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AN EVALUATION OF AFRICAN AMERICAN FATHERS' PERCEPTIONS
AND INFLUENCES ON CHILD FOOD CHOICES
AND PHYSICAL ACTIVITY BEHAVIORS

by

Valerie Annette Richardson

A Dissertation
Submitted to the Graduate School
and the Department of Nutrition and Food Systems
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

AN EVALUATION OF AFRICAN AMERICAN FATHERS' PERCEPTIONS AND INFLUENCES ON CHILD FOOD CHOICES AND PHYSICAL ACTIVITY BEHAVIORS

by Valerie Annette Richardson

August 2016

Child obesity is affecting children's health nationwide. Rates are highest among African Americans (AA) in the South. Research has explored parents' influence on child eating and activity, but most has reported on mothers' influences. The purpose of this research was to investigate perceptions about AA fathers' influences on their children's eating and physical activity. Using a structured focus group questionnaire based on the parent layer constructs of Birch and Ventura's Ecological Model for Child Overweight (2009), four focus groups were conducted with 28 AA fathers with children 6- to 11-years-old in a rural and an urban church setting in southeast Louisiana. Data was coded using deductive content analysis and a matrix based on model constructs. Most fathers were knowledgeable about healthy eating but indicated that fathers' typical focus in feeding their children was simply making sure they were not hungry. Cultural food preferences influenced rural fathers' diets more than urban, but both groups agreed that their children's diets were more influenced by the fast food environment. Fathers were involved with food shopping, with food preferences, health, and cost affecting their food purchases. Most affirmed providing support for their children's physical activity and monitoring their children's screen time as important. Participants believed that AA fathers intensely influence their children, especially boys, in many aspects of their lives,

including eating and physical activity. Fathers stated that study participation made them more aware of their responsibility and potential influences on their children's eating and physical activity habits, and of the importance of role modeling and educating their children about healthy lifestyles, so that their children did not experience the burden of chronic disease typical for their own generation.

Findings suggest the relevance of the parent constructs of the Child Overweight Ecological Model to the population of interest and support a body of literature indicating that fathers should be an intervention focus. Future research should explore AA fathers' knowledge and practices related to child feeding, the specific ways in which they provide support for children's activity and monitor sedentary behavior, and ways to support fathers' role modeling of healthy eating and physical activity.

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First and foremost I would like to give thanks and glory to God for giving me the favor, strength, wisdom, faith, persistence, and perseverance to complete this task. I would also like to give a very special thanks to Dr. Kathy Yadrick, for tirelessly and faithfully sticking with me throughout the years. She has unconsciously taught me how to motivate and encourage others and not to give up on anyone. I will forever be grateful to her for her wisdom, support, direction, encouragement and tenacity during this dissertation process. Lastly, I would like to thank my committee members, Dr. Carol Connell, Dr. Denise Brown, and Dr. Holly Huye for their time, wisdom, dedication, and commitment throughout this process.

DEDICATION

I would first like to dedicate this dissertation to my parents. To my father, Earl, who has been my backbone, strength, and provider. To my mother, Nadine, for her wisdom, strength, prayers, and encouragement throughout this process. To my Pastor, Eric Williams, for being a true spiritual father and for always praying for me, believing and trusting in me, and for his understanding, motivation, encouragement, and faith-filled messages that brought me through. To my friends and family members who have encouraged me, prayed for me, put up with me, and helped me along the way. Finally, to Ministerial Alliance, thank you all so much for carrying me through this process with love, prayers, and encouragement and for carrying on the work of Christ in my absence. I sincerely love and appreciate each of you.

TABLE OF CONTENTS

ABSTRACT ii

ACKNOWLEDGMENTS iv

DEDICATION v

LIST OF TABLES x

LIST OF ILLUSTRATIONS xi

CHAPTER I - INTRODUCTION 1

 Purpose and Research Questions 10

 Conceptual Framework 11

 Limitations 13

 Significance 13

 Definitions 14

CHAPTER II – REVIEW OF LITERATURE 15

 Child Characteristics and Risk Factors for Overweight 16

 Child Dietary Intake 16

 Physical Inactivity 20

 Media Use, Sedentary Behavior, and Influences on Dietary Intake and Weight Status
 23

 Parental Influences on Child Weight Status 27

 Food Availability 28

Nutritional Knowledge.....	30
Parenting Styles and Child Feeding Practices	33
Authoritarian feeding style ad child weight status.....	34
Authoritarian feeding style and self-regulation of food intake.	37
Permissive feeding style and child weight status.....	39
Authoritative feeding	41
Parental Monitoring of Child TV Viewing and Sedentary Behavior	43
Parents’ Food Choices, Eating, and Modeling.....	47
Parent Physical Activity Behaviors	53
CHAPTER III - METHODOLOGY	59
Design	59
Setting and Participants.....	59
Setting	59
Participants.....	61
Sample Size.....	61
Data Collection Tools and Instruments.....	62
Demographic and Anthropometric Data.....	63
Focus Group Questions.....	63
Data Collection Procedures.....	65
Data Analysis and Interpretation	66

CHAPTER IV – MANUSCRIPT ONE	68
Methodology	71
Setting and Participants.....	71
Data Collection Tools and Instruments.....	73
Data Collection Procedures.....	73
Data Analysis and Interpretation	75
Results.....	76
.Fathers’ eating.....	77
Food Availability	78
Parenting, Feeding Style, and Feeding Practices	79
Fathers’ Role Modeling	80
Nutritional Knowledge.....	80
Child Weight Status	81
Discussion.....	82
CHAPTER V – MANUSCRIPT TWO.....	88
Methodology	92
Setting and Participants.....	92
Data Collection Tools and Instruments.....	93
Data Collection Procedures.....	94
Data Analysis and Interpretation	95

Results.....	96
Fathers’ Physical Activity and Encouragement of Child Physical Activity	96
Monitoring TV and Sedentary Behavior.....	97
Fathers’ Role Modeling	98
African American Culture and Physical Activity Parenting.....	99
Discussion.....	100
Implications.....	105
CHAPTER VI - SUMMARY AND CONCLUSIONS	106
APPENDIX A – Focus Group Questionnaire.....	109
APPENDIX B – IRB Approval Letter	111
APPENDIX C – Demographic Questionnaire	112
REFERENCES	116

LIST OF TABLES

Table 1 Focus Group Questions, by Ecological Model Construct.....	63
Table 2 Food-related Focus Group Questions, by Ecological Model Construct	74
Table 3 Participant Characteristics	76
Table 4 Physical Activity and Screen Time Questions, by Model Construct.....	94
Table 5 Participant Characteristics	96

LIST OF ILLUSTRATIONS

Figure 1. Ecological Model for the Etiology of Child Overweight..... 3

CHAPTER I - INTRODUCTION

Obesity is a worldwide epidemic affecting approximately 64% of the United States population who are overweight and obese. Currently, the Louisiana obesity rate is 33.1%, up from 25.8% in 2004 and almost tripled from 12.3% in 1990. According to *The State of Obesity: Better Policies for a Healthier America 2014* (Levi, Segal, St. Laurent, & Rayburn, 2014), Louisiana ranked 6th in obesity prevalence in the nation. In 2011, Louisiana ranked fourth in child obesity among 10-17 year olds and reported higher obesity rates among African Americans (43.2% vs. 30.5 in Caucasian) (Levi et al., 2014).

Child overweight and obesity may lead to adult obesity and increase the risk of obesity-related co-morbidities such as cardiovascular disease, diabetes mellitus, hypertension, sleep apnea, and psychological disorders (CDC, 2014). A complex array of factors contribute to childhood obesity, including genetics, behaviors such as dietary patterns, physical activity, and inactivity, and other factors including the food and physical activity environment (CDC, 2015a). Birch and Ventura (2009), in their ecological model for the etiology of childhood overweight, adapted from the model of Davison and Birch (2001), depict three layers of factors that may influence child weight status (Figure 1). These include community and demographic factors; parenting, feeding and parental characteristics; and child behavior. A large body of literature has been published related to the middle level of the Davison and Birch model, parenting and parental influences on child weight. Two recent review papers highlight the extent of interest and study of this topic. Savage, Fisher and Birch (2007), in a non-systematic review citing 105 references, explored eight topical areas related to ways parents influence children's early experiences with food, and the relationship of each of these to

children's eating behavior and weight status. The topical areas ranged from the role of taste and food flavor in amniotic fluid and the impact of breastfeeding to the role of parenting styles and parental perceptions of healthy weight. Pocock, Trivedi, Wills, Bunn, and Magnusson (2010) published a systematic review of qualitative studies on parental perceptions of behaviors for preventing overweight and obesity in young children, as well as barriers and facilitators of these behaviors. From 8925 studies initially screened, 21 met the authors' eligibility criteria, which included English language, children under age 12, no eating disorders/medical conditions, and included perceptions of the main caregiver about healthy behaviors, barriers and facilitators to prevent obesity. These authors identified six organizing themes from reviewed articles. Themes included child factors, family dynamics, parenting, knowledge and beliefs, extra-familial influences, and resources and environment. The themes family dynamics, parenting, and knowledge and beliefs correspond to the parenting, feeding, and parent characteristics level of the Birch and Ventura model (2009).

Each of the factors included in the parenting level of the Birch and Ventura model has been explored in some detail in existing literature. However, a majority of those studies focused on maternal influences. Few studies focused on fathers as subjects. For example, of the 21 qualitative studies reviewed by Pocock and colleagues (2010), 12 included fathers as subjects, but in most of those, only a few fathers were part of the sample. Fraser and colleagues (2011) systematically reviewed articles on paternal influences on children's weight gain published through 2010. They excluded articles that did not include socio-ecological and behavioral factors and those that focused only on

adolescents. They identified only 10 articles that included fathers as subjects and in only one of those were fathers the primary focus of the study.

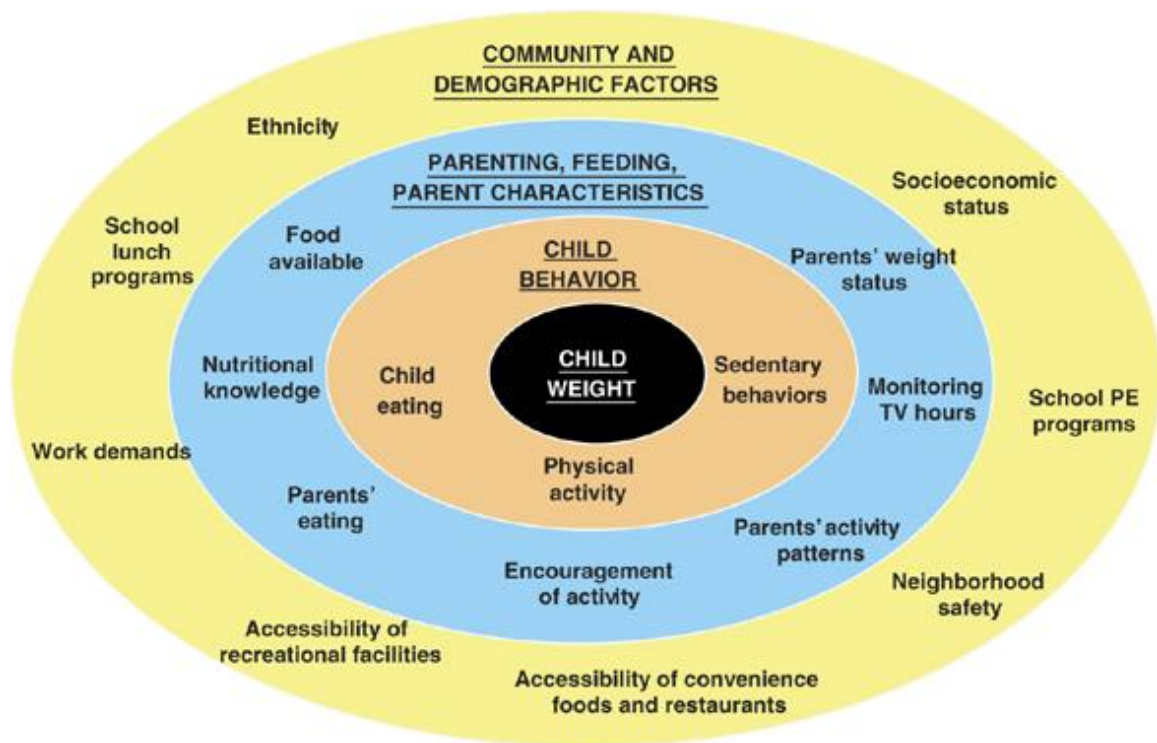


Figure 1. Ecological Model for the Etiology of Child Overweight.

Birch and Ventura (2009).

Although research on fathers' influences on children's weight status is limited, societal and economic shifts have expanded the roles that fathers play in their families (Allen & Daly, 2007). There have been many transitions in family life and the family unit, such as gender roles changing, women's employment increasing, men's employment and wages decreasing, and the increase of men as primary care providers for children (Gerson, 1993; Parker, 2015). Traditionally, fathers were primarily perceived as authoritarian and as the provider (Pleck & Pleck, 1997). In a review of studies on fathers and child health, Marsiglio, Amato, Day, and Lamb (2000) found that positive paternal involvement promotes beneficial outcomes in children. For example, Zimmerman,

Salem, and Maton (1995) found that emotional support and time spent with children by fathers were correlated with more life satisfaction, higher self-esteem, and less depression and delinquency in children. Father involvement has been associated with positive cognitive, developmental, and socio-behavioral child outcomes such as improved weight gain in preterm infants, improved breastfeeding rates, higher receptive language skills, and higher academic achievement (Lamb, 1997). Researchers have become more interested in how men perceive their roles and responsibilities in various situations. Researchers are now more intrigued with the distinctiveness of men and their specific fathering activities. Developing a wider conceptualization of fathering, one that studies the direct and indirect dynamics of father involvement, may structure future research to examine the magnitude to which fathers may influence their child's overall well-being and future development (Marsiglio et al., 2000).

