrong, to ride with a drinking driver (OR .422; CI .337-.529). Higher levels of perceived family love and support was also significant as a protective factor (OR .62; CI .405-.956).

Not Wearing a Bike Helmet: In the final model, only race was predictive, such that the odds of neglecting to wear a bike helmet for African Americans was four times that for Caucasians (OR 4.0; CI 1.10-14.60).

SEXUAL ACTIVITY: Ever having sex and use of birth control with last act of sexual intercourse were the dependent variables in this set of analyses.

Ever Having Had Sex: In the final block African American teens were more likely than Caucasian teens and older teens were more likely than younger teens to have had sex (OR 3.2; CI 2.1-5.00 and OR 1.7; CI 1.55-1.89 respectively). The belief that their family loved and supported them was protective with these teens less likely to engage in sex (OR .340; CI .216-.536).

Not Using Birth Control with Last Sexual Intercourse: In the final block ethnicity was significant, specifically African Americans were less likely to have used birth control than Caucasians (OR 3.3; CI 1.73-6.18). Gender lost significance with the addition of other support and family protective factors. Teens that did not believe that they were loved and supported were less likely to use birth control with intercourse (OR .177; CI .096-.325).

ALCOHOL AND OTHER DRUG ABUSE: Smoking cigarettes, chewing tobacco, drinking alcohol and smoking marijuana were assessed in this set of analyses.

Smoking Cigarettes: In block one higher levels of the risk of having smoked were associated with heavier than ideal body weight (OR 1.35; CI 1.09-1.67), Hispanic ethnicity, relative to Caucasians (OR 1.66; CI 1.07-2.58), and older age (OR 1.33; CI 1.33-1.44). During block three, two protective factors were identified. Teens with parents who believed cigarette smoking was harmful were less likely to smoke than the teens

whose parents did not associate a risk with smoking (OR .195; CI .13-.30). Also teens that believed they were loved and supported by their families were less likely to smoke (OR .323; CI .20-.53). Hispanic race and older age remained significant (OR 1.9; CI 1.16-3.08 and OR 1.3; CI 1.19-1.42 respectively). However, weight status was no longer predictive. Consideration of the two protective factors separately showed that weight status lost its significance only when parent assessment of smoking risk was included in the model.

Chewing tobacco: In block one, ethnicity, age and gender were all significant predictors of use of chewing tobacco in the last 30 days. African Americans and Hispanics were both less likely than Caucasians to use chewing tobacco (OR .21; CI .07-.62 and OR .19; CI .05-.79). Older teens and males were more likely to chew tobacco (OR 1.2; CI 1.04-1.40 and OR 5.6; CI 3.54-8.83 respectively). Also, weight status remained a significant predictor after other demographics were controlled, such that, relative to normal weight teens, those who were overweight were significantly more likely to chew tobacco (OR 1.7; CI 1.20-2.44). In block two all above predictors remained significant. In addition, teens that perceived smoking as risky or harmful were less likely to chew tobacco (OR .318; OR .16-.63).

In block three, teens of parents who perceived risk with smoking were less likely than those whose parents did not perceive smoking as risky to use chewing tobacco (OR .46; CI .28-.76). When this variable was included in the model, African Americans and Hispanics were still less likely to use chewing tobacco, relative to Caucasians (OR .23; CI .08-.71 and OR .15; CI .03-.88 respectively). Males remained much more likely to chew tobacco (OR 5.8; CI 3.5 – 9.6). However, age was also no longer a significant

predictor. Contrary to the results for smoking, overweight or obese weight status remained a significant predictor of chewing tobacco after the available protective factors were included in the model (OR 1.5 CI 1.04- 2.30).

Ever Having Used Alcohol: In the final block, African American teens were less likely than Caucasians to use alcohol (OR .54; CI .36-.82). Age remained significant with older teens more likely to drink alcohol (OR 1.3; CI 1.15-1.44). Parents believing that there was risk associated with regular alcohol use was protective in that those children were less likely to use alcohol (OR .128; CI .09-.19). Teens who believed that the family loves and supports them also predicted less risk of ever using alcohol (OR .384; CI .20=.74).

Ever Having Used Marijuana: In the final block, African American teens (OR 1.7; CI 1.21-2.52), older teens (OR 1.5; 1.35-1.62) and individual's assessment of marijuana being harmful (OR .40; CI .27- .59) was predictive of marijuana use. The parent's assessing the use of marijuana as harmful (OR .28; CI .17- .46) and the child believing that they are loved and supported by family (OR .23; CI .15- .36) both were protective and showed less likelihood of these teens using marijuana.

DISCUSSION

Our findings suggest that overweight youth have higher levels of risk, relative to normal weight youth, for three of the nine assessed health risk behaviors. Overweight youth are less likely to wear seatbelts when being a passenger in a car, more likely to have ever smoked cigarettes, and to have used chewing tobacco. In contrast, overweight youth were no more likely than normal weight youth to have ever: used alcohol, smoked marijuana, had sexual intercourse, have been a passenger with a driver who had been

drinking in the past thirty day, failed to use birth control with intercourse or to wear a bike helmet.

Similar to the limited previous adolescent studies, the current results do support that overweight and obese adolescents are not more likely to have sexual intercourse (Cawley, Joyner, & Sobal, 2006a; Garriguet, 2005; Halpern, Udry, Campbell, & Suchindran, 1999) or drink alcohol (Neumark-Sztainer et al., 1997). These findings do contradict the association found between BMI and binge drinking, and past month alcohol, tobacco and other drug use category that was significant in the Pasch et al (2008) study. Contrary to the study by Neumark-Sztainer and colleagues (1997) we did find a significant relationship between tobacco smoking and BMI. In addition, our finding of a significant association between overweight status and chewing tobacco use in adolescents has not been previously published to our knowledge. Similar to the adult literature concerning seatbelt use, we found a significant relationship between overweight status and neglecting to wear a seatbelt (Lichtenstein, Bolton, & Wade, 1989; Schlundt et al., 2007).

Our findings revealed that BMI significantly predicted seatbelt use, cigarette use, and use of chewing tobacco. Moreover, BMI remained a significant predictor for each of these outcomes after demographic variables were included. Also, the relationship between weight status and seatbelt use and chewing tobacco use was unchanged when potential cognitive and support protective factors were included in the model. However, the relationship between weight status and cigarette use in adolescents was no longer significant when the protective factor of feeling loved and supported by their family was included in the model. It's possible that this variable may be directly protective of

smoking behavior for teens or that it is simply associated with a third factor related to smoking behavior that is not included in the equation.