In the systematic review conducted by Fraser et al. (2011) on paternal influences on child weight gain, four of the 10 studies that met the review criteria measured paternal parenting style, and results varied. One study of parents of preschool age children found an inverse relationship between father's authoritative parenting and pressuring feeding behaviors, but no relationship of authoritarian parenting style with monitoring of eating, pressure to eat, or food restriction (Blissett & Haycraft, 2008). Paternal permissive parenting was inversely related to monitoring of eating and positively related to pressure to eat. Another study found no association between parenting styles and child feeding practices and monitoring (Brann & Skinner, 2005). Neither of these studies found a direct relationship between paternal parenting styles and child weight or BMI. In contrast, a large population-based study of preschooler obesity in Australia found that

fathers', but not mothers', parenting was associated with child BMI (Wake, Nicholson, Hardy, & Smith, 2007). Children whose fathers had permissive or disengaged parenting styles were more likely to have a higher BMI, and children of fathers with higher control scores were less likely to be have higher BMI. Stein and colleagues (Stein, Epstein, Raynor, Kilanowski, & Paluch, 2005) studied fathers' influences on weight loss maintenance in a pediatric obesity treatment intervention. They found that obese 8- to 12-year-old children who perceived a positive change of fathers' acceptance vs. rejection over the course of the program lost more weight than those who rated their fathers' acceptance lower. Thus, more caring, supportive fathers promoted better weight outcomes in children.

A general controlling style of parenting may have other effects on child weight status beyond controlling child feeding practices. In a study of parents of preschool age children, Johannsen, Johannsen, and Specker (2006) found that fathers of children with a higher BMI were more likely to use restriction for weight; and fathers of older children were less likely to use food as an emotional regulator. It was also found that for both U.S. and French fathers, feeding practices were related to child BMI.

These studies represent relatively recent attempts to understand fathers' influence on child weight status. This body of literature is limited in contrast to studies of mothers' influence. Of the 111 articles on parental influence on child weight status reviewed as a part of the literature review for this dissertation, most included relatively small numbers of fathers, and for those that did, most used a cross-sectional design to examine relationships of various paternal influences, including parenting style and parent feeding practices, using existing measures for these constructs, with child weight status (Blissett

& Haycraft, 2008; Blissett, Meyer, & Haycraft, 2006; Haycraft & Blissett, 2008; Johannsen et al., 2006; Musher-Eizenman, de Lauzon-Guillain, Holub, Leporc, & Charles, 2009; Snethen et al., 2008; Wake et al., 2007). However, it was difficult to compare and contrast the findings due to the use of multiple methodologies in this relatively small number of studies.

Further, few studies included African American fathers as part of the sample. One such study by Horodynski and Arndt (2005) examined mealtime behaviors in a small group of African American fathers ($n=6$) to explore cultural knowledge concerning paternal feeding behaviors that contribute to childhood obesity. Themes identified were family gatherings, mealtime routines, mealtime tension, separation of maternal and paternal feeding responsibility, and healthy eating knowledge. It was found that fathers had some knowledge about normal child growth and development, their children's nutritional intake, and their responsibility as contributors. However, some fathers demonstrated inappropriate behaviors which have been linked to poor child weight outcomes such as permissive feeding and not promoting self-regulation of food intake. These findings represent a very small sample of African American fathers, and thus have limited generalizability. Harris and Ramsey (2015) examined possible associations between paternal dietary intake behaviors and child food intake in African American fathers of children 3 to 13 years. Child fruit intake, vegetable intake, and sugar sweetened beverage intake were each correlated with paternal intake, each evaluated with single questions about frequency of consumption, answered by the father. Household availability of sugar sweetened beverages, but not of fruits or vegetables, was associated with child consumption. Paternal modeling of healthy food consumption, evaluated by

the father's response to a 4-item scale, was not related to child's fruit, vegetable or sweetened beverage consumption.

In considering the role of African American fathers as it relates to child weight status, it may be important to consider broader aspects of African American culture. An Ohio State University Extension publication synthesizes African American cultural food traditions, emphasizing the role of rituals revolving around “religious ceremonies, feasting, and cooking” and food preparation methods that include frying, barbecuing, and serving foods with gravies and sauces (Ewing, 2015). Church is often referred to as the cultural center of the African American community (Revell, 2015). It is considered as a place where familial concerns are expressed and barriers are conquered. It is suggested that mentoring in church by men can provide an avenue of socialization and encouragement for African American fathers. Roberts, Coakley, Washington, and Kelley (2014), in a qualitative study of resident and non-resident fathers on supports and barriers affecting their role, reported that fathers spoke comprehensively “about church, God, Christ, the Bible and spirituality” when referencing support for their fathering roles (p. 8). Therefore, Roberts and colleagues (2014) recommended that the center of the African American fathers' lives, the church, be used as a logical resource for fathering and for motivating and building fathers.

Another cultural consideration related to perception of child weight status is traditional perceptions about obesity. A full figured body size has been commonly accepted among African Americans (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000), whereas thinness has been perceived as being unhealthy or indicating sickness (Sherry et al., 2004). Unfortunately, this cultural acceptance of larger body

images could influence weight perception and the physical activity and eating behaviors of children and lead to a greater prevalence of obesity and severe health issues (Meshreki & Hansen, 2004).

Other issues that could affect African American fathers' parenting of children around food include the cost, convenience and availability of healthy foods. Fresh fruits and vegetables, seafood and lean meat may not be available or affordable in many African American communities (Connell et al., 2007). Economically challenged African American families may be forced to choose what is affordable in feeding themselves and their families (Connell et al., 2012).

Parental influences on child eating habits and physical activity may also be affected by the distinctive structure of African American families. Wilkins, Whiting, Watson, Russon, and Moncrief (2013) discuss many aspects of African American family structure and function, in the context of marriage and family therapy that have been influenced by residual effects of slavery, including roles of men and women, the matriarchal family, and parenting of children by grandparents and "non-kin relatives." Other researchers likewise address racial disparities in the roles and responsibilities of fathers and mothers, differences in cultural life experiences, and other familial factors that may affect child weight (Julion, Gross, Barclay-McLaughlin, & Fogg, 2007; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001).

Although a matriarchal family structure may be the stereotype for African American families, Revell (2015) suggests that African American fathers' involvement can provide a solid foundation for the African American family as a whole and that it is vital that the father's role be viewed as being equally significant as the mother's role.

Recent research by Jones and Mosher (2013) on a nationally representative sample of fathers 15-44 years old documents non-Hispanic Black fathers' involvement with their children, including with feeding. Generally, Black fathers were as equally engaged as non-Hispanic White fathers in activities with their children, including eating meals, playing with or reading to younger children, and helping older children with homework or taking them to activities. Of fathers with children under 5-years of age, 92.6% living with one or more children fed or ate meals with their children and 96.1% played with their children every day or several times a week. For fathers living with one or more children with children aged 5 to 18 years, 87.3% ate meals with their children every day or several times a week.

The same study reported on time spent with children by non-residential fathers (Jones & Mosher, 2013). Non-Hispanic Black fathers fed or ate meals with; bathed, diapered and dressed (or helped); and played with young children, and talked with and assisted with homework of older children more frequently, than Hispanic and non-Hispanic White fathers (statistical significance was not reported). Hauri and Hollingworth (2009) also found that African American fathers spent a significant amount of time with their children regardless of resident status. They also found that African American fathers were more engaged in their children's education than other races and that African American fathers also expressed that the lack of a father's involvement in their own lives, provoked them to be more involved in their children's lives.

However, several barriers have been reported that affect African American parenting responsibilities. Mazza (2002) reported that poor perceptions of African American parenting roles, and fathers' own personal insecurities, were among such

factors (Julion et al., 2007). Schiele (2005) reported employment challenges, financial constraints, and oppression and racism as barriers for African American fathers.

Nonetheless, in the national survey reported by Jones and Mosher (2013), 86.9% of residential fathers and 56.4% of non-residential fathers reported doing a good job or very good job as a father.

The emerging research on African American fathers' involvement and influences on children, aspects of African American culture such as the role of church, food, and family structure and function, and the recent studies specifically on their role in child health and feeding, suggest opportunities to further develop our understanding of how they may play a role in their children's weight status. It may be particularly important to address this issue in a geographic area with high rates of adult and child obesity.

In a relatively young (new or undefined) area of research exploration such as this one, it may be helpful to use qualitative methods to explore aspects of African American fathers' influence that have not previously been studied, or for which existing measures related to parenting style or feeding behaviors may be inappropriate.

Purpose and Research Questions

The purpose of this research was to investigate perceptions of African American fathers in southeast Louisiana regarding child obesity and the influence of fathers on healthy food consumption, physical activity, and sedentary behavior in African American children. This study explored the applicability of Birch and Ventura's adaptation (2009) of Davison and Birch's model (2001) of parental influences on child overweight to the experience of African American fathers in southeast Louisiana, specifically considering the Parenting, Feeding, Parent Characteristics layer of the model. This layer includes

food availability, nutritional knowledge, parents' eating, parents' weight status, parents' activity patterns, as well as encouragement of activity and monitoring TV hours. It also includes the overarching constructs of parenting and [child] feeding. This research explored each of these factors among African American fathers in southeastern Louisiana to answer the following questions:

1. What are fathers' beliefs and attitudes about healthy eating, physical activity, and sedentary behavior?
2. How do fathers characterize *their own* eating, physical activity, and sedentary behavior?
3. What are fathers' perceptions of their roles related to
 - a. children's eating
 - b. children's physical activity
 - c. children's sedentary behavior
4. What are fathers' roles in making food available in the home? How do they execute those roles?
5. What characterizes fathers' child feeding style?
6. What are fathers' perceptions about the role played by African American culture as it relates to their children's healthy eating and activity?

Conceptual Framework

The Ecological Systems Theory (EST) provides the contextual basis for this research. The EST theory conceptualizes human development from an interactive perspective (Edinete & Tudge, 2013). This theory states that a person's development cannot be fully explained or comprehended without consideration of the context of the

environment of which she/he is a part. EST theory states that child development is a result of child characteristics interacting among and within family and school, which are influenced by community and societal characteristics. Also, specific characteristics such as gender and age intertwine with family and society to affect child development. The EST not only considers the contextual environment the person is in but also the context of the environment itself and how it may affect his/her development.

This research used the child overweight ecological model of Davison and Birch (2001), as adapted by Birch and Ventura (2009), as a framework to study African American fathers' perceptions of paternal influences on child weight status. This model has been described as a contextual model (Davison & Birch, 2001), or an ecological framework (Birch & Ventura, 2009) and has not been tested empirically. It includes child behavior risk factors of overweight including child eating, sedentary behaviors, and physical activity. This model also includes several factors by which parents may shape child behaviors that contribute to child obesity. Factors included in the Parenting, Feeding, and Parent Characteristics layer of the model are nutrition knowledge, parents' eating, parents' activity patterns, food availability, encouragement of activity, monitoring TV hours, and parents' weight status (Figure 1). Davison and Birch (2001) provide an overview of most of these relationships, as briefly summarized here. Parents' nutritional and health knowledge concerning food choices and nutrition-related disease may influence child food choices, eating behaviors, and overall health. Parents' eating may shape children's eating through observation, imitation and exposure. Just like eating patterns, child activity patterns are shaped within the confines of the family environment. Parents' physical activity has been found to have an association with child activity

patterns. Parent-child involvement in physical activity may reflect that parents that are more concerned and knowledgeable about the importance of regular physical activity and therefore promote increased physical activity and greater health awareness in children. Davison and Birch (2001) further suggest that parents' weight status is linked environmentally to child weight in that overweight and obese parents may be more prone to make unhealthy food choices and live sedentary lifestyles that may encourage children to adopt these same practices that place their child at risk for overweight or obesity. Parents may also shape child eating behaviors through feeding techniques and interactions exercised while feeding children. Restrictive, permissive, and controlling feeding practices have been associated with child food behaviors, intake, and weight status. Parent role modeling is also suggested by Davison and Birch (2001) as a factor in parental influences on child weight. Children are likely to imitate the food and activity behaviors of parents associated with repeated exposure to those behaviors. Each factor included in the Parenting, Feeding, Parent Characteristics layer of the Birch and Ventura (2009) adaptation of the model is discussed in detail in Chapter II.

Limitations

1. This study used a convenience sample of fathers in Southeastern Louisiana. Therefore, generalizability of findings may be limited to populations similar to fathers in the study sample.
2. The qualitative nature of this study also limits generalizability.

Significance

Previous research on parental influences on childhood overweight has primarily focused on maternal influences on child food choice, consumption, and weight. Only a

small body of research has focused on African American fathers' influences on child behaviors that are related to child weight status. Research on African American fathers' role and influences, in a region where child obesity rates are particularly high such as southeastern Louisiana, presents a significant area of inquiry with potential opportunity for developing child and parent interventions involving fathers that address the significant public health challenge of child obesity in the African American population.

Definitions

Feeding style: Attitude and techniques used in the process of feeding a child (Ruel, Brown, & Caulfield, 2003).

Parenting: Process of encouraging and supporting the overall well-being (emotional, physical, social, intellectual, and economic) of a child's development to adulthood (Berlin, Brady-Smith, & Brooks-Gunn, 2002).

Parenting style: Common strategies used to rear and train children relative to food choices, physical activity habits and sedentary behaviors (Spera, 2005).

Pragmatism: Liberal belief to understanding; and belief that knowledge is obtained by current actions, situations or circumstances (Creswell, 2008).

Screen time: Time spent by children in "activities done in front of a screen, such as watching TV, working on a computer, or playing video games," hand-held devices or other visual media devices (NIH, U.S. National Library of Medicine, 2015).

CHAPTER II – REVIEW OF LITERATURE

Obesity is a worldwide epidemic affecting approximately 64% of the United States population who are overweight and obese. Currently, the Louisiana obesity rate was 34.9% in 2014, for a #4 ranking in the U.S., and up from 25.8% in 2004 and has almost tripled from 12.3% in 1990 (Levi, Segal, Rayburn, & Martin, 2015). In 2011, Louisiana ranked fourth in child obesity among 10-17 years old and reported higher obesity rates among African Americans (43.2%) (Levi et al., 2014; Segal, St. Laurent, & Rayburn, 2014). In 2014, 39% of adults aged 18 or older were overweight and 13% were obese (World Health Organization, 2015).

A multitude of factors have been studied as contributing to childhood overweight and obesity (CDC, 2014). According to Hill and Trowbridge (1998), “Despite obesity having strong genetic determinants, the genetic composition of the population does not change rapidly. Therefore, the large increase in the prevalence of obesity...must reflect major changes in non-genetic factors” (p. 571). Gable and Lutz (2000) reported: “Studies from a variety of disciplines demonstrate that childhood obesity is not caused by one thing; rather, obesity results from the interplay of multiple factors” (p. 293). Genetics has long been understood to influence body type, and is increasingly understood as interacting with environmental factors to influence obesity expression. Sedentary lifestyles and/or unhealthy eating behaviors, environmental influences such as familial and school influences, and social factors such as socioeconomic status, race/ethnicity, media and marketing, and the physical environment all influence energy consumption and expenditure contributing to obesity in children. A comprehensive review of all the factors that are understood to contribute to childhood obesity is beyond the scope of this

review of literature. Davison and Birch (2001) proposed an ecological model of predictors of child overweight (Figure 1, as adapted by Birch & Ventura, 2009), which considers contextual factors known to be related to risk of overweight. The model includes three levels: community, demographic and societal characteristics; parenting styles and family characteristics; and child characteristics and child risk factors. Each of these is comprised of several factors. This model, and in particular, the parent and child levels, provides the framework for this literature review.

The model suggests that child behavioral risk patterns such as physical activity, dietary intake and sedentary behavior may increase the prevalence of child overweight. These child risk factors may then be influenced by parenting and family characteristics such as food availability, parent's nutritional knowledge, dietary intake and activity patterns, and child feeding practices. Other community factors may also affect child obesity risk factors such as their school physical activity and dietary environment; and demographic factors such as a child's ethnic or cultural influences, parent work responsibilities, parent and child eating and physical activity behaviors and its effect on child weight status; and living environment and accessibility and availability of exercise equipment or facilities (Davison & Birch, 2001). This literature review focuses on the Child and Parent layers of influences.

Child Characteristics and Risk Factors for Overweight

Child Dietary Intake

Epidemiological research has identified that dietary energy density is related to body weight in children (Perez-Escamilla et al., 2012; Vernarelli, Mitchell, Hartman & Rolls, 2011) and that only small proportion of children meet dietary recommendations for

intake of healthy foods. Data from NHANES 2001-2004 showed that less than 29% of children met intake recommendations for all food groups except starchy vegetables, milk, total grains, and meat and beans (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012). These data also showed that fewer African American adults met dietary guideline recommendations for total grains, milk and fruit and vegetables.

Certain food intake habits appear to contribute to an energy imbalance in children such as eating away from home, increased intake of fast food, sweet and salty snack foods, and sweetened drinks and low intake of fruits/vegetables. Poti and Popkin (2011) reported that children's energy consumption increased by 179 kcal/day from 1977 to 2006, along with an increase in energy eaten away from home of 255 kcal/day over the same time period. Consumption of fast food by children has consistently increased since the 1970s (Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004; Poti & Popkin, 2011), with food away from home as a share of total household food expenditures at its highest level of 43.1% in 2012 (U.S. Department of Agriculture, 2014). Bowman et al. (2004) examined the connection between dietary intake and diet quality measures and whether fast food intake negatively influenced dietary factors associated with obesity risk in 6012 individuals between the ages of 4 and 19 who participated in the Continuing Survey of Food Intakes of Individuals, 1994-96 and 1994-98. It was found that 30.3% of participants consumed fast food. Being African American, male, older age, living in the South and having a higher income were all independently related to fast food intake. Children who ate fast food consumed more calories, sugar, carbohydrates and fat, and less vegetables, fruit and milk. Overall, fast food intake was common in both genders and in all regions of the United States.

In addition to fast food restaurant intake, snacking also contributes to children's increased total energy intake (Kant & Graubard, 2004; Piernas & Popkin, 2010). Piernas and Popkin (2010) compared children's snack intake over the time period 1989 to 2006 and found increases in snacking frequency, as well as an increase in consumption of salty snacks and candy. Data from NHANES 2003- 06 showed that children consumed approximately three snacks a day, and 27% of children's daily energy intake came from snacks. However, research on the relationship between snack foods and weight status has been mixed (Nicklas, Yang, Baranowski, Zakeri & Berenson, 2003; Phillips et al., 2004). In cross-sectional studies, consumption of sweet, but not salty, snack foods was positively related to overweight status in children, but little to no longitudinal studies have found a relationship between snack food intake and weight status in children (Phillips et al., 2004).

Frary, Johnson, and Wang (2004) reported that children are less likely to meet dietary requirements of vegetables, fruit, and dairy products when their diets consist of snacks with large amounts of sugar. Stroehla, Malcoe, and Velie (2005) identified significant food sources of macronutrients, fiber and energy of 329 children 6 years of age or less in rural Oklahoma. Child caregivers reported children's intake using food frequency questionnaires. It was found that the primary sources of energy were refined carbohydrate and high fat, low nutrient-dense food including salty snacks, candy, sweetened beverages, white bread, hot dogs and dairy products. Overall, compared to national samples, the children's diet quality and variety were poor with minimal fruit, vegetable, and fiber intake. Because this study was in a rural sample, it may shed light on

eating habits that contribute to risk of obesity in populations experiencing health disparities.

Increased child intake of fast food, sweet and salty meals and snacks, and a decreased intake of nutrient-dense foods may be contributors to overweight in children. Snacking is common in adolescents; however, it is unclear if there is an association between snacking and overweight or obesity within the context of the child's overall diet.

In the United States, NHANES 2005-06 reported that children's daily food choices are exceptionally high in sugar and fat; and that report that 40% of children's energy intake came from fat and sugar (Reedy & Krebs-Smith, 2010). According to Brownell and Frieden (2009), in 2007, U.S. adults and children consume approximately 300 calories more today than 30 years in the past; and increased sugar sweetened beverages accounts for almost 50% of these calories. Sweetened drinks constituted the principal source of added sugar in children's daily diets (American Heart Association, 2013). Ludwig, Peterson, and Gortmaker (2001) conducted a prospective analysis to observe the relationship between consumption of sugar-sweetened drinks and child obesity in 548 ethnically-diverse school children. It was also found that child obesity prevalence increased obesity prevalence by 60% and BMI by 0.18 points. It was found that soft drink consumers had a higher daily energy intake than non-consumers at all ages. Sweetened drinks are associated with child obesity because they add additional calories to children's diet (Louis-Sylvestre, Tournier, Verger, Chabert, & Delorme, 1989).

James, Thomas, Cavan, and Kerr (2004) investigated whether a school based educational program in schools in England aimed at reducing consumption of carbonated drinks could prevent excessive weight gain in 644 children ages 7-11 years of age. The

intervention incorporated a nine-month school nutrition education program. Carbonated drink consumption decreased by 0.6 glasses in the intervention group but increased by 0.2 glasses in the control group. It was also found that in one year, the percentage of overweight decreased in the intervention group by 0.2% and increased in the control group by 7.5%.

Yen and Lin (2002) analyzed data from the USDA's Continuing Survey of Food Intakes by Individuals 1994-1996 (CSFII). It was found that children consumed more soft drinks and less milk as they became older. On average, for each 1-ounce reduction in milk consumption, consumption of soft drinks increased by 4.4, resulting in a net gain of 31 calories and a loss of about 34 milligrams of calcium. Increasing consumption of sugar sweetened beverages in the face of rising obesity prevalence, along with evidence that an intervention to reduce consumption also impacts obesity rates, suggest that sweetened soft drink consumption has contributed to overweight and obesity in children. CSFII (1994-1996) also reported that a daily serving of soft drinks increased child BMI risk by more than 50%. Research interventions targeting nutrition education, specifically educating parent and children on the importance of decreasing child consumption is warranted in order to decrease child obesity prevalence.

Physical Inactivity

Physical inactivity is an increasing concern among youth in relation to childhood obesity. The 2011 Youth Risk Behavior Surveillance (YRBS) on physical activity reported that only 28.7 % of high school youth were physically active at least 60 minutes every day of the week; 13.8% did not engage in at least 60 minutes of physical activity on any day of the week; 51.8% of students went to physical education classes on 1 or more

days in an average week; and 31.5% of students attended PE classes 5 days in an average week during the school year (CDC, 2012). The 2011 YRBS on physical activity in Louisiana showed that 62.1% of children were not physically active at least 60 minutes a day on 5 or more days a week, compared with the national average of 50.5% (CDC, n.d.). Approximately 42% did not attend physical education classes in an average week, 57.5% did not attend physical education classes 5 days in an average week; 75.8% were physical active at least 60 minutes a day on less than 7 days; and 19.1% did not participate in at least 60 minutes of physical activity on any day.

The 2008 Physical Activity Guidelines for Americans (USDHHS, 2008) reported that physical activity offers several persuasive emotional and physical benefits. Physical fitness, a gauge of physical activity, has been found to be related to lower rates of overweight and obesity, diabetes, heart disease, depression, hypertension and decreased mortality rates. In addition, leisure and school time physical activity in children has been associated with increased cardio respiratory fitness and muscle strength, improved bone health and cardiovascular and metabolic health biomarkers, and favorable body fat composition.

Strong et al. (2005) conducted an evidence-based physical activity analysis on school age youth and found a relationship between physical activity and child adiposity. Cross-sectional and longitudinal observational studies showed that boys and girls who participate in vigorous physical activity had less adiposity than less active children. Experimental studies of overweight youth involved in organized physical activity intervention programs of moderate exercise regimens of 30 to 60 minutes in duration

approximately 3 to 7 days per week led to a reduction in visceral and total body and visceral adiposity in overweight children.

As it relates to metabolic syndrome in overweight children, Strong et al. (2005) reported that exercise showed a reduction in triglyceride and insulin levels in a randomized trial, whereas a vigorous 40-minute program of moderate to vigorous physical activity 3 times/week improved adiposity, along with insulin and triglyceride levels.

In another study, Moore et al. (2003) longitudinally explored whether early physical activity forecasted a change in body fat throughout the childhood of children 4- to 11-years old who were participants of the Framingham Children's Study. It was found that triceps skinfolds, BMI and the sum of five skinfolds throughout childhood increased less in children with the most daily activity. For example, at 11 years of age, the skinfolds were 95.1, 94.5, and 74.1mm for the low, middle and high tertiles of activity, respectively.

Results of this study and the evidence-based analysis indicated that school-age youth should participate every day in at least 30-40 minutes or more of moderate to vigorous physical activity in order to have a positive effect on child adiposity, cholesterol and triglyceride levels, insulin levels and blood pressure. The results suggest that significant amounts of moderate to vigorous physical activity may be needed to have a beneficial effect on the overall health status of children. This also suggests the necessity for a continuous amount of moderate to vigorous physical activity on a regular basis to encourage and sustain these positive effects.

Media Use, Sedentary Behavior, and Influences on Dietary Intake and Weight Status

Media has also been a major contributor in affecting child food preferences and intake. The 2011 YRBS reported that on an average school day, 32.4% of students watched television 3 or more hours and 31.1% of students played computer games or used a computer for something other than school work for 3 or more hours per day (CDC, 2012). A national survey found that 8 to 18 year old children in the United States spend an average of 7.5 hours a day using media, and most of the time is consumed with TV watching (Rideout, Foehr, & Roberts, 2010). It was found that TV watching significantly increased by 1-2 hours daily when there was a TV in the bedroom (Rideout et al., 2010). It was also found that children are less likely to engage in other activities, such as hobbies and reading with TV's in their bedroom (Zimmerman & Christakis, 2005). Not only does TV viewing contribute to sedentary behavior, but it may influence children's dietary intake. On average, a child views over 40,000 television commercials a year (Kunkel, 2001). Zimmerman and Bell (2010) reviewed data from the primary caregivers of 3,563 children ages 0-12 years of age. Caregivers were asked to record children's activities, such as television viewing, and the format (TV programs, videos or DVD's) and type of TV program viewed on a weekday and weekend. These data were used to categorize television viewing into either entertainment or educational programming and to determine whether or not it contained product placement or advertising. It was found that commercial viewing was significantly associated with higher BMI among all children. These authors also reported that children see about 4,000 food-related television commercials for food annually by the time they reach 5 years old and an average of one food ad every five minutes during Saturday morning cartoons; 95% of the ads promote

foods of low nutritional value (Zimmerman & Bell, 2010). For example, several studies reported that more than 50% of television ads focused on children encourage foods and beverages such as fast foods, snack foods, sugar sweetened cereals and beverages and candy that are high in fat, sugar and calories and low in essential nutrients and fiber (Kaiser Family Foundation, 2004).

Crespo et al. (2001) used NHANES data from 1988-1994 to investigate the relationship between energy intake, television watching, physical activity, and obesity status in 4,069 American boys and girls ages 8-16 years. Researchers used a nationally representative cross-sectional survey with an in-person interview and a medical examination, dietary interview, physical activity participation, height and weight, and daily hours of television watching. It was found obesity prevalence was higher in children who watched TV four or more hours/day and lower in those who watched TV one hour or less a day.

In another study, Mendoza, Zimmerman, and Christakis (2007) conducted a cross-sectional study using data from the National Health and Nutrition Examination Survey (1999-2002) of children 2-5 years of age. The authors measured the effects of TV/video viewing, computer use, and media use on children's weight and adiposity. It was found that watching more than 2 hours/day of TV/video was associated with being overweight or at risk for overweight and having higher skinfold thickness; and computer use greater than 0 hours/day was related to a higher skinfold thickness.

Dennison, Erb, and Jenkins (2002) conducted a cross-sectional study to evaluate the TV/video viewing practices of an ethnically diverse, underprivileged preschool population of children ($n=2,761$) and their parents enrolled in a supplemental food

program, to determine whether TV/video viewing was associated with their body fat mass. It was found that African American and Mexican children had a higher TV/video viewing time than Caucasian children, which increased with the child's age. Children who watched TV/video an extra hour a day were more likely to have a BMI greater than the 85th percentile. It was also found that children who had a TV in their bedroom (40%) watched more TV (4.6 hours/week) and were more likely to have a higher BMI than children with no TV in their bedroom.