Similarly, several risk appraisal variables were significant predictors of engaging in risk behaviors for adolescents. The adolescent perceiving harm associated with a specific risk behavior predicted a lower likelihood of riding with a driver who had been drinking, using marijuana, alcohol, or chewing tobacco. Similarly, parents perceiving harm with a given behavior predicted lower levels of smoking tobacco and marijuana, chewing tobacco, and alcohol use. It should also be noted that with respect to chewing tobacco, an individual perception of risk on the part of the student lost its significance when family support factors were added.

The most consistent predictor of lower levels of risk behaviors across outcomes was adolescent perceptions of feeling loved and supported by their family. This variable was significant in seven of the nine health risk behavior categories. Only bike helmet use and chewing tobacco use were not predicted by this variable. The least protective behaviors included having talked about AIDS or HIV with one's family or other adult family member, which did not influence sexual activity or birth control use. Having other adults to talk with was only protective for smoking.

These findings are significant in several respects. Overweight status appears to be a predictor of certain health risk behaviors in adolescents, specifically smoking tobacco, chewing tobacco and neglecting to wear a seatbelt. Acknowledging that this relationship exists, these behaviors should be addressed within schools, public awareness campaigns and health care provider visits. Second, these findings show that teens are receiving the message that these risky behaviors have consequences and this awareness does provide

some protection, supporting the value of continued anticipatory guidance. In addition, teens' perceptions of their parents' risk assessment of a particular health behavior plays a significant protective role. As a result, parents should be encouraged to continue talking with the teens about their concerns about specific risk behaviors.

Finally, the belief that one is loved and supported by one's family members appears to have a general protective role with respect to health risk behaviors. Incorporating this message through verbalizing and positive role-modeling from the family can be significant in protecting teens with respect to the majority of studied risk behaviors. However, it is important to note that it is the child's viewpoint regarding feeling loved and supported that matters.

Further studies are warranted to support findings of a significant association between overweight status in adolescents and cigarette and chewing tobacco use and seatbelt use. At this time limited information is found that assesses why overweight teens are less likely to wear their seatbelts, however, comfort may be a reasonable explanation and could be a focus of future studies.

LIMITATIONS

This study was limited by the questions and wording of questions that were utilized within the YRBS survey. Questions assessing health risk behaviors, even similar ones, were not necessarily written in the same format. For example, smoking was assessed based on whether or not the adolescent had ever smoked a cigarette; chewing tobacco use was assessed over the past 30 days. Furthermore, some information is likely to have been lost by recoding risk factors as dichotomous variables.

Also because the sample was representative of high school students attending public school in a Midwestern state, students attending private school or not attending school regularly may not have been well represented by the sample. In addition, the small representation of ethnic groups other than Caucasian, African Americans and Hispanics limited the opportunity to examine prevalence of risk behaviors and their association with weight status for other racial or ethnic groups.

Finally, the cross sectional nature of the dataset does not permit interpretations of causal direction. However, the associations for adolescent risk behaviors discussed here are still likely to be of interest to health care, education, and public health professionals alike.

Table 1: Original Youth Risk Behavior Survey Questions and How Recoded for Analysis

Variable and Question Number from Survey	Original Question from YRBS	Recoding for Analysis
<p><i>Demographics</i></p> <p>1.) Self reported height and weight (Q 6, 7)</p> <p>2.) Age (Q1)</p> <p>3.) Gender (Q2)</p> <p>4.) Ethnicity (Q5)</p>	<ul style="list-style-type: none"> • How tall are you without your shoes on? • How much do you weigh without your shoes on 	<p>Converted to BMI %</p> <p><5% omitted due to small numbers</p> <p>5-84% Normal weight</p> <p>> 85% Overweight or Obese</p>
	How old are you?	None

	What is your race?	1) Caucasian 2) African American 3) Hispanic Latino or Multiple Hispanic 4) Other
Substance Abuse Ever drank alcohol (Q39)	During your life, on how many days have you had at least one drink of alcohol	0 = no 1 or more = yes
Ever smoked cigarettes (Q28)	Have you ever tried cigarette smoking, even one or two puffs	0 = no 1 = yes
Use of chewing tobacco (Q36)	During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen	0 = no 1 or more = yes
Ever used marijuana (Q45)	During your life, how many times have you used marijuana	0 = no 1 or more = yes

<p>Unintentional Injury</p> <p>Use of seat belt when a passenger in car (Q9)</p>	<p>How often do you wear a seat belt when riding in a car driven by someone else</p>	<p>0 = never, rarely or sometimes</p> <p>1 = most of the time or always</p>
<p>Use of helmet when riding a bicycle (Q8)</p>	<p>When you rode a bicycle during the past 12 months, how often did you wear a helmet</p>	<p>0 = never, rarely or sometimes</p> <p>1 = most of the time or always</p> <p>I did not ride a bicycle during last 12 months counted as missing data</p>
<p>Rode with a driver who was drinking in last 30 days (Q10)</p>	<p>During the last 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol</p>	<p>0 = no</p> <p>1 or more = yes</p>
<p>Sexual Activity</p> <p>Ever had sex (Q 58)</p>	<p>Have you ever had sexual intercourse</p>	<p>0 = no</p> <p>1 = yes</p>
<p>Used birth control with last sexual encounter (Q64)</p>	<p>The last time you had sexual intercourse, what one method did</p>	<p>0 = no method was used to</p>

	you or your partner used to prevent pregnancy	prevent pregnancy 1 = birth control pills, condoms, depo-provera (injectable birth control), withdrawal, some other method, and I have never had sexual intercourse was treated as abstinence Missing = not sure
Potential Protective Factors Individual's risk assessment of smoking (Q95)	How much do you think people risk harming themselves (physically or in other ways) if they smoke one or more packs of cigarettes per day	0 = no risk 1 = slight, moderate or great risk
Individual's risk assessment of marijuana use (Q99)	How much do you think people risk harming themselves (physically or in	0 = no risk 1 = slight,