Chamberlain, Wang, and Robinson (2006) conducted a prospective cohort study to evaluate children's screen media exposure and requests for advertised toys and food/drinks. Eight hundred twenty-seven third grade children from 12 elementary schools in northern California were studied at baseline and 386 children at 6 schools were followed up in twenty months. Prospectively, children's screen media time at baseline showed a positive association with the children's mean number of food and drink requests 7 to 20 months later. The association of future requests for advertised foods/drinks with total TV viewing and media exposure was also found to be statistically significant.

Boynton-Jarrett et al. (2003) investigated prospective observational evidence to determine the association between patterns of television viewing and fruit and vegetable consumption patterns in a cohort of 548 multi-ethnic 6th and 7th grade students. It was found that for each additional hour of television viewed per day, fruit and vegetable servings and intake decreased. In addition, baseline hours of television viewed per day was independently associated with change in fruit and vegetable servings.

Lindsay, Sussner, Greaney, and Peterson (2009) conducted interviews and focus groups with low-income Latino mother to examine the influence of social contexts, such as media, on eating, physical activity, and sedentary behaviors of these mothers and their children. There were 20 in-depth interviews conducted and 6 focus groups. The in-depth interviews reported that their children participated in sedentary activities such as reading, listening to music, playing computer and video games and watching TV. Some mothers believed that having a TV in the bedroom increased their child's daily TV hours. Mothers reported trying to reduce their child's TV watching to encourage more active lifestyles among their children.

Jago, Baranowski, Baranowski, Thompson, and Greaves (2005) investigated three- to seven- year old children to examine whether TV viewing or sedentary practices, physical activity, or diet, predicted body mass index (BMI) in a longitudinal study from 1986 to 1989. It was found that physical activity per hour and TV viewing per hour and study year and minutes of physical activity per hour and study year were significantly related to child BMI. It was also found that physical activity at year one and TV viewing at year three were positively correlated to child BMI, whereas physical activity at year 2 and 3 showed a negative correlation. These findings strongly suggest that navigating children away from commercial TV may be effective in reducing childhood obesity, given that about 90% of children are initiated to regular TV viewing before 2 years old and that food is the most common advertised item during child TV programs (Zimmerman & Bell, 2010). Results of the reported studies correspond with national recommendations to monitor and control child media use. Research suggests that future

studies incorporate media reduction techniques that promote a reduction in child obesity prevalence.

Parental Influences on Child Weight Status

Children's eating behaviors develop within the context of the family. The second layer of Davison and Birch's (2001) Ecological Model of Childhood Overweight suggests that the child obesity risk factors are shaped by parenting styles and family characteristics, such as parents' dietary intake and activity patterns, nutritional knowledge, food availability, and child feeding practices. Recurring commonalities have been found in parent-child eating patterns (Oliveria et al., 1992; Vauthier, Lluh, Lecomte, Artur, & Herbeth, 1996) and significant relationships have been found between the food preferences and eating behaviors of parents and children (Borah-Giddens & Falciglia, 1993).

Researchers suggest that parents have a significant influence in what a child consumes (Campbell et al., 2007; Campbell, Crawford & Bal, 2006). Specific methods of influence include making foods available, structuring meals for children, modeling healthy food choices, parent-child socialization and communication, and specific techniques used by parents to change children's behaviors (Wang, Beydoun, Li, Liu, & Moreno, 2011; Webber & Loescher, 2013). Many of these methods are derived from the broader literature on parental influence on child weight status, which has identified successful strategies to prevent childhood obesity such as exposing children to a variety of healthy foods and snacks, affective reactions to fruits and vegetables, controlling behavior about food and restricting the amount of food eaten, overseeing planning and assembly of preparation (Golan, Weizman, Apter, & Fainaru, 1998), conveying

attitudinal conviction that increased fruits and vegetables by children could reduce their risk for cancer (Gibson, Wardle, & Watts, 1998), verbal encouragement, approval for eating food, and discussion about food (Sallis, Prochaska, Taylor, Hill, & Geraci, 1999).

Food Availability

Parents, as primary caregivers, have the task of providing foods for their child which in turn, may significantly affect the child's food choices and intake. One line of research has investigated the role of making healthy foods available and accessible to children. Some of this work was done in the school setting, but can inform our understanding of healthy food availability in the home. Children consumed more fruits and vegetables in the school cafeteria when they were easy to reach and accessible in size, for example, carrot sticks and apple wedges (Cullen, Baranowski, Baranowski, Hebert, & deMoor, 1999). Thus, although children are not especially likely to get a carrot from a bag of full-sized carrots, they are more prone to consume fruit and vegetable in bite-size pieces. In another study with elementary school-aged children, 10 daily exposures to an unfamiliar vegetable was associated with a significant increase in children's liking and consumption of that vegetable (Wardle, Herrera, Cooke & Gibson, 2003b). Cullen, Baranowski, Rittenberry, and Olvera (2000) used focus groups to evaluate fourth through sixth grade students and their parents ($n=180$) on the effects of food availability and accessibility and social influences on children's fruit, juice, vegetable (FJV) and low-fat food choices. Results showed that some African American and Euro American children reported that parents made a variety of fruit, vegetables and low fat foods available in the home. One group suggested that African American parents did not prepare fruits and vegetables and make them available to their children. It was

also found that sixth grade children were responsible for preparing their own fruits and vegetables even though they were accessible and available at home which in turn may hinder their consumption.

However, research has also shown that if parents make fruits and vegetables available and serve them to children, their intake may increase. Arcan and colleagues (2007) examined longitudinal associations of parental report of household food availability and parent intakes of fruits, vegetables and dairy foods with adolescent intakes of the same food. These researchers evaluated secondary Project EAT-II data taken from a diverse sample of adolescents between 1999 (time 1) and 2004 (time 2). Parents ($n=509$) were asked to complete a telephone interview at time 1; and their children completed the Project EAT survey and the Youth Adolescent Food-Frequency Questionnaire in both time periods. It was found that making vegetables available and serving them at dinner significantly predicted adolescent intakes of vegetables for males ($P=0.037$), females ($P=0.009$), high school ($P= 0.033$), and young adults ($P=0.05$) at 5-year follow-up. Time 1 parental intakes significantly predicted intakes of young adults for fruit ($P=0.0440$), vegetables ($P=0.041$) and dairy foods ($P=0.008$) at follow-up.

Likewise, in a cross-sectional study of 347 adolescents 12 to 13 years of age and their parents, researchers examined relationships between multiple aspects of the home food environment and obesity-promoting characteristics adolescents' diets, specifically frequency of consumption of high-energy fluids, sweet snacks, savory snacks, and take-out foods (Campbell et. al., 2007). The adolescents' diets were assessed using a Food Frequency Questionnaire derived from existing age-appropriate National Nutrition Survey data. Availability of unhealthy foods at home was positively associated with

girls' sweet snack ($p = 0.001$), girls' savory snack ($p < 0.001$), boys' savory snack ($p = 0.002$), and girls' high-energy fluid consumption ($p = 0.002$).

Evidence supports the importance of parents initiating and exposing children to nutrient-dense foods (fruit, vegetables, low-fat) in improving preferences for these foods (Birch, 1992; Birch, McPhee, Shoba, Pirok, & Steinberg, 1987), and that persistent exposure to nutrient-dense foods can conquer the aversion to these foods and therefore, increase intake (Wardle et al., 2003a). These findings suggest that intervening in ways that could influence and improve the healthiness of the home food environment would in turn influence children's eating behaviors and food consumption. Therefore, interventions in the home setting or directly with parents may be an important direction for future research.

Nutritional Knowledge

Parents' food-related knowledge, beliefs and choices affect their children's food choices and consumption (Crockett & Sims, 1995; Fisher & Birch, 1998). Since parents are typically the primary food purchasers, have specific beliefs about foods, and purchase foods they like (Fisher & Birch, 1998), they have the potential to strongly influence their children's intake and beliefs about foods (Skinner, Carruth, Bounds, Ziegler, & Reidy, 2002). For example, Dennison, Erb, and Jenkins (2001) found that parents who had never consumed low-fat milk, believed that whole milk had more nutrients than reduced fat milk, and that whole milk was healthier for children and were more prone to give their children whole milk.

Parental knowledge about obesity prevention mechanisms has been found to affect child weight status. Evidence has shown that parents recognize the relationship

between healthy eating and child weight. Pocock et al. (2010) conducted a qualitative review examining parental perceptions regarding behaviors for preventing overweight and obesity in children. Thirty-two studies were found, extracted and synthesized using thematic content analysis. Six organizing (extra-familial influences, family dynamics, child factors, parenting, resources and environment, and knowledge and beliefs) and 32 specific themes were discovered. Several studies showed that parents believed that children should be taught healthy habits at an early age to encourage healthy habits; and that being overweight was more of a problem of the future for older children but not their children. Parents associated overweight with cosmetic appearance rather than comorbidities. Overall, parents seemed to comprehend the necessity to consume healthy foods to prevent overweight but felt that their children did not understand the benefits of healthy eating and physical activity and the consequences of unhealthy eating. Parents also believed that caregivers of children were more beneficial in promoting healthy habits than health care professionals.

Some research suggests that mothers recognize the importance of healthy eating practices but don't apply what they know. Sherry et al. (2004) conducted 12 focus groups (three Caucasian, three African American, and three Hispanic American low-income groups; and three Caucasian middle-income groups) of mothers ($N=101$) of 2 to 4 year-old children to investigate maternal beliefs and practices related to child feeding and perceptions about child weight. Major themes were identified in all 12 groups. All groups reported wanting to offer their children good nutrition, but prepared foods their children wanted and used sweets as bribe mechanisms to meet their child feeding goals. However, the majority of the groups wanted children to avoid eating an excessive amount

of processed foods and sweets. All groups except one believed their children were exaggerating when they said they were full when mothers encouraged them to eat more. Zehle, Wen, Orr, and Rissel (2007) qualitatively investigated childhood obesity through mothers' perceptions, attitudes, beliefs, and behaviors using 16 detailed interviews with mothers of children aged 0-2 years. Interview questions related to physical activity, parental role modeling, family eating structure, nutrition, and television viewing. It was found that mothers highly recognized the need for their children to consume a healthy diet but many times neglected to educate or initiate their children in doing so. It was also found that several mothers became apprehensive about child overweight when there was extreme weight gain.

Several studies have shown that parents of overweight children lack the knowledge to accurately identify their child's weight status. Doolen, Alpert, and Miller (2009) conducted a review to examine the current research on parental perceptions about their children's weight. Numerous studies looked at parental perceptions of childhood obesity in the United States and other countries. Universally, it was found that overweight parents were more likely to misperceive their child's weight. In a similar study, Etelson, Brand, Patrick, and Shirali (2003) investigated the extent to which parents could identify their child as overweight, recognize the health threats of obesity, and have a basic understanding of healthy eating behavior. A self-administered questionnaire was used to survey 83 parents of children 4 to 8 years of age. Twenty-three percent of parents were found to have overweight children, but only 10.5% recognized their child's actual weight. However, the concern for excess weight and health risk was the same among parents of overweight children and parents of normal weight children.

In other research, He and Evans (2007) conducted a cross-sectional study of children's actual weight status and their parents' perceptions of their weight status. A convenience sample of 355 parent-child pairs participated from seven elementary schools in Middlesex-London, Ontario. Children's weight, height, and body mass index (BMI) were measured. Family demographics, parents' self-reported body weight and height and parents' perceptions of their children's weight status were also evaluated by a self-administered questionnaire. It was found that parents misperceived their children's weight (i.e., describing 18.3% overweight or obese and 17.2% as slightly underweight or underweight) compared to their actual weight (i.e., 29.9% overweight or obese and 1.4% underweight).

The lack of parent knowledge to identify child overweight and to exercise proper child feeding strategies were found to be barriers to promoting healthy eating behaviors in children. Findings suggest that some parents are unaware that their child is overweight or obese. Parents cannot assist with reducing child obesity risk factors and complications if they are not aware that their child is overweight or at high risk for overweight. In order to change parental feeding practices towards children, parent's beliefs must be changed concerning known pressures to children's healthy eating behaviors and health outcomes. It is suggested that future interventions to combat overweight and obesity spotlight equipping parents with the ability to transform their knowledge into actions that set foundations that develop healthy habits in children.

Parenting Styles and Child Feeding Practices

Parenting style has been found to forecast a child's psychological, behavioral, academic and social well-being (Baumrind, 1989). Birch and Fisher (1995) related

Baumrind's (1989) authoritative, authoritarian, and permissive parenting style to child feeding styles. Feeding styles are ways to structure or affect child feeding behaviors. According to Birch and Fisher (1995), authoritative parents exercise parental authority but yet welcome and respect child autonomy. Authoritative feeding strategies offer balance between authoritarian and permissive eating strategies by encouraging intake of healthy foods but yet leave room for child choice. Authoritarian parents are demanding and non-responsive to child needs, choices and opinions. Authoritarian feeding practices demand intake of certain foods and allow no room for child input or choice. Permissive parents reflect the opposite extreme of authoritative parents by allowing children to make their own choices without exercising any parental control. Relationships have been found between parenting styles, child eating behaviors and obesity, which are discussed further below.

Authoritarian feeding style ad child weight status. Authoritarian (over-controlled) feeding behaviors, including food incentives for good behavior, aggressively controlling or restricting the availability of specific foods, and pressuring children to eat (Hughes, Power, Fisher, Mueller, & Nicklas, 2005) are linked to increased child weight and BMI. Restricting availability of unhealthy foods and the quantity of food eaten, and pressure to eat more are two main control techniques exerted by authoritarian parents (Fisher & Birch, 2002; Patrick & Nicklas, 2005). Authoritarian feeding may also include pressuring children to eat healthy by using unhealthy foods as rewards (Sherry et al., 2004). This technique may encourage excessive intake of restricted foods and negative self-regulation of food choice and intake (Johnson & Birch, 1994), and thus increase child obesity.