	other ways) if they smoke marijuana regularly	moderate or great risk
Individual's risk assessment of drinking alcohol (Q97)	How much do you think people risk harming themselves (physically or in other ways) if they take one or two drinks of alcohol nearly every day	0 = no risk 1 = slight, moderate or great risk
Parent's risk assessment of smoking (Q96)	How wrong do your parents feel it would be for you to smoke cigarettes	0 = very wrong or wrong 1 = a little bit wrong, not at all wrong * not sure = missing
Parent's risk assessment of marijuana use (Q100)	How wrong do your parents feel it would be for you to smoke marijuana	0 = very wrong or wrong 1 = a little bit wrong, not at all wrong * not sure = missing
Parent's risk assessment of drinking alcohol (Q98)	How wrong do your parents feel it would be for you to drink alcohol at least twice a month	0 = very wrong or wrong 1 = a little bit

		wrong, not at all wrong * not sure = missing
Parents love and support individual (Q111)	Do you agree or disagree that your family loves you and gives you help and support when you need it	0 = strongly agree or agree 1 = disagree or strongly disagree * not sure = missing
Other adults teen feels comfortable talking with (Q114)	Besides your parents, how many adults would you feel comfortable seeking help from if you had an important question affecting your life	0 = 0 adults 1 = 1 or more adults
Has individual talked with parents or another adult about AIDS (Q110)	Have you ever talked about AIDS or HIV infection with your parents or other adults in your family	0 = yes 1 = no * not sure = missing

Table 1: Variable used, original question number, original question and how recoded for analysis. Abbreviations: YRBS = Youth Risk Behavior Survey, BMI = Body Mass Index, AIDS = Acquired Immune Deficiency Syndrome, HIV = Human Immunodeficiency Virus

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CHAPTER 5

Parenting and Feeding Behaviors Associated with a Child's Weight Status in African American and Caucasian 9-15 Year Old Youths

Abstract

Background: Previous research on parenting, feeding behaviors and a child's weight status has focused on preschool aged Caucasian children, limiting knowledge needed.

Objective: To investigate what parenting and feeding behaviors are utilized by African American and Caucasian parents of school age children when the parent identifies the child's weight as a concern and to understand how relationships among parenting, feeding behaviors and the child's Body Mass Index (BMI) are influenced by the ethnicity, socioeconomic status (SES) and/or parent's BMI.

Method: A cross-sectional study design was used with a convenience sample of 176 parent-child dyads (89 Caucasian and 87 African American). Multiple and hierarchical regression analyses were performed.

Results: When parents identified being concerned with their child's weight they demonstrated increased rejection of child ($p=.01$), restriction of food ($p=.00$) and pressure to eat ($p=.003$). Caucasian parents exhibited rejection ($p=.02$), restricting food ($p=.000$) and pressuring child to eat ($p=.001$), but African American parents only used restriction ($p=.02$). The relationship between parenting, feeding behaviors and the child's BMI was influenced minimally by parent BMI explaining 3.6% of the variance ($p=.01$). Parenting and feeding behaviors played a larger role (an additional 24.4% of the variance) in the child's BMI when controlling for ethnicity, SES, and parent BMI.

Discussion: Findings from the study demonstrate that there are ethnic differences between parenting and feeding behaviors. Parenting and feeding behaviors play a large role in children's BMI even when controlling for ethnicity, SES, and a parent's BMI.

Key Words: Parenting behaviors, feeding behaviors, pediatric obesity

The prevalence of childhood obesity has increased dramatically since the 1980's and has not been proportionate across race or socioeconomic status (Ogden et al., 2008). Groups disproportionately affected include African Americans and those with a lower socioeconomic status, although there have been some inconsistencies relating pediatric obesity and socioeconomic status (Wang & Beydoun, 2007). Pediatric obesity is a multifactorial problem that involves a combination of genetic and environmental factors and is not easily solved (O'Brien et al., 2007).

The importance of the parent's role in moderating the child's environment cannot be underestimated. Previous research has examined how parenting and feeding behaviors affect a child's weight status, but these studies have focused on preschool aged Caucasian children. This study examined parenting and feeding behaviors that are utilized by African American and Caucasian parents of children between the ages of 9-15 years old when the parent identifies the child's weight as a concern. Further assessment included how ethnicity, socioeconomic status and/or the parent's weight affected these relationships.

Related Literature

Parenting Behaviors

The family is often thought of as the focal point for environmental interventions to address pediatric obesity. This is especially true of younger children due to the increased dependence that the child has on the parents. The act of parenting is a process of complex two-way interactions that occur between the child and the parent (Luther, 2007). Seminal work was performed by Diana Baumrind that examined parenting

through the context of amount of responsiveness and demandingness parents exert on the child (Baumrind, 1966, 2005). Through her work, three models of parenting emerged: permissive, authoritarian, and authoritative (Baumrind, 1966). Eventually a fourth parenting typology of neglectful was added. With continued research, parenting behaviors have been broken down to three aspects: the level of acceptance versus the level of rejection, the level of psychological control versus psychological autonomy and the level of firm control versus the level of lax control (Barber et al., 2005; Dornbusch et al., 1987). The parent who utilizes a higher level of acceptance, exerts firm control but will not overwhelm the child with restrictions and allows for psychological autonomy has been labeled the authoritative parent. Children of authoritative parents emerge as socially responsible and more independent than children raised by parents using the other typologies (Baumrind, 1966; Dornbusch et al., 1987). This style of parenting is more prevalent among European-American and middle class families with these children more likely to have these parenting practices echoed in their neighborhoods and social circles (Steinberg et al., 1994).

The question has been raised if this style of parenting is always superior across different ethnic backgrounds, cultures and socioeconomic classes. It has been suggested that in certain situations, a parent who utilizes a strict and more vigilant level of control (authoritarian parenting) may benefit the child (Steinberg et al., 1994). The example commonly provided includes a child from an economically disadvantaged background who may live in an unsafe environment. These circumstances may necessitate a more authoritarian approach for safety purposes (Steinberg et al., 1994).