Tschann et al. (2015) conducted a longitudinal study with Mexican mothers ($n=322$) and fathers ($n=182$) to examine relationships between parental feeding practices and child weight in children 9-10 years old over a two-year period, also considering mutual influences between mothers and fathers. Both mothers' and fathers' restrictive feeding practices at baseline predicted child's weight status at Year 1, for both girls and boys. Mothers' and fathers' pressure to eat at baseline negatively predicted only boys' weight status at year 1. Considering Year 2, only fathers' restrictive feeding practices at year 1 were related to children's weight status at year 2, and the direction was different for girls ($B=-0.11$) than boys ($B=0.18$). These researchers also found some effects of child's weight status in predicting mothers' and fathers' feeding practices, with mothers more likely to use pressure to eat in Year 1 when boys (but not girls) weight status was low at baseline. These authors note the differing feeding practices between fathers and mothers and argue that more research is needed on fathers' role in feeding and child obesity.

Wehrly, Bonilla, Perez, and Liew (2014) investigated pressuring a child and restricting unhealthy foods and snacks as feeding practices to explain variance in child percent body fat and BMI, and parental perception of child weight. In a diverse sample of 243 children 4-6 years and their mothers (89% of sample) and fathers (8% of sample), economic and ethnic differences with child body composition and feeding practices were found. Pressuring to eat was lower for White non-Hispanic than for other ethnicities, including Black parents. The effects of pressure to eat and restriction on child BMI and percent body fat were different, with pressure to eat predicting lower, and restriction higher values, but ethnic differences were not analyzed. Only restriction explained variance in how parents perceived their child's weight.

In a comprehensive review of 22 studies of parental feeding styles and child eating and weight status, Faith, Scanlon, Birch, Francis and Sherry (2004b) found that parental feeding restriction, but no other feeding domain, was associated with increased child eating and weight status. In another study of stability of parental feeding styles and associations with child obesity, Faith and colleagues (2004a) found that restriction predicted higher BMI z scores and pressure to eat predicted reduced BMI z scores among high-risk children. Among children predisposed to obesity, elevated child weight appeared to elicit restrictive feeding practices, which in turn may produce additional weight gain.

Rhee, Lumeng, Appugliese, Kaciroti, and Bradley (2006) explored the association between the four parenting styles (authoritative, authoritarian, permissive, and neglectful) and overweight status in first grade children using data from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development. Children with complete data for parenting parameters at 54 months and measured weight and height in first grade were included in the analysis. The four parenting styles were constructed with two scales, namely, maternal sensitivity and maternal expectations for child self-control. A total of 872 children, 11.1% overweight and 82.8% White, were included in the analysis. Children of authoritarian mothers ($N=98$) had an increased risk of being overweight, compared with children of authoritative mothers ($n= 179$). Authoritarian parenting was associated with the highest risk of overweight among young children.

Spruijt-Metz, Lindquist, Birch, Fisher, and Goran (2002) evaluated the relationship between mothers' child-feeding practices and children's adiposity in a

sample of boys and girls from two ethnic groups, 74 Caucasian and 46 African American. Two subscales of the CFQ (Childhood Feeding Questionnaire), pressure to eat and concern for child's weight, explained 15% of the variance in total fat mass in both African American and Caucasian boys and girls ($p < 0.001$) after correction for total lean mass and energy intake (which explained 5% of the variance in total fat).

In another study, Moens, Braet, and Soetens (2007) examined differences between families of 7 to 13-year-old children who were or were not overweight with regard to parental control and support, using observations and self-reports of mealtime family functioning. Observations suggested that parents with an overweight child exhibited more controlling strategies and less support, though self-reports suggested an equal amount of parental support between both groups.

Johannsen et al. (2006) investigated the effects of mothers and fathers eating behaviors, child feeding practices, and BMI on body fat percentage, and BMI in their children. The Three Factor Eating Questionnaire and Child Feeding Questionnaire were completed by 458 parents ($n=239$ mothers, $n=219$ fathers). These questionnaires measured the dimensions of parent eating behaviors and child feeding practices. Girls with more controlling fathers had a higher percent of body fat; these fathers also expressed greater concern with regard to their daughters' future health.

Authoritarian feeding style and self-regulation of food intake. Child-feeding practices that control what and how much children eat may also affect their self-regulation of food intake and weight status. Birch and Fisher (1998) reported that parents who attempt to encourage the consumption of food may unintentionally cause children to dislike the food, whereas parents who attempt to limit food may promote increased

preference for and consumption of the limited food in children. Johnson and Birch (1994) explored mechanisms of parental influence to investigating children's ability to self-regulate energy intake as well as maternal control of children's intake in a study of 77 children 3 to 5 years who attended a university preschool setting. Children consumed controlled, two-part meals to estimate their ability to adjust food intake in response to changes in caloric density of the diet. It was found that children with higher body fat and children of over-controlling mothers were less able to regulate energy intake.

In another study of controlling feeding behaviors, Birch and Fisher (2000) examined the association between restrictive feeding practices and girls' negative self-evaluation of eating in 197 girls aged 4-6 years and their parents. Intake of 10 snack foods was measured immediately following a standard lunch, in a setting that allowed free access to palatable foods. Parents' reports of restricting access to desired snack foods were also measured. Four restrictive foods (potato chips, ice cream, fruit chews and chocolate bars) were consumed in the largest amounts. Twenty-three percent of girls reported eating too much, and almost 50% reported feeling bad about eating. One-third of the girls reported that they would feel bad if their mother or father found out what food item they had eaten for their snack. Results coincide with other studies in that restrictive child feeding behaviors promote poor self-regulation and increased intake of restrictive foods.

Faith et al. (2003) assessed the demographic correlation of mother-child feeding patterns (MCFPs) and tested whether differences in MCFPs were associated with child BMI. The MCFPs were measured using three interview questions probing mother-allotted child food choices, child compliance during meals, and child obedience during

meals. Mothers of non-Hispanic/non-African American children allotted greater food choice than mothers of African American or Hispanic children. Maternal BMI and other demographic measures were unrelated to MCFPs. Lower levels of mother-allotted child food choice and child eating compliance at meals were associated with reduced child BMI. Offering the least food choices was associated with reduced child BMI, but MCFP's showed no relationship to child overweight.

Even though several studies found a relationship between authoritarian feeding styles and child BMI and weight status, some evidence has shown no association between authoritarian child feeding practices and child BMI. Lee, Mitchell, Smiciklas-Wright, and Birch (2001) found that daughters' body mass was negatively correlated with maternal restriction of palatable foods. Other reports have failed to find a relation between maternal control over child-feeding and BMI (Baughcum et al., 2001; Robinson, Kiernan, Matheson, & Haydel, 2001). These results may be due to the inclusion of young children in the sample, because younger children tend to be more resilient to the effects of food restriction. Not controlling for confounding variables and not differentiating between obese and non-obese parents and children could be other reasons for these results.

Permissive feeding style and child weight status. Studies have also found significant associations between permissive feeding styles and child weight. In the study by Rhee et al. (2006) described above, children of permissive and neglectful ($n=263$) mothers were twice as likely to be overweight, compared with children of authoritative mothers. Hughes, Shewchuk, Baskin, Nicklas, and Qu (2008) studied permissive feeding styles (FS) in relationship to overweight status of ethnically diverse, low-income

preschool children in Head Start, considering both characteristics of the parent (emotional affect) and the child (temperament). In a sample of 718, parents' feeding style was categorized as authoritative ($n=118$), authoritarian ($n=219$), indulgent ($n=240$), or uninvolved ($n=141$). Children with indulgent parents were twice as likely to be obese compared to children with authoritative parents ($OR: 1.83; 95\% CI: 1.07-3.13; p = .028$). An indulgent feeding style was thought to result in overweight by parents providing easy access to excess energy intake.

In another study, Hennessy, Hughes, Goldberg, Hyatt, and Economos (2012) examined the influences of parenting style and practices on child intake in a cross-sectional study of 99 parents and children. Twenty-four hour recalls were used to obtain child food intake. Parental feeding practices and feeding style were obtained by validated child feeding questionnaires. It was found that 60% of children and 76% of parents were overweight or obese. Permissive feeding styles were found to be most prevalent ($n=37$). Similar to other studies, permissive feeding style was found to be associated with child intake of low nutrient dense foods ($r=0.3; P<0.001$).

Research has also shown that permissive feeding styles show a relation to child consumption of nutritious foods. Hoerr et al. (2009) investigated the association of parental feeding styles and young children's evening food intake in a multi-ethnic sample of families in Head Start. Seven hundred fifteen parents were categorized as authoritative, authoritarian, permissive or uninvolved using the Caregivers Feeding Style Questionnaire. Compared to children of authoritarian parents, intakes of fruits, juice and vegetables were lower among children of indulgent or uninvolved parents.

Authoritative feeding. Unlike authoritarian and permissive feeding styles, several studies have shown authoritative child feeding styles to be associated with healthier child food preferences and intake. Kremers, Brug, de Vries, and Engels (2003) investigated the potential environmental influence of general parenting style on adolescent food choice patterns and perceptions in 643 school children using self-administered parenting style questionnaires. Differences among adolescents whose parents were described as authoritative, authoritarian, indulgent, or neglectful were consistent with those predicted by theory. There was a positive association between fruit preferences and perceptions of being raised with an authoritative parenting style.

In another study, researchers found a significant association between authoritative child feeding style and increased fruit, vegetable and dairy intake. Patrick, Nicklas, Hughes, and Morales (2005) investigated the relationship between caregiver feeding styles and children's food consumption patterns among 231 African American and Hispanic caregivers and their Head Start children. Information on authoritarian and authoritative feeding styles and the diverse characteristics of children's food consumption patterns (availability of, feeding attempts for, and child's consumption of dairy, fruit, and vegetables) was obtained using the Caregiver's Feeding Style Questionnaire. Authoritative feeding was positively associated with the availability of fruit and vegetables and with attempts to get the child to eat dairy, fruit, and vegetables and reported child consumption of dairy and vegetables.

Overall, the relationships between parenting and children's eating and weight status seem to be consistent with those more general relationships found in the parenting literature. Authoritarian and permissive feeding styles seem to have more negative child

nutrition outcomes. On the other hand, authoritative parenting styles are warranted since they demonstrate effective controlled feeding styles that encourage healthy child eating behaviors and weight (Rhee et al., 2006). Since authoritative feeding style has previously been established as having a more favorable outcome on child eating behaviors, most current child feeding style research has been relative to authoritarian and permissive feeding styles and their negative implications on child obesity. However, the need remains to study the indirect and direct factors that interfere with parents exercising authoritative child feeding behaviors that promote healthy food choices and consumption in children.

Collins, Duncanson, and Burrows (2014) conducted a systematic review exploring the relationships between authoritarian, authoritative, and permissive parenting style and parental response, pressure to eat or monitoring or restriction of child dietary intake. Articles were selected using eight electronic health data bases. Articles published between 1975 and 2012 were included that studied children <12 years and associations between parenting style and child feeding behavior. Only seven studies were identified. For the most part, various significant relationships were found between parenting style and child feeding behaviors in only single studies. A negative association was found between authoritative parenting and pressure to eat (1 study) and monitoring of food intake (1 study); a positive relationship was found between authoritarian parenting style and food restriction (1 study). Permissive parenting was positively associated with pressure to eat by fathers (1 study), and maternal food restriction (same study), negatively associated with monitoring in fathers and mothers (1 study), and “across the study cohort

in another.” The authors concluded that parenting styles showed only weak to moderate associations with child feeding practices.

In summary, research has shown that mothers’ child feeding practices are related to children’s food preferences, energy intake, ability to regulate food intake according to the internal cues of hunger and satiety, and child weight status. However, much of the available research has been cross-sectional studies that showed a general connection between parenting style or feeding practices and child food preferences or weight status, but mainly focused on mothers’ feeding practices. Evidence for relationships between restrictive feeding and child weight status is found in multiple studies, but the preponderance is for mothers. A few studies have begun to show relationships between fathers’ feeding practices and child weight status, but these are limited in number, and in some cases by restrictions on ethnicity studied. Several authors, including those who have included fathers in studies, call for more research on fathers’ role in child feeding, and in turn child weight status.

Parental Monitoring of Child TV Viewing and Sedentary Behavior

Parents are primary factors of influence for children’s television viewing practices and physical activity behaviors because they have the ability to impact such practices. A few studies report that parents steer children’s physical activity behavior by their own TV viewing and physical activity behaviors (Baughcum, Burlow, Deeks, Powers, & Whitaker, 1998) and by monitoring or failing to monitor their children’s video time and TV viewing hours (Valerio, Amodio, Dal Zio, Vianello, & Zacchello, 1997).

Lloyd, Lubans, Plotnikoff, Collins, and Morgan (2014) investigated potential behaviors and maternal and paternal correlates of adiposity in children; and examined

possible correlations with diet, screen time and physical activity, and differences in maternal and paternal physical activity and diet-related parenting behaviors. Seventy families with children 8.4 (+ or – 2.4 years) participated. The 7-day pedometry FFQ and BMI z-scores were used to measure child outcomes. Maternal and paternal parenting practices and child variables were measured using multiple regression models. It was found that father's BMI ($p < .01$) and mothers' control ($p < .001$) were significantly associated with child weight status. Child physical activity was significantly correlated to father's reinforcement ($p < .01$). Child characteristics ($p = .01$), BMI z-score ($p = .03$), and child sex ($p = .01$), and mothers' monitoring ($p < .001$) were significantly associated to child screen time.

Drenowatz, Erkenlez, Wartha, Brandstetter, and Steinacker (2014) investigated the association between parent characteristics and child weight and health behaviors. Specific parent characteristics measured were TV time, sports participation and body weight. Baseline data were used from a Southwest Germany school-based intervention with 1,118 elementary school children (7.6 ± 0.4 years). Parent and child behavior was assessed via KIGGS survey that assessed health and behavior in 18,000 German children. A significant correlation was found between child BMI and parent BMI ($r = 0.2$, $p < 0.01$). It was also found that parental TV time and sports participation were associated with increased child TV time and sports participation in children.