Feeding Behaviors

When linking parenting behavior with childhood obesity, feeding practices utilized by the parent have been examined. Restrictive feeding practices and pressuring the child to eat have been associated with overeating and poorer self-regulation in preschool age children (Eneli et al., 2008; Savage et al., 2007). Excessive parental control and pressure to eat may influence dietary intake and disrupt the child's short-term behavioral control of food intake (Savage et al., 2007). Savage et al. (2007) have summarized multiple studies and noted that parents with more controlling or authoritarian feeding practices have fewer fruits and vegetables available in their homes and their children consume less of these food groups. Authoritative feeding practices have been positively associated with increased consumption of dairy and vegetables (Moens et al., 2007). The authoritative feeding practice would be when the parents are highly responsive to their child's eating cues and behaviors allowing them to participate in the feeding process yet set limits and have clear expectations regarding the child's needs (Savage et al., 2007). Similar to general parenting, this is thought of as the superior feeding style that promotes appropriate growth and nutrition. While an authoritarian style of parenting can be seen as a benefit in some cultures related to safety, there have not been any associated benefits found when utilizing these parenting behaviors within the feeding context.

Some researchers have proposed that parenting behaviors are not fixed and that a parent may change their parenting behavior based on the specific problem being dealt with, depending on their level of concern and/or level of constraint in that problem area

(Costanzo & Woody, 1985). Costanzo and Woody (1985) theorized that the parent's own individual values and perceptions of the long term consequences thought to be associated within that particular domain (e.g. obesity) would determine their level of concern. Using this approach with parenting behaviors and feeding, it would be important to know the level of concern that a parent attributed to the child's weight to help understand the parenting behavior that they use with feeding. Understanding that the parenting behaviors may be different within this context, education and possible interventions can be created and delivered with a higher likelihood of success.

The majority of studies that have assessed feeding behaviors, parenting behaviors and children's weight have been performed with preschool or younger children of Caucasian descent (Fisher & Birch, 1999; Rhee et al., 2006; Wake et al., 2007). This is an optimal time frame that would allow for easier changes to be implemented as habits are less engrained. Due to the vast diversity amongst developmental stages of children and ethnic groups, the findings from these studies cannot be generalized for use with other age groups. With the already present childhood obesity problem noted in all ages, it is important for healthcare providers to also understand how to intervene with parents of older children.

This study included children 9-15 years of age of African American and Caucasian descent. The purpose was to examine general parenting and specific feeding behaviors related to the child's body mass index z score (BMIz), while controlling for ethnicity, socioeconomic status (SES) and parental Body Mass Index (BMI). Specific questions were 1) What feeding behaviors and parenting behaviors are reported when the parent identifies an increased concern about the school age child's weight status and do

these associations vary between ethnic groups? 2) Is the relationship between parenting, feeding behaviors and a school age child's BMI z score influenced by ethnicity, socioeconomic status, and/or parent's BMI?

Methods

Study Design and Population

A cross sectional design was used with a purposive convenience sample of 176 parent child dyads from a Midwestern state. Dyads with children between 9-15 years old (mean age 11.6 years; SD = 1.95) were recruited from a variety of locations including a private pediatric clinic, two Boys and Girls Clubs, an inner city nurse practitioner run clinic, a pediatric specialty clinic and an inner city University based dental clinic. Of the dyads 89 (50.6%) described themselves as Caucasian and 87 (49.4%) as African American descent. Parents' ages ranged from 23 to 59 (mean age 38.2 years; SD = 7.00). Mothers made up the majority of the parents with 148 (84.1%) participating versus 28 (15.9%) fathers. Ninety-two males (52.3%) and 84 females (47.7%) completed the surveys. Ninety-three (52.8%) of the parents were working full time, 37 (21%) were working 20 hours or less, 34 (19.3%) were not working and an additional 6 (3.4%) were disabled. Annual family income was broken down by 0-\$25,000 (40.3%), \$26,000 - \$50,000 (31.8%), \$51,000 - \$75,000 (13.6%), \$76,000-\$100,000 (9.1%), and >\$100,000 (5.1%). One hundred and six (60.2%) of the children qualified for free or reduced lunch. See Table 1 for anthropometrics of participants.

Written consent and assents were obtained from both the parent and the child prior to participating within the study. Approval for the study was granted through the

Internal Review Boards of a Midwestern Children's Hospital and University. A \$10.00 gift certificate to a local department store was provided to the child and the parent (total of \$20.00) upon completion of their participation to reimburse them for their time. A general demographic form was utilized to confirm biological parental status, gender and age of child and parent, and qualification for free or reduced lunch status at school.

Constructs Measured and Questionnaires

Parenting Behaviors

The 30-item Parent Report of Parenting Behavior Inventory (PRPBI) was completed by the parent (Schaefer, 1965a, 1965b; E. Schludermann & Schludermann, 1970). The Child Report of Parenting Behavior Inventory (CRPBI) was initially published in 1965 by Earl Schaefer and consisted of 260 items allowing children to assess their parent's parenting style (Schaefer, 1965a, 1965b). The parent had their own version of the same scale called the PRPBI (Schaefer, 1965a, 1965b). Through the years the questionnaires have been revised to the current 30-item survey that continues to assess three dimensions: acceptance versus rejection, psychological control versus psychological autonomy, and firm control versus lax control. Internal consistency was adequate with scores ranging from .65 to .75. Within the current study, internal consistency was .67 (firm control versus lax control), .82 (psychological control versus psychological autonomy) and .81 (acceptance versus rejection). Internal consistency varied when the instrument was assessed for each ethnic group. For the Caucasian population, internal consistency was .45 (firm control versus lax control), .83 (psychological control versus psychological autonomy) and .84 (acceptance versus

rejection). For the African American population, internal consistency was .72 (firm control versus lax control), .86 (psychological control versus psychological autonomy) and .78 (acceptance versus rejection).

Parents responded to questions across the three domains of acceptance (e.g., “smiles at my child very often,”) psychological control (e.g., “is less friendly toward my child if s/he does not see things my way,”) and firm versus lax control (e.g., “insists that my child must do exactly as s/he is told) by choosing if they were “like”, “somewhat like”, or “not like” each of the items listed. Higher scores within each subscale reflected increased acceptance, psychological control, and firmness. See Table 2 for additional instrument information.