Cheng, Koziol, and Taveras (2015) examined associations between parental limits on TV watching and the behavioral health of children. Parents limited child TV viewing and TV content. Parents ($n = 86$) of children 6-12 years were examined. Outcome measures included eating behaviors and physical activity behaviors. Bivariate and

multivariable analyses were used to investigate independent associations of TV viewing and the outcomes. It was found that it was less likely to have a TV in their child's bedroom when there is limited TV watching (OR 0.45; 95% CI 0.31, 0.64). Also, parents limiting TV content was associated with decreased likelihood of having a TV in children's bedroom (OR 0.37, 95% CI 0.18, 0.79). Results also indicated that children with parental limits spent fewer days of the week watching TV, using the internet and playing video or computer games.

Melkevik et al. (2015) investigated associations between electronic media use and child BMI across levels of physical activity in a large sample ($n=107,184$) of 3- and 5-year-old children from 30 different countries, using data from the 2009-2010 Health Behaviour in School-aged Children (HBSC) World Health Organization Collaborative Cross-National Survey. An association was found between electronic media and BMI z-scores and overweight odds for both boys and girls with no adherence to physical activity guidelines. Results also showed a significant association between electronic media and BMI in overweight boys and girls.

Marshall, Biddle, Gorely, Cameron, and Murdley (2004) reviewed the empirical evidence of associations between computer/video usage, television (TV) viewing, and (a) body fatness, and (b) physical activity. The 52 studies reviewed included children 3-18 years and each presented at least one empirical association between computer/video usage or TV viewing, and body fatness or physical activity among samples. Forty-four studies found a positive association between TV viewing and body fatness among children and youth. In another review, Maniccia, Davison, Marshall, Manganello, and Dennison (2011) conducted an analysis of interventions focusing on a reduction in child

TV viewing. The review found a positive effect of interventions on TV viewing reduction time and child physical activity.

Gentile et al. (2009) explored Switch program behaviors (increasing physical activity, decreasing TV time and increasing fruit and vegetable consumption) and temporary and persistent effects of the x-month Switch program in 1,323 parents and children in the school, family, and community. Body mass index and other study measures were collected at baseline, immediately post-intervention, and 6-months post-intervention. There was a decrease in parent-reported screen time of children in the intervention group immediately post-intervention and six months later. A relationship was also found between minimizing TV time and promoting fruit and vegetable intake with child BMI.

Johnston, Huebner, Anderson, Tyll, and Thompson (2006) tested the effects of the Healthy Steps for Young Children program (HS) (which supports parents managing children's developmental and behavioral issues), with and without a prenatal component, on child health and development, parenting practices, and parental well-being. This study was conducted in five clinics and included 439 pregnant women. Families in intervention clinics received HS services, including developmental and behavioral advice and risk factor screening. The intervention was found to have a significant beneficial effect on TV viewing, parenting practices and overall child health.

Saelens et al. (2002) longitudinally explored children's TV time from 6 to 12 years of age and home environment factors among 169 families. It was found that the number of in-home and bedroom TV's, number of video recorders, time spent watching TV, and the frequency of meal eating while watching TV increased with child age. It

was also found that TV watching and an increase in TV watching over time were related to meal eating. TV watching greater than or equal to 2 hours/day was associated with a higher weight status in younger children and increased weight in older children. The factors that were measured in this study were under parental control, and thus reflected monitoring (or its absence) of TV time and sedentary behavior.

Overall, reported studies focused on parental TV monitoring, reducing time spent watching television, and increasing time spent in physical activity, each of which may impact children's weight status. Clearly time spent in sedentary behavior mitigates against children being physically active, but the specific role of media-based inactivity in contributing to child obesity is not clear and more research is warranted. Caution should be exercised in limiting study of sedentary behavior to single markers of inactivity, such as TV viewing or video game use.

Parents' Food Choices, Eating, and Modeling

Research has found children's food knowledge, choices and intake to be related to that of their parents (Birch & Fisher, 1998). One way this may occur is through parent modeling. Parent modeling is defined as a progression of observational learning occurring in four-functions in which actions of the parent act as an agent to promote common behavior in children (Rosenthal & Bandura, 1978). Observational learning, the initial function, happens when a model displays an original reaction and the viewer discovers the conduct for the first time. For example, when a child sees a parent consuming a specific food, it provokes them to consume the same food. The second is disinhibiting or inhibiting behavior that transpires when the observer sees the consequences of a model's actions, which in turn contributes to the consequences of the

observer's actions. For example, if a child sees a parent's dislike of a certain food, he or she may likely avoid eating that food item. Facilitating a similar response is the third function, which occurs when the conduct of the model functions as a signal for the observer's actions. For example, a child who repeatedly observes a parent eating nutrient-dense foods may eat nutrient dense foods. Self-regulation, the final function, is defined as offering a protocol for the viewer to evaluate accuracy of performance. For example, a parent chooses to set a goal of choosing low-fat snacks, which in turn triggers the child to become accustomed to adhering to the same goal (Rosenthal & Bandura, 1978).

There is empirical evidence that parents can influence their children's dietary intake by acting as role models. Stolley and Fitzgibbon (1997) reported that parental support and role modeling in Hispanic and African American groups were positively related to mothers' fruit and vegetable intake and negatively related to children's dietary fat intake. This study also showed relationships between parent and child behaviors such as purchasing healthy food items and reading food labels. In another study, Brown and Ogden (2004) explored the modeling and control theories of parental influence on consuming snack foods with children's eating behaviors and attitudes in 112 child-parent pairs. Positive associations were found for parent and child eating motivations, body dissatisfaction, and snack intake. It was found that parents' unhealthy or healthy food intake was similar to their child's intake.

Several studies have found a resemblance between parents' and children's food preferences and fruit, vegetable, and fat intake. Harris and Ramsey (2015) examined possible associations between paternal dietary intake behaviors and child food intake.

African American fathers of children 3 to 13 years participated. Fathers self-reported their intake of fruits and vegetables and sugar sweetened beverages; role modeling; food and beverage availability, and child consumption. The Comprehensive Feeding Practice Questionnaire (CFPQ) was used to measure household availability of fruits and vegetables and paternal modeling. Regression analyses showed that child fruit and vegetable intake was correlated with paternal intake. Paternal intake and household availability was correlated with child sugar sweetened beverage consumption. However, paternal modeling did not show a significant relationship to child's fruit, vegetable or sweetened beverage consumption.

Skinner et al. (2002) found the food intake of two-year old children was related to that of their mothers. Tibbs et al. (2001) conducted a cross-sectional study with 456 African American parents that explored the association between dietary intake and modeling healthy food habits for their children. Baseline data from a community-based dietary change study to increase vegetable and fruit consumption and reduce fat intake among children were analyzed to identify role modeling behaviors. Parental modeling of healthy dietary habits was found to be correlated with the act of increased consumption of vegetables and fruits, low dietary fat intake and low-fat eating behaviors.

Fisher, Mitchell, Smiciklas-Wright, and Birch (2002) investigated parent's fruit and vegetable intake and parents' pressure to eat in child feeding as predictors of their 5-year old daughters' food intakes in 191 Caucasian families. Structural equation modeling was used to analyze a model describing parents' use of force on daughters' fruit and vegetable intake, micronutrient and fat intake and child feeding, and relationships among parents' fruit and vegetable intake. Parent and daughters' fruit and vegetable

consumption was found to be less than 3 servings a day. It was also found that parents who reported greater pressure to eat consumed less fruit and vegetables and so did their daughters. The daughters' fruit and vegetable intake was significantly related to their parents' fruit and vegetable intake.

In another study of parental influence on fruit and vegetable consumption, Cooke et al. (2004) conducted a cross-sectional study in 564 parents of children 2 to 6 years to examine the relationship of parental feeding behaviors and personal characteristics and demographics with child fruit and vegetable consumption. Fruit and vegetable consumption was found to be related to early introduction of fruit and vegetables and parental consumption of these.

Other research has shown that children's dieting behaviors are related to those of their parents. Pike and Rodin (1991) explored the attitude and behavior of 77 mothers and the relation to their daughters' eating patterns. Mothers of daughters with disordered eating problems and mothers of daughters with minimal or no eating problems were compared. It was found that dieting mothers were more prone to have dieting daughters. Saarilehto, Keskinen, Lapinleimu, Helenius, and Simell (2001) prospectively examined whether young children's problematic eating was correlated with the eating behaviors and attitudes of the parents. Children ($n=397$), mothers ($n=397$) and fathers ($n=375$), participated in an atherosclerosis risk-factor intervention trial. It was found that child dysfunctional eating behaviors were related to those of their parents. Mothers' meager ability to enjoy eating, increased propensity to snack and decreased tendency to eat only when hungry, as well as the fathers' complexity in sustaining model weight significantly forecasted consistent difficulties with problematic eating in their children.

Cutting, Fisher, Grimm-Thomas, and Birch (1999) examined parental features related to overweight and eating patterns in 75 preschool children and their highly educated parents [mothers (87% White) and fathers (89.2% White)] in day care centers. Children were given free access to palatable snack foods apart from meal and snack times. Girls who displayed disinhibited eating under these conditions were more likely to have parents who reported dietary inhibition or problems controlling their own intake.

Parental practices such as support and encouragement have been found to be associated with child eating behaviors. Gubbels et al. (2011) investigated associations of dietary-related parenting behaviours with child physical activity behavior, child dietary intake and BMI development in 3947 parents and their 5-year-old children. It was found that parental support and encouragement of healthy eating and physical activity and dietary monitoring were associated with desirable BMI development and dietary intake and/or physical activity behaviors. Parenting practices and behaviors were positively associated with child weight status and eating behaviors.

Parental influences concerning environmental factors have also been found to be connected to child food intake. Campbell et al. (2007) conducted a cross-sectional study investigating correlations with several facets of the home food environment of 347 parents and their 12 and 13 year-old children and obesity contributors of their diets, such as the prevalence of their home intake of high sugar snacks, high calorie foods and beverages, fast food and savory snacks. It was found that mothers' home intake of high-calorie beverages, high-calorie snacks, savory snacks, and fast food was significantly related to boys' intake of all foods studied. Daughters' consumption of high-calorie beverages was also found to be associated with that of their mothers.

Gibson et al. (1998) examined environmental and psychosocial contributors to fruit and vegetable intake in 9 to 11-year-old children and their mothers ($n=92$ pairs). Questionnaires and interviews were used to measure nutritional knowledge and diet and health-related beliefs and socio-economic factors. Mothers' frequency of fruit intake, nutritional knowledge, and attitudinal responsibility that increased child consumption of fruit and vegetables would decrease health risks were found to be predictors of child fruit intake. Children's confectionery consumption was predicted by the mothers' liking for confectionery and the children's concern for health in choosing what to eat.

Wang et al. (2011) systematically reviewed the connection between parental food intake and child food intake. Twenty-four studies published between 1980 and 2009 were reviewed and 15 of those included in a meta-regression analysis. Of these, five studies included African Americans and six included fathers. There was considerable variation among studies in design, settings, methods, and findings, and most studies used small samples. Generally, parent-child correlations were moderate to weak. Associations varied by nutrients considered, countries (lower in U.S), dietary assessment methods, and parent-child pairs (associations were stronger for mother-daughter pairs for fat intake), and over time (weaker associations as time/publication date progressed).

In most studies, relationships were found between parent (mostly mother) and child food intake, though the meta-analysis of Wang and colleagues (2011) suggests that these relationships are moderate to weak. Some studies used constructs related to parental modeling and support to explore factors that may influence or explain these relationships, providing some support for these constructs playing a role in healthy food

consumption. Again, research is lacking on relationships between fathers' and children's consumption, as well as the role of fathers' role modeling and supportive behaviors.

Parent Physical Activity Behaviors

Child health behaviors are typically derived from parental attitudes and beliefs concerning health behaviors (Tinsley, 2003). Specifically, it has been theorized that parental behaviors such as parental modeling, encouragement or discouragement, and instrumental (providing access to physical activity equipment and transportation) physical activity behaviors forecast child physical activity. Pugliese and Tinsley (2007) conducted a meta-analysis to investigate the associations between parental socialization behavior and child and adolescent physical activity levels. Parental socialization behaviors included modeling, encouragement, and instrumental behaviors which facilitate or provided an opportunity for children to be active. Thirty articles focused on children 2-18 were included. Overall effect sizes were small to moderate. The odds of being an active child were almost two times greater with supportive vs unsupportive parents. There were small but significant effects for both mothers and fathers, and no difference between mothers and fathers in the relationship between parental behaviors and child physical activity.

Trost and Loprinzi (2011) reviewed 103 studies that examined the influence of parenting style, parental physical activity, and family cohesion on child physical activity, and parenting support for child physical activity. Parental support was found to have a consistent positive relationship with child activity. Little evidence existed to make solid conclusions concerning relationships among family cohesion and parenting style and parent and child physical activity.

In a qualitative study, Wright, Wilson, Griffin, and Evans (2010) conducted focus groups to assess how parental social support and role modeling influenced physical activity in 53 children of low socioeconomic status, majority African American, 10-14 years of age. Regarding parental role modeling, adolescents stated that parents inconsistently participated in different physical activities with their children such as bike riding, playing basketball and walking. Girls and boys reported receiving tangible support in the form of parent participation in physical activity, but only girls reported receiving physical activity encouragement or negative support (forced physical activity).

McGuire, Hannan, Neumark-Sztainer, Cossrow, and Story (2002) examined relationships between parents' and adolescents' television viewing and physical activity in a sample of 900 parents and adolescents from various ethnic backgrounds. Child exercising and eating, parental exercising, and other weight-related factors were investigated. Positive associations were found between child and parent physical activity attitudes and behaviors. It was also found that physical activity in all girls and in African American and Caucasian boys was significantly associated with parents' reported encouragement. Sallis et al. (1999) studied physical, social, biological, psychological, and environmental variables to examine their connections with child physical activity behaviors in 1,504 parents and their 4th to 12th grade children. A significant association was found across child gender and grade subgroups with afternoon time usage for sports and physical activity, pleasure of physical activity and family support for physical activity.