Parent’s Perception and Concerns Regarding Child Obesity

The Child Feeding Questionnaire (CFQ) has a total of 31 items, which are answered on a five point likert scale (Birch et al., 2001). A total of seven subscales were measured including the parents’ responsibility for feeding the child, parent’s monitoring of the child’s nutritional intake, parent’s restricting the nutritional intake, parental practices of encouraging food intake, perceived child weight, perceived parent self-weight and parent’s concern about their child’s weight (Birch et al., 2001; Kaur et al., 2006). Internal consistency was acceptable in prior studies with scores ranging from alpha of 0.70 for pressure to eat to 0.92 for monitoring of food (Birch et al., 2001). In the present study, internal consistency scores were acceptable with pressure to eat (.75), restriction (.86), concerns about child overweight (.88), and monitoring (.90). The instrument was reliable for both ethnic groups with the following internal consistencies: Pressure to eat (Caucasian .73, African American .72), Concern about child’s weight

(Caucasian .89, African American .86), Restriction (Caucasian .88, African American .85), and Monitoring (Caucasian .93, African American .86). See Table 3 for additional instrument information.

Anthropometrics

Weight status was obtained by a trained healthcare provider who measured the individual's height and weight with shoes removed. Seca 869 portable medical grade scale and Seca 214 portable stadiometer were utilized for non-medical sites. Calibrated medical grade Seca digital scale and wall-mounted stadiometer were utilized for medical sites. Height and weight measurements were converted to a Body Mass Index (BMI) for adults and a BMI z score for the children. BMI z scores standardized for age and sex according to the national norms were obtained from the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine's website <http://www.bcm.edu/cnrc/bodycomp/bmiz2.html>.

Data Analysis

Data were analyzed using SPSS Version 14.0. Standard and hierarchical regressions were used for question one and two respectively. All p-values were two-tailed, with a $p < 0.05$ considered statistically significant. Collinearity diagnostics of tolerance and Variance Inflation Factors (VIF) were found to be within acceptable ranges. For research question one, a standard multiple regression analysis was performed. The dependent variable was the concern that the parent had about the child's weight and independent variables were the acceptance versus rejection scale, psychological control versus psychological autonomy, level of firm control versus level

of lax control, restriction of food subscale, pressure to eat subscale, and monitoring of food subscale. After performing analysis for the entire sample, the file was split by ethnicity and analyses were run again to assess for differences between ethnic groups. For research question two, a hierarchical regression analysis was performed. The dependent variable was the child's BMI z score. The first block of variables included parent ethnicity, socioeconomic status/family income, and parent BMI. The second block consisted of acceptance versus rejection scale, psychological control versus psychological autonomy, level of firm control versus level of lax control, restriction of food subscale, pressure to eat subscale, and monitoring of food subscale.

Results

Question 1: What feeding behaviors and parenting behaviors are reported when the parent identifies an increased concern about the school age child's weight status? Do these associations vary between ethnic groups?

Whole Group: The multiple regression analysis revealed that the model explained 37.2% of the variance in parent concern regarding their child's weight [$R^2 = 0.37$; $F(6, 167) = 18.11$; $p = .00$]. Significant predictors included: Acceptance versus Rejection ($p = .01$), Restriction of Food ($p = .00$) and Pressure to Eat ($p = .003$). The restriction of food variable was the strongest unique contributor explaining 16.6% followed by pressuring the child to eat, which explained 3.4%. Rejecting the child explained 2.5%. See Table 4 for further information.

Split Group: For the Caucasian participants the model explained 38.7% of the variance when the parent identified being concerned with their child's weight [$R^2 = .39$; $F(6,81) = 10.15$; $p = .000$]. Significant predictors were Acceptance versus Rejection ($p = .02$),

Restriction of Food ($p = .00$) and Pressure to Eat ($p = .001$). The restriction of food variable was the strongest unique contributor explaining 14.4% followed by pressure to eat explaining 8.2% and rejection of the child explaining 4%.

For the African American participants, the model explained 31.5% of the variance when the parent identified being concerned with their child's weight [$R^2 = .32$; $F(6,79) = 7.52$; $p = .00$]. The only significant predictor was Restriction of Food ($p = .00$). As a unique contributor, this factor explained 15% of the variance related to the parent's concern with their child's weight. See Table 5 for additional information.

Question 2: Is the relationship between parenting, feeding behaviors and a school age child's BMI z score influenced by ethnicity, socioeconomic status, and/or parent's BMI? Hierarchical regression analysis was performed to assess the relationship between parenting behaviors while controlling for ethnicity, socioeconomic status and parent's BMI. In the first model that was comprised of ethnicity, family income and parent BMI the model explained 5.1% of the variance of the child's BMI Z score [$R^2 = .05$; $F(3,172) = 4.11$; $p = .008$]. After the parenting behaviors were added, the model explained 27.3% of the variance of the child's weight or an additional 24.4 % of the variance after controlling for ethnicity, SES, and parent BMI [$R^2 = .27$; $F(9,166) = 8.31$; $p = .000$].

In model one, only the parent BMI was a significant contributor ($p = .01$) accounting for 3.6% of the variance. In model 2, when adding the parenting behaviors, the parent BMI remained a unique contributor ($p = .04$) along with rejection of the child ($p = .003$), restriction of food (.001) and pressure to eat (.00). Pressuring the child to eat was the strongest contributor explaining 12.7%, restriction explained 4.9%, rejection 3.6% and parent BMI 1.8%. See Table 6 for additional information.

Discussion

When the parent of the 9-15 year old child identified that they were concerned with their child's weight, associated findings included rejecting the child and using authoritarian feeding behaviors such as exerting control over their child's feeding. Specifically the parents restricted access or portion sizes of foods and pressured the child to eat certain types and amounts of food. This supports previous findings with younger children that higher levels of concern will be associated with exerting control over feeding (Birch & Fisher, 2000; Musher-Eizenman, Holub, Hauser, & Young, 2007).

Ethnic differences were found related to specific parenting behaviors and feeding behaviors. Almost identical to the whole group, the Caucasian sample mirrored the same behaviors of restriction of food and pressure to eat with rejecting the child when concerned about the child's weight. For the African American sample, restriction was the only behavior that was significant when parents were concerned about their child's weight. Pressuring the child to eat and general rejection were not utilized or found to be significant in the African American participants. This somewhat contradicts previous research that has shown African American parents to have more authoritarian parenting styles, although the previous literature did not examine parenting when parents had a level of concern for their child's weight (Dornbusch et al., 1987; Radziszewska, Richardson, Dent, & Flay, 1996; Rhee et al., 2006; Wake et al., 2007). These findings may be related to culture or environment in which the participants raise their child or how they choose to address the concern that they have with the child's weight. It may be that African American parents do tend to use more authoritarian parenting styles in general,

but when specifically concerned with their child's weight they will choose restriction of food as their primary solution.

An additional difference found between the ethnic groups was how reliable the instrument was when used separately for each ethnic group. In this study the firmness versus laxness subscale had a poor internal consistency score when utilized for the Caucasian participants alone. This prohibited the use of the firmness subscale to be used as a reliable indicator for the Caucasian population. These findings were unexpected since the instrument was previously validated with a Caucasian sample with acceptable reliability scores. The remainder of the subscales were reliable for use with the entire sample and within each ethnic group separately. This documents the importance of assessing reliability within a sample, since differences by ethnicity can be found.

It seems contradictory that a parent who is concerned about their child's weight would pressure the child to eat but it is not certain which behavior occurred first, the concern about the weight or the pressuring the child to eat. The possible explanation of this is that the child became overweight through the continued pressure to eat or 'clean the plate' mentality. Restriction of food similarly has been shown to counteract the parent's attempt to have a child eat healthier (Fisher & Birch, 1999; Musher-Eizenman et al., 2007). When sweets or junk food are used as a reward for eating healthy foods or when favorite non-nutritious food items are restricted from the child there is a rebound effect. The child ends up not liking the healthy food they were coerced to eat or they seek out the restricted items and eat in higher amounts (Birch & Fisher, 2000; Fisher & Birch, 1999; Klesges, Stein, Eck, Isbell, & Klesges, 1991; Musher-Eizenman et al., 2007).

Ethnicity, family income, and parent BMI had surprisingly little influence on the child's weight. Only the parent BMI was significant, explaining less than 4% of the variance. Parenting and feeding behaviors had a much larger effect on the child's weight status. This contradicts extensive previous research that has concluded that the genetic influences on body mass index are substantial (Stunkard, Harris, Pedersen, & McClearn, 1990; Wake et al., 2007; Whitaker et al., 1997). Our findings differ from the results of a study that assessed relationships between BMI and parenting styles on 4 and 5 year old children. It was found that the parental BMI status was the strongest predictor and that the relationship was not attenuated by inclusion of parenting styles or dimension ((Rhee et al., 2006; Wake et al., 2007).

Limitations

Due to the cross sectional design of this study, causality is unable to be determined. Because the parenting and feeding behaviors were assessed at a single meeting it is unknown if the parents had utilized different parenting or feeding practices before they became concerned about their child's weight or prior to completing of the questionnaires. An additional limitation of the study is that the findings cannot be generalized to other age groups or ethnic groups.

Clinical Implications

Further research needs to be performed that examines how a parent's behavior related to nutrition influences a child and this research needs to include diverse samples with children of different age groups. It will be important to further understand how different ethnic groups respond to having a concern about their child's weight. It is vital

for healthcare providers to work with families to teach appropriate approaches for parents to utilize when concerns are present. In the optimal situation, feeding behaviors and general parenting behaviors should be assessed early on before the behaviors become engrained and feeding habits are entrenched in the child. We must also understand how to work with families of older children and how to intervene successfully. Integrating the family's culture into care will be necessary since it is clear that there are differences between ethnic groups.

Conclusion

In the attempts to reduce or curb the pediatric obesity epidemic it would seem logical to continue to focus on the parent as the agent of change. Parenting behaviors and feeding behaviors have a direct impact on a child's weight. Parents should be taught appropriate feeding behaviors and parenting techniques when their children are very young. By starting this earlier, the behaviors will not be as engrained in the parent and subsequently the child. When working with parents of older age children, encouraging the parent to be accepting and to be aware of their feeding practices will be the first step to making changes or suggesting improvements. Further work needs to be done with diverse samples to understand how parenting behaviors and feeding behaviors can fit into an individual's culture.

Table 1: Descriptive Statistics – Anthropometrics

	N	Minimum	Maximum	Mean	Standard Deviation
Parent Body Mass Index (BMI)	176	17.60	58.30	32.15	8.12
Caucasian	89	18.70	51.70	30.86	7.60
African American	87	17.60	58.30	33.47	8.46
Child Body Mass Index	176	13.30	50.60	23.21	7.53
Caucasian	89	13.30	50.60	22.71	7.88
African American	87	15.10	48.20	23.73	7.16
Child BMI z score	176	-4.16	3.02	.98	1.19
Caucasian	89	-4.16	2.91	.78	1.24
African American	87	-2.77	3.02	1.19	1.10

Table 2: Parent Report of Parent Behavior Inventory Subscale Means and Standard Deviations

Parent's Report of Parent Behavior Inventory (PRPBI)	Number of Items in Subscale	Range of Scores	Mean		Standard Deviation	
Acceptance Vs. Rejection	10	10-30 points possible	W	27.5	W	2.78
			C	27.71	C	2.76
			AA	27.29	AA	2.80
Psychological Control Vs. Psychological Autonomy	10	10-30 points possible	W	16.0	W	4.38
			C	14.47	C	3.55
			AA	17.56	AA	4.61
Firm Vs. Lax	10	10-30 points possible	W	16.62	W	4.42
			C	15.66	C	2.12
			AA	17.60	AA	3.35

W: Whole Group C: Caucasian AA: African American

Table 3: Child Feeding Questionnaire Subscale Means and Standard Deviations

Child Feeding Questionnaire (CFQ)	Number of Items in Subscale		Mean		Standard Deviation	
Concern About Child Overweight	3	3-15 points possible	W	8.67	W	4.42
			C	7.78	C	4.35
			AA	9.58	AA	4.34
Restriction	8	8-40 points possible	W	25.21	W	7.97
			C	23.39	C	8.05
			AA	27.07	AA	7.48
Pressure to Eat	4	4-20 points possible	W	10.08	W	4.38
			C	8.60	C	3.99
			AA	11.60	AA	4.27
Monitoring	3	3-15 points possible	W	10.55	W	3.20
			C	10.22	C	3.46
			AA	10.87	AA	2.90

W: Whole Group C: Caucasian AA: African American

Table 4: Multiple Regression Analysis Predicting Parenting Behaviors Used When Parent Identifies Concern with their School Aged Child's Weight