Biddle and Goudas (1996) investigated social cognitive variables and adult influence factors to forecast projected and self-reported vigorous child physical activity

behaviors in 147 children 13-14 years of age. Physical activity with intention to participate in sports or other vigorous activity, adult encouragement and support of physical activity, and social cognitive variables were measured via questionnaire. It was found that adult intention to participate and encouragement and support positively influenced vigorous physical activity in children, and parents' perceived competence predicted vigorous activity in children. It was also found that child intention and physical activity goal achievement was predicted by adult encouragement.

Trost et al. (2003) examined a conceptual model relating parental encouragement for physical activity, children's self-efficacy perceptions and parental activity behaviors with physical activity participation in 380 parents and children in grades 7 to 12. Questionnaires were given to parents to assess their roles and beliefs concerning child physical activity, their own physical activity habits and pleasure of physical activity. Child physical activity and self-efficacy of physical activity was assessed. Child self-efficacy and physical activity behaviors were found to be positively associated with parental encouragement.

Parental modeling has also been associated with many child health behaviors including physical activity. Holm, Wyatt, Murphy, Hill, and Odgen (2012) investigated 83 families (children and parents) enrolled in the America on the Move Initiative family-based intervention implemented to circumvent excess weight gain in 7- to 14-year-old overweight children. Participating families in the initiative were encouraged to walk 2,000 more steps a day. Only 34 fathers participated while all mothers participated in the intervention. Parental modeling of physical activity was found to have a greater effect on

child activity than parental encouragement. It was found that children walked more when their fathers and mothers walked more and met or surpassed their goal of 2,000 steps.

Madsen, McCulloch, and Crawford (2009) studied physical activity in 2379 African American and Caucasian girls 9 to 10 through 18 to 19 years of age, who participated in the National Heart, Lung, and Blood Institute Growth and Health Study. Researchers assessed the parental modeling contributors to girl's activity associated with other prospective predictors, and examined whether parent modeling of physical activity (PA) had a varying effect on girls' PA by ethnicity and whether the relationship changed over time. They found girls' perceptions of parent modeling positively forecasted future log METs in each study year; relationships remained constant with time and were comparable by ethnicity. It was also found that girls with sedentary parents, whose parents began to exercise at least three times per week, were 50% more active than those whose parents did not exercise.

Ornelas, Perreira, and Ayala (2007) used data from the National Longitudinal Study of Adolescent Health to explore differences in gender associations between adolescent physical activity and parental influences and to examine whether adolescent depression and self-esteem directed these relationships. Study participants included 13,246 youth, grades 7 to 12, who were interviewed in 1995 and one year later in 1996. It was found that parental engagement, parent-child communication and family cohesion significantly predicted moderate to vigorous physical activity for boys and girls one year later.

Bauer, Berge, and Newman-Sztainer (2011) longitudinally explored the relationship of parental encouragement to be physically active and parental concern about

remaining active with adolescents' sedentary and physical activity behaviors, in 1998-1999 and five years later in 2516 boys and girls participating in Project EAT-II. , Adolescent TV/video watching and moderate and vigorous physical activities (MVPA) were assessed. After 5 years, a significant association was found in boys between adolescent-reported maternal and paternal encouragement to be active and paternal care for fitness, with boys' weekly hours of MVPA. A positive association was also found between paternal encouragement and MVPA in boys; and a near significant association between maternal encouragement and MVPA in girls.

Research has also found an association between parents' instrumental physical activity behaviors and child physical activity patterns. Loucaides, Chedzoy, Bennett, and Walshe (2004) investigated predictors of self-reported physical activity in 256 sixth-grade children in summer and winter. It was found that outside playtime, gender, home exercise equipment, and self-efficacy in overcoming barriers were factors related to physical activity in summer and winter. Summertime physical activity was related to school location, and wintertime activity was associated with best friends' physical activity and parental support of sport-club and private-lesson attendance.

Gorely, Atkin, Biddle, and Marshall (2009) investigated the connection between family circumstances such as single versus dual parent household, socio-economic status, presence/absence of siblings, leisure-time physical activity and sedentary behaviors in 1171 adolescents. Analyzed behaviors were sports/exercise, active travel, TV viewing, computer use, sedentary socializing (hanging-out, using the telephone, sitting and talking) and total sedentary behavior. It was also found that single parent status was related to greater sedentary behavior in boys compared to those from dual parent

households. Girls and boys in higher socioeconomic status (SES) neighborhoods participated in more sports/exercise than those from lower SES neighborhoods; and girls in lower SES groups reported higher weekend TV viewing and higher weekday total sedentary behavior than girls from higher SES.

Even though the roles and responsibilities of parents have not been clearly identified relative to child physical activity, parents' motivational support and encouragement to child self-efficacy and physical activity, parents' socio-economic status, physical activity modeling behaviors and instrumental behaviors (transportation to exercise facilities, providing exercise equipment) may significantly affect child physical activity behaviors. However, several of these relationships were affected by child age, ethnicity, and gender. Family cohesion, parental engagement, parent-child communication and encouraging adolescent self-esteem were other ways that were found that parents influenced child physical activity. It was also found that child physical activity is more affected by the parent of the same gender.

CHAPTER III - METHODOLOGY

The purpose of this research was to investigate perceptions of African American fathers in southeast Louisiana regarding child obesity and the influence of fathers on healthy food consumption, physical activity, and sedentary behavior in African American children. This study explored the applicability of Birch and Ventura's adaptation (2009) of Davison and Birch's model (2001) of parental influences on child overweight to the experience of African American fathers in southeast Louisiana, specifically considering the Parenting, Feeding, and Parent Characteristics layer of the model. This layer includes food availability, nutritional knowledge, parents' eating, parents' weight status, parents' activity patterns, as well as encouragement of activity and monitoring TV hours. It also includes the overarching constructs of parenting and [child] feeding.

Design

This study used a qualitative design with pragmatism as a philosophical basis (Creswell, 2008). Pragmatists examine the "what" and "how" to research, to address practical problems. Pragmatism exercises liberality rather than adhering to a strict qualitative tradition like grounded theory or phenomenology (Goldkuhl, 2012). Since previous study of African American fathers' influences on child weight is limited, pragmatic research using qualitative methods can contribute to a fuller understanding of fathers' influences and their perception of their influences on their child's weight status.

Setting and Participants

Setting

African American churches were chosen as the setting for this study because the church plays a dominant role in the social environment of African American communities

(Gillum, 2009). Participants were recruited from two churches in two southeastern Louisiana parishes, located in the Lower Mississippi Delta region of Louisiana. This region is known for its high rates of child obesity (Lower Mississippi Delta Intervention Research Consortium, 2004). A suburban and a rural church were selected to provide a basis for comparison between these two groups. Each church was selected because it had a men's ministry and was known to the researcher and she to them, to facilitate successful recruitment of male participants, which had been a challenge in other studies in the region of which the researcher was a part.

The urban/suburban church was located in an unincorporated area just outside the city limits of Baton Rouge in East Baton Rouge Parish, and belonged to the Full Gospel Baptist conference of churches. The congregation included approximately 2000 members and 25 ordained staff members, offered a youth department that serviced approximately 200 children each Sunday, had a men's ministry that was involved with sports activities such as basketball and softball, and offered youth activities for young adults along with a multitude of other ministries.

The rural church was in the town of Amite, Louisiana in Tangipahoa Parish, and belonged to the Church of God in Christ denomination. The congregation included approximately 500 members and 10 ordained staff, offered a youth department which included a dance and music ministry for the youth, and had a men's ministry where men connected and engaged in sports, bible study and other activities. Both church denominations were founded in the Deep South to minister to African Americans, and had a Pentecostal orientation. Both pastors assured the researcher of cooperation in recruitment of participants.

Participants

The participants were African American men who attend the selected churches. Participants were required to meet the following selection criteria: over the age of 18; have children between the ages of 6 – 11; and live with their children. Participants were selected using convenience sampling, because of the accessibility and availability of the target study participants (Babbie, 2001), and previous challenges with recruiting men in the region for research, as noted above. The participants were recruited using church bulletins, pastors' announcements, and flyers requesting their participation. The pastors' (both men) participation was obtained to encourage the participation of other male church attendees. Interested church attendees completed a brief screener following a church service to establish eligibility, provide contact information, and indicate willingness to participate. Those eligible were contacted by telephone to confirm and schedule participation. Approval for the use of human subjects for this study was obtained from the USM IRB prior to study enrollment (Appendix B). Brief information about study requirements was a part of the recruitment material, as an initial step in the informed consent process. Written informed consent was obtained from participants at the start of each focus group.

Sample Size

The intended sample size was approximately 25 (based on 5-8 participants for each of four focus groups), with the intention to conduct additional focus groups if data saturation was not reached. Focus group size was guided by the recommendations of Krueger and Casey (2010).

Data Collection Tools and Instruments

A structured list of questions guided focus group discussions (Appendix A). Questions were developed by the researcher based on constructs of the Parenting, Feeding, and Parent Characteristics level of the Ecological Model for Childhood Overweight (Figure 1; Birch & Ventura, 2009) to explore perceptions of African American fathers about their influences on factors related to child obesity. These questions addressed fathers' characteristics and their parenting related to feeding, physical activity and role modeling. The constructs included fathers' nutrition knowledge and eating and physical activity behavior, fathers' parenting styles and feeding practices, their monitoring of children's physical activity and sedentary behaviors, making food available to their children, and their role modeling. Parental role modeling is implied in the Ecological Model for the Etiology of Childhood Overweight although it is not listed as a specific construct. However, findings from the literature review, and specifically that on parental role modeling influences on child eating and physical activity behaviors, suggested that it was relevant and appropriate to add the construct for this research. The work of Sherry and others (Birch et al., 2001; Sherry et al., 2004) on parental feeding strategies and responsibilities was also consulted in developing the questions. Prior to conducting focus groups, the questions were reviewed by an expert panel including experts in qualitative research and child nutrition and obesity, and their professional feedback was incorporated into the questions. The focus group questions were pretested for clarity and understanding with two African American men in both rural and urban/suburban Louisiana. No revisions were needed.

Demographic and Anthropometric Data

Demographic data (Appendix C) were collected from all participants.

Demographic questions included respondent's age, marital status, education level, and employment status. Participants also self-reported their height and weight and that of their oldest child in the specified age range.

Focus Group Questions

Table 1 summarizes the focus group questions, aligning them with the constructs that are part of the Parenting, Feeding, and Parent Characteristics layer of the Birch and Ventura model (2009) and with the research questions. The focus group questions, with probes, are found in the Appendix A.

Table 1

Focus Group Questions, by Ecological Model Construct

Construct	Focus group question
Parent Eating Behaviors	
	Describe a typical day of eating for you.
	Is there anything specific about AA culture that affects fathers' eating or their influences on their children's food choices or eating?
	In what ways do you think children's food choices and eating are influenced by their father's eating?
Parent Activity Patterns and Encouragement of Activity	
	Describe your own physical activity or inactivity and the impact of the African American culture on these behaviors?
	In what ways do you think children's physical activity behaviors are influenced by their fathers' behaviors?
	Describe some ways fathers can encourage physical activity in children.
Food Availability	
	What involvement do fathers you know have in food shopping or making food available in the home?

	What kind of things affect the foods that you typically have at home?
	Is there anything specific about African American culture that affects fathers' involvement in making food available at home?
Parent Feeding Style and Feeding Practices	
	What are your thoughts about fathers' involvement in their child's/children's food choices and eating?
	Parents use different styles when feeding their children. Some may restrict their children's access to certain foods or pressure their children to eat, while others may let their children eat whatever they want. Others are in between. How would you describe your child feeding strategy during meal times and whether or not the African American culture impacts your feeding style?
Monitoring TV and Sedentary Behavior	
	What are your thoughts on children inside playing games and using technology inside versus outside activities? Do the fathers you know monitor their children's screen time?
	In what ways do you think fathers' sedentary behavior affects children's level of activity vs sedentary behavior?
Parental Role Modeling	
	How would you describe a role model for children as it relates to healthy eating and physical activity?
	How important is it for fathers to be a role model for their children for healthy eating and physical activity? For you personally?
Nutritional Knowledge	
	When you hear the words "healthy eating," what comes to mind, and is your perception of this term influenced by African American culture?
	What foods do you eat that your children should eat that are healthy?
	What foods do you think children should avoid?
	Have you heard of MyPlate or the Dietary Guidelines for Americans? If so, what does it mean to you?
Child Weight Status	
	The sheet I am giving you shows silhouettes of AA children of different weights and sizes. Please circle the one that most closely resembles your oldest child who is between the age of 5 and 12. Now place a check in the box

	that describes your child's weight. Do you consider him or her to be a) underweight; b) normal weight; c) overweight; d) obese?
Closing	Is there anything else that you would like to add concerning African American fathers and child eating and physical activity behaviors?

Data Collection Procedures

Focus groups were used for the qualitative data collection of this research. This technique is used to solicit valuable information and ideas from a specific group whose input is fundamental to understanding and explaining the research topic at hand. As Krueger (1994) summarized, "a focus group is a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment. The discussion is comfortable and often enjoyable for participants as they share their ideas and perception" (p. 6). Since research on African American fathers and preadolescent children and fathers' influences and perceptions of childhood obesity is limited, focus groups create an opportunity to discover and contribute ideas and concepts to this narrow body of research.

The focus groups were conducted in a designated meeting room at each church. The researcher and a recorder/note taker, who were trained by Dr. Richard Krueger for other qualitative research in the Lower Mississippi Delta region, facilitated the focus groups. The researcher has thirteen years of experience in planning, organizing, conducting, recording and analyzing focus groups. Participant consent was obtained before beginning each group. Participants were informed that the information they shared would be written and audio recorded but secured and kept confidential. Participants were also informed that they had the liberty to refuse to answer any question,

and the right to discontinue participation if they chose. The focus group moderator explained her responsibilities, the purpose and intent of the focus groups, and the tone and style of the focus groups to relax the focus group participants. All participants received healthy refreshments and a \$5 Subway gift card. Each focus group was planned to last 60-90 minutes. Two focus groups were conducted in each of the two locations. Data saturation was used for this study to determine final sample size including total number of focus groups.