	Unstandardized Coefficients		Standardized Coefficients	Sig.	95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	3.64	1.31		.006	1.06	6.22		
Parent Acceptance vs. Rejection	-.09	.03	-.16	.01	-.15	-.02	.92	1.08
Parent Psychological Control vs. Psychological Autonomy	.04	.02	.13	.07	-.004	.09	.75	1.33
Parent Firmness vs. Laxness	-.05	.03	-.10	.11	-.12	.01	.95	1.05
Restriction	.77	.11	.52	.00	.55	1.00	.61	1.63
Pressure to Eat	-.28	.09	-.21	.003	-.46	-.10	.78	1.28
Monitoring	.13	.10	.09	.23	-.08	.33	.64	1.56

Dependent Variable: Parent concern about child overweight

Table 5: Multiple Regression Analysis Predicting Parenting Behaviors Used When Parent Identifies Concern with their School Aged Child's Weight – Split by Ethnicity

Ethnic Group	Independent Variables	Unstandardized Coefficients		Standardized Coefficients	Sig	95% Confidence Interval for B	
		B	Std. Error			Lower Bound	Upper Bound
Cauc.	(Constant)	5.55	1.97		.006	1.63	9.47
	Acceptance vs. Rejection	-.12	.05	-.22	.02	-.21	-.02
	Psychological Control vs. Psychological Autonomy	.006	.04	.01	.88	-.07	.08
	Firmness vs. Laxness	-.06	.05	-.12	.20	-.16	.03
	Restriction	.68	.15	.47	.00	.38	.98
	Pressure to Eat	-.45	.13	-.31	.001	-.72	-.19
	Monitoring	.17	.14	.13	.22	-.10	.44
African American	(Constant)	2.83	1.84		.13	-.84	6.50
	Acceptance vs. Rejection	-.08	.05	-.16	.09	-.18	.01
	Psychological Control vs. Psychological Autonomy	.04	.03	.14	.19	-.02	.11
	Firmness vs. Laxness	-.03	.05	-.06	.52	-.13	.07

	Restriction	.77	.18	.50	.00	.42	1.13
	Pressure to Eat	-.20	.14	-.15	.15	-.48	.07
	Monitoring	.13	.17	.09	.43	-.20	.47

Dependent Variable: Parent concern about child overweight

Table 6: Hierarchical Regression Analysis Predicting Effect of Parenting Behaviors on Child's Weight after controlling for Ethnicity, Income and Parent BMI

	I.V.	Unstandardized Coefficients		Standardized Coefficients	95% Confidence Intervals for B		Sig.
		B	Std. Error	Beta	Lower Bound	Upper Bound	
1	Constant	-.35	.52		-.14	.67	.50
	Ethnicity	.31	.19	.13	-.07	.69	.11
	Annual Family Income	-.02	.08	-.02	-.19	.14	.78
	Parent BMI	.03	.01	.19	.007	.05	.01
2	Constant	1.73	1.21		-.66	4.12	.16
	Ethnicity	.28	.18	.12	-.08	.64	.12
	Annual Family Income	-.09	.07	-.09	-.24	.05	.21
	Parent BMI	.02	.01	.14	.001	.04	.04
	Acceptance vs. Rejection	-.09	.03	-.20	-.14	-.03	.003
	Psych. Control vs. Psych. Autonomy	.04	.02	.14	-.004	.08	.07
	Firm vs. lax	-.002	.03	-.005	-.06	-.05	.94
	Restriction	.34	.10	.29	.15	.54	.001
	Pressure	-.45	.08	-.42	-.61	-.29	.000
	Monitoring	.06	.09	.05	-.12	.24	.51

Dependent Variable: Child BMIz score

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APPENDIX A

HUMAN RESEARCH REVIEW BOARD ASSENT

STUDY TITLE: **Healthy Families**

INVESTIGATORS: Michele Polfuss, RN, MSN, APNP and Cindy Biesterveld, RN

PHONE NUMBER: (920) 470-2150

STUDY SPONSOR: Children's Research Institute

A. WHAT IS THE PROBLEM?

You are being invited to take part in this study because you are a child between the ages of 9-15 years of age, read and speak English and live with a parent for at least 50% of the time that will also participate in this study.

B. WHAT IS THE PURPOSE OF THIS RESEARCH STUDY?

To examine the relationship between health habits and parenting behaviors.

C. WHAT IS INVOLVED IN THE RESEARCH STUDY?

If you are going to be in the study you will complete one questionnaire and have a height and weight performed without shoes on. Participation will end after today.

D. WHAT ARE THE RISKS TO YOU IN THIS RESEARCH STUDY?

The risks associated with participation in this study are minimal and are no more than you would encounter in your everyday life. Potential risk would be that a participant

might have anxiety or be uncomfortable having a height and weight performed or answering questions about their parent's parenting behaviors.

E. WHAT ARE THE POSSIBLE BENEFITS TO YOU IN THIS RESEARCH STUDY?

No direct benefits are expected by participating within this study. Your participation will provide a better understanding on the area of parenting behaviors and family member's health, which will provide future areas of research or possible ways to improve other children's health.

F. WILL YOU BE PAID FOR TAKING PART IN THE RESEARCH STUDY?

You will receive a Wal-Mart gift card of \$10.00 for completion of this study.

G. DO YOU HAVE TO PARTICIPATE IN THIS RESEARCH STUDY?

You do not have to be in this study, and if you are in it you can stop at any time. If you have any questions please ask your researcher or research assistant.

H. PERMISSION TO PROCEED

Your parents / guardian will receive a copy of this form. A copy of the signed consent, assent and HIPAA Authorization will be kept in your medical record. Writing my name on this page means that the page was read (by me/to me) and that I agree to be in the study. I know what will happen to me. If I decide to quit the study, all I have to do is tell the person in charge.

Childs Name

Child's Signature

Assent Form administered and explained in person by:

Date

Principal Investigator or Designee

Date

APPENDIX B

HUMAN RESEARCH REVIEW BOARD STATEMENT OF VOLUNTEER CONSENT
FOR RESEARCH STUDY**TITLE OF STUDY: Healthy Families****PRINCIPAL INVESTIGATOR: Michele Polfuss, RN, MSN, CPNP****PHONE NUMBER: (920) 470-2150****FULL STREET ADDRESS: 1534 E. Meadowgrove Boulevard Appleton, Wisconsin
54915****E-MAIL ADDRESS: mpolfuss@mcw.edu FAX NUMBER: 414-266-4709****CO-INVESTIGATORS: NEED TELEPHONE NUMBERS
Marilyn Frenn 414-288-3845***If appropriate, list name and address of sponsor:***SPONSOR: Children's Hospital of Wisconsin Research Institute (CRI)****FULL STREET ADDRESS: Children's Hospital of Wisconsin C/O Children's
Research Institute PO Box 1997 Milwaukee, WI 53201-1997**

We invite you/your child to take part in this research study. Taking part in this research study is you/your child's decision. You/your child do not have to participate. You/your child may stop or decide to leave the study at any time. If you/your child stop or leave the study, you/your child will not be penalized. You/your child will still receive any treatments, help or benefits coming to you/your child. You/your child will not benefit or be helped from being in this research study. The information in this form explains what will happen to you/your child in the study. The researchers may be reviewing this form with you/your child and can answer any questions you/your child may have. This

form also tells you/your child about the risks, discomforts and other information about the study. Medical language is hard to understand for most people. If there is anything that you/your child do not understand or are unsure about, please ask questions.

You/your child should only agree to take part in this research study and sign the consent form if you/your child understand what will happen to you, what the risks are, and that your questions have been answered.

WHAT IS THE PROBLEM?

Health behaviors of children such as levels of activity, nutrition intake and weight are thought to occur for many reasons. Parenting within the home has been thought to relate to the child's health behaviors. This study would like to examine parenting behaviors and to see if there is a relationship to the child's health.

You/your child are being asked to participate in this study because you live together at least 50% of the time, you are able to speak and read English language, your child is between the ages of 9-15 years of age and will be able to answer questions about you/your child's health habits.

WHAT IS THE PURPOSE OF THIS RESEARCH STUDY?

The purpose of this study is to examine the relationship between parenting behaviors from the child and parent's point of view and to see if/how they relate to the child's health habits and height and weight.

Currently there is limited information that has examined this relationship between parenting behaviors and health. What has been done has focused on younger children of Caucasian descent. Your participation will assist in providing information about older children of both Caucasian and African American descent.

You and your child will be 2 of 340 participants in this research study. Participants will be selected from the Boys and Girls Club of the Fox Valley located in Appleton, Wisconsin, Quad Med Pediatric Clinic in West Allis, Wisconsin and Marquette Neighborhood House in Milwaukee, Wisconsin.

WHAT IS INVOLVED IN THE RESEARCH STUDY?

If you and your child participate in this study you, as the parent will complete two questionnaires and have a height and weight done with shoes removed. Your child will complete one questionnaire and have a height and weight done with shoes removed. Participation in this study is a one time occurrence and is expected to take 30 minutes or less of your time.

WHAT ARE THE RISKS TO YOU IN THIS RESEARCH STUDY?

Risks and side effects of participating in study include:

- Potential anxiety about answering questions about parenting or health behaviors
- Potential anxiety about having a height and weight performed

WHAT IF PROBLEMS OCCUR DURING THE STUDY OR WITH TREATMENT?

No problems are anticipated with participating within the study. If during the completion of questionnaires or obtaining height and weight you have any concerns you are asked to tell research staff. If significant anxiety or stress was noted you would be referred to appropriate authorities.

F. WHAT ARE THE POSSIBLE BENEFITS TO YOU IN THIS RESEARCH STUDY?

If you agree to take part in this study, there may or may not be direct medical benefit to you. We hope the information learned from this study will benefit other families in the future.

G. WHAT ARE THE FINANCIAL RISKS TO YOU IN THIS RESEARCH STUDY?

You/your child will not incur any costs by participating in this research study.

H. WILL YOU BE PAID FOR TAKING PART IN THE RESEARCH STUDY?

You and your child will each receive a \$10.00 gift card (for a total of \$20.00) to a local Wal-Mart for completion of this study. The two \$10.00 gift cards are to provide for the time and inconvenience of participating in this study. If you discontinue the study before its completion, no gift card will be provided.

I. DO YOU HAVE TO PARTICIPATE IN THIS RESEARCH STUDY?

You do not have to participate in this study. You are free to withdraw at any time. Your decision to withdraw will not change the quality of care that you receive from the Medical or Day Care Staff on this day or in the future. However, if you decide to stop participating in the study, we encourage you to talk to the researcher first.

J. WHAT IF YOU HAVE MORE QUESTIONS?

For questions about the study or a research-related injury, contact the researcher MICHELE POLFUSS AT (920) 470-2150. The research study has been reviewed and approved by the Human Research Review Board, whose purpose is to see that the rights and welfare of research participants are adequately protected, and that risks are balanced by potential benefits. A member of this committee is available to speak to you if you have any questions or complaints at 414-266-7454

You will get a copy of this form. A copy of the signed consent, assent and HIPAA Authorization will be kept in your participant records that will be kept with Principal Investigator.

K. WILL INFORMATION BE CONFIDENTIAL?

Children's Hospital of Wisconsin / Children's Health System, its researchers and their designees will maintain the privacy and confidentiality of your personal and health information to the extent permitted by law. Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Also, scientific data from this study, without identifiable information, may be presented at meetings and published so that it may be useful to others, as long as it is not identifiable with you. Some organizations that may inspect and/or copy your research records for purposes of quality assurance and data analysis include groups such as: Human Research Review Board of Children's Hospital of Wisconsin or Human Research Review Board of Marquette University.

Your questionnaires and data will be given a coded number so no identifiable information will be linked to the questionnaires or measurements. All information will be kept in a locked file cabinet within the principal investigator's office and will be destroyed after three years.

The researcher is required by law to report child abuse or neglect (or suspicion of abuse or neglect) if you mention it to the researcher or if it is suspected.

L. PERMISSION TO PROCEED

The signing of this consent does not release your doctors from their responsibility for your proper medical care at all times.

The proposed research study and consent has been explained to you by:

Name Of Principal Investigator or Designee Signature Of Principal or Designee

Date: _____

When you sign this form, you agree that you have read the above description of this research. You also agree that you have had a chance to discuss the research study with a member of the research team; that your questions have been answered, and that you want to take part in this research.

Signature of Subject or Authorized Representative **Date**

Signature of Subject or Authorized Representative **Date**