Focus groups were audio-recorded to obtain participants' responses. Notes were hand-recorded by the focus group recorder, along with observations of non-verbal behavior. Immediately after each session, the facilitator and recorder debriefed, by reviewing field notes and noting any additional observations.

Data Analysis and Interpretation

The focus groups were transcribed by the primary researcher. A directed approach to content analysis, sometimes referred to as deductive content analysis, was used (Elo & Kyngas, 2008; Hsieh & Shannon, 2005). This approach is used to “validate or extend conceptually a theoretical framework or theory” (Hsieh & Shannon, 2005, p. 1281). Each transcript and field notes were analyzed independently by the primary researcher and another individual experienced in qualitative analysis. A categorization matrix (Elo & Kyngas, 2008) was developed using the constructs of the Parenting, Feeding, Parent Characteristics layer of the Birch and Ventura model (2009). Coding of each transcript was initially done by each analyst using the matrix categories. Data not fitting into a predetermined category was analyzed using the traditional inductive approach to determine if these data represented a new category or subcategory, which was then added

to the matrix. After initial independent coding of transcripts, the two analysts discussed their categories and categorization of data and resolved any differences. Findings are presented in Chapters IV and V. Themes and representative quotes are presented based on ecological model constructs. Similarities and differences between urban and rural focus groups are noted.

CHAPTER IV – MANUSCRIPT ONE

The doubling of child obesity rates in the past 30 years (Ogden, Carroll, Kit, & Flegal, 2014) has spurred research on factors influencing children's food intake and physical activity, and in particular parental influences on these obesity determinants. Recent review papers have approached this topic theoretically (Savage, Fisher, & Birch, 2007), and reviewed both qualitative (Khandpur, Blaine, Fisher, & Davison, 2014; Peters, Parletta, Campbell, & Lynch, 2014; Pocock et al., 2010), and quantitative research (Collins et al., 2014; Fraser et al., 2011; Khandpur et al., 2014), and considered such factors as parent eating and physical activity patterns, weight status, and nutrition/health knowledge; parenting styles; parent/family resources/environment, and child feeding practices, among others. Until recently, most studies of parental influences focused primarily on mothers. In 2011, Fraser and colleagues systematically reviewed articles on paternal influences on children's weight gain published through 2010. After excluding articles that did not include socio-ecological and behavioral factors and those that focused only on adolescents, they identified only 10 articles that included fathers as subjects and in only one of those were fathers the primary focus of the study. In a 2014 review of both qualitative and quantitative studies focused specifically on fathers' child feeding practices, only 20 studies of 865 initially identified as relevant met review criteria (Khandpur et al., 2014). The increasing involvement of fathers in families (Allen & Daly, 2007) and as caregivers of their children (Gerson, 1993; Parker, 2015), as well as evidence on the positive influences of fathers on their children's development (Lamb, 1997; Marsiglio et al., 2000; Zimmerman et al., 1995), suggest that more research on fathers' influences on child weight status is warranted.

Given the higher rates of obesity among African American children (Skinner, 2014), African American fathers' influence on child obesity and factors related to obesity may be a particularly important focus for study. Recent research by Jones and Mosher (2013) on a nationally representative sample of fathers 15-44 years old documents Black fathers' involvement with their children, including with feeding. Of fathers of children 0-5 years old, 92.6% fed or ate meals with their children every day or several times a week, and the percentage was 87.3% for fathers of children 5-18 years of age. Nonetheless, few studies on parental influences on child weight status thus far have focused on or included African American fathers.

Although Khandpur and colleagues (2014) did not specifically include the race/ethnicity of the fathers in the 20 studies they reviewed on fathers' feeding practices, they noted that most study participants were non-Hispanic White and from middle or upper socioeconomic backgrounds, and only one qualitative study "strategically recruited fathers of ...African American origin" (p. 117). Fraser and colleagues' (2011) review of 10 qualitative studies on broader paternal influences on child weight gain identified the same single study by Horodyski and Arndt (2005) that focused on African American fathers. These researchers examined mealtime behaviors in a small group of African American fathers (n=6) to explore cultural knowledge concerning paternal feeding behaviors that contribute to childhood obesity. Themes identified were family gatherings, mealtime routines, mealtime tension, separation of maternal and paternal feeding responsibility, and healthy eating knowledge. Although fathers had some knowledge about normal child growth and development, their children's nutritional intake, and their responsibility as contributors, some fathers acknowledged inappropriate

behaviors which have been linked to poor child weight outcomes, such as permissive feeding and not promoting self-regulation of food intake. Odum, Smith, and Mckyer (2014), in a qualitative study of 20 African American fathers' perspectives on their children's health education, reported that participants identified eight health topics relevant to and important for their children; the most frequently mentioned was diet and the second most frequent was physical activity. These fathers also affirmed the importance of parents delivering health education to their children but described their own guidance approach as reactive rather than proactive. Harris and Ramsey (2015) examined possible associations between paternal dietary intake behaviors and child food intake in 102 African American fathers of children ages 3-13. Fathers' intake of fruit, vegetables, and sugar sweetened beverages, but not their self-reported modeling of healthy food consumption, significantly predicted child intake.

The emerging research on African American fathers' involvement and influences on children, and specifically on their role in child health and feeding, suggest opportunities to further develop our understanding of how they may play a role in their children's weight status. Therefore, the purpose of this research was to investigate African American fathers' perceptions regarding child obesity and the influence of fathers on healthy food consumption of children. The Parenting, Feeding, Parent Characteristics level of Birch and Ventura's Ecological Model for the Etiology of Childhood Overweight [Child Overweight Ecological Model] (Figure 1; Birch & Ventura, 2009) was used to frame the study. Specific constructs found in this level of the model include parent nutrition knowledge, weight status, and eating behavior; parent encouraging and monitoring of child behavior; and food availability. Parent activity

patterns, encouragement of activity, and monitoring of screen time are also included in the model and were part of this research, but are addressed in Chapter V, Manuscript 2. The Child Overweight Ecological Model has not been empirically tested, but Pocock and colleagues (2010) provided some support for the validity of model constructs in their systematic review of qualitative studies on parental perceptions of behaviors for preventing overweight and obesity in young children, deriving themes of family dynamics, parenting, and knowledge and beliefs, which correspond to constructs in the parenting, feeding, and parent characteristics level of the Birch and Ventura model (2009). A secondary aim of this study was to explore fathers' perceptions related to the influence of African American culture on their parenting related to food.

Methodology

This study employed a qualitative design with pragmatism as its philosophical basis (Creswell, 2008), and used focus groups for data collection. Pragmatists examine the “what” and “how” to research, to address practical problems. The researcher was particularly interested in information that could lead to the design of intervention programs targeting African American fathers in the church setting, since churches play a dominant role in the social environment of African American communities (Gillum, 2009) and have been used successfully for health promotion (Markens, Fox, Taub, & Gilbert, 2002).

Setting and Participants

Participants were recruited from two African American churches in two southeastern Louisiana parishes (counties), located in the Lower Mississippi Delta region of Louisiana. This region has a high proportion of African American residents, and high

rates of child obesity (Lower Mississippi Delta Intervention Research Consortium, 2004). African Americans are represented in the Lower Mississippi Delta region of Louisiana at more than twice the national level (34.8% vs. 13.2%) (Delta Regional Authority, 2016). The researcher selected one church in an urban parish and the other from a rural parish. Both churches offered men's ministries, along with youth departments and programming, and had pastors who endorsed the project and cooperated with the researcher in recruitment of participants. Both churches belonged to historically African American denominations and had large to moderate-size congregations (2000 and 500 members, respectively).

The participants were men who attended the selected churches and met the following selection criteria: over the age of 18; had children between the ages of 6 to 11; and lived with their children. A convenience sample from each church was recruited using flyers posted in the church and announcements in the bulletin and from the pulpit. Interested men completed a brief screener following a church service, to establish eligibility and provide contact information. Those eligible were contacted by telephone to confirm and schedule participation. The University of Southern Mississippi IRB approved the project prior to study enrollment. Brief information about study requirements was a part of the recruitment material, and written informed consent was obtained from focus group participants at the start of each focus group.

The initial targeted sample size for all focus groups was approximately 25, with half the participants from each of the churches, and the intent to conduct additional groups if saturation was not reached. The actual sample included 28 men, divided among four focus groups, two urban/suburban (labeled "urban") and two rural.

Data Collection Tools and Instruments

A structured list of questions guided focus group discussions (Table 4.1). Questions were developed by the researcher based on constructs of the Parenting, Feeding, and Parent Characteristics level of the Ecological Model for Childhood Overweight; these included fathers' 1. nutrition knowledge and eating and physical activity behavior, 2. parenting styles and feeding practices, 3. making food available to their children, and 4. role modeling. The work of Sherry and colleagues (Sherry et al., 2004) on parental feeding strategies and responsibilities was also consulted in developing the questions. Focus group questions were reviewed by a panel of experts in qualitative research and child nutrition and obesity, and their professional feedback was incorporated into the final question set. Questions were pretested for clarity and understanding with two African American men from each of the churches who did not participate in the focus groups. No changes were made after pretesting. Demographic questions included respondent's age, marital status, education level, employment status, and self-reported height and weight. Respondents were also asked to report the number and age of all children in their household, and the height and weight of the oldest child in the specified range (reference child), if known.

Data Collection Procedures

Focus groups were conducted in a meeting room at each church. The researcher and a recorder/note taker, both of whom had been trained by Dr. Richard Krueger (Krueger, 1994) and had extensive experience conducting focus groups in the region, facilitated each group. Participant consent was obtained before beginning. All participants received healthy refreshments and a \$5 Subway gift card.

Two focus groups were conducted in each setting, ranging in duration from 75 to 81 minutes. Data saturation was reached within each setting with two groups. Focus groups were audio-recorded and the recorder made notes on verbal and non-verbal aspects of each group. Immediately after each session, the facilitator and recorder debriefed, by reviewing field notes and noting any additional observations, including non-verbal behavior.

Table 2

Food-related Focus Group Questions, by Ecological Model Construct

Construct	Focus group question
Parent Eating Behaviors	
	Describe a typical day of eating for you.
	In what ways do you think children's food choices and eating are influenced by their father's eating?
	Is there anything specific about African American culture that affects fathers' eating or their influences on their children's food choices or eating?
Food Availability	
	What involvement do fathers you know have in food shopping or making food available in the home?
	What kind of things affect the foods that you typically have at home?
	Is there anything specific about African American culture that affects fathers' involvement in making food available at home?
Parenting Feeding Style and Practices	
	What are your thoughts about fathers' involvement in their child's/children's food choices and eating?
	Parents use different styles when feeding their children. Some may restrict their children's access to certain foods or pressure their children to eat, while others may let their children eat whatever they want. Others are in between. How would you describe your child feeding strategy during meal times and whether or not the African American culture impacts your feeding style?
Parental Role Modeling	
	How would you describe a role model for children as it relates to healthy eating?

Nutritional Knowledge	When you hear the words “healthy eating,” what comes to mind; do you think your perception of this term is influenced by the African American culture?
	What foods do you think your children should eat that are healthy?
	What foods do you think children should avoid?
	Have you heard of a) My Plate or b) Dietary Guidelines for Americans? If so, what does it mean to you?
Child Weight Status	Do you consider your child to be a) underweight b) normal weight; c) overweight; d) obese?
Closing	Is there anything else that you would like to add concerning African American fathers and child eating behaviors?

Data Analysis and Interpretation

Quantitative data were entered into SPSS. Rural and urban groups were compared using independent samples t-tests for continuous variables and chi-square tests of independence for categorical variables. Statistical significance was established at $p \leq .05$.

The focus groups were transcribed by the researcher. A deductive content analysis approach was used (Elo & Kyngas, 2008; Hsieh & Shannon, 2005), with the parenting level of Parenting, Feeding, Parent Characteristics layer of the Birch and Ventura model (2009) serving as the theoretical framework. Each transcript and field notes were analyzed independently by the researcher and the recorder, both of whom had experience in qualitative analysis. Each analyst coded each transcript using the specified categories. Each analyst also looked for emerging themes not captured by the original thematic categories. After initial independent coding of transcripts, the two analysts discussed their categorization of data and resolved any differences. A third independent researcher experienced with qualitative analysis compared the codes assigned by each analyst with the data used to assign codes, and verified their accuracy. In terms of reflexivity, the

primary researcher was an African American female who was a member of the urban church, and who also had family connections to the rural church. About half of the participants in the urban church focus groups were the researcher’s colleagues in ministry at the urban church. These participants were aware of the profession of the researcher (nutrition and dietetics), but had not interacted with her in a professional or nutrition education role previously.

Results

Characteristics of the sample are presented in Table 4.2. There were no differences between the urban and rural fathers in age (41.7 ± 5.5), marital status (82.1% married), or BMI (31.2 ± 4.4). The mean age of the reference child (10.0 ± 1.4) did not differ between groups. Urban fathers had a higher education level compared to rural fathers (12 of 14 had at least some college for the urban group, compared to only 4 of 14 in the rural group). Child BMI, based on fathers’ report of child height and weight, did not differ between groups, but eight fathers were not able to report this information. In terms of the focus group questions, generally there were few differences in responses between urban and rural groups. Where these occurred, they are noted.

Table 3

Participant Characteristics

Variable	Total (n=28)	Urban (n=14)	Rural (n=14)
		Mean (SD)	
Father age	41.7 (5.5)	40.1 (4.8)	43.3 (6.0)
Father BMI	31.2 (4.4)	30.3 (3.6)	32.1(5.1)
Number of children	3 ± 1.3	2.6 ± 1.0	3.4 ± 1.6
Reference child age	10.0(1.4)	9.9 (1.8)	10.1(0.9)
Child BMI ^{^*} (total n=20; urban=9, rural=11)	22.7(4.2)	20.3 (3.1)	24.6 (4.0)
		n (%), by variable	
Marital status			
Married	23 (82.1)	10 (71.4)	13 (92.9)

Never married, divorced	5 (17.8)	4 (28.6)	1 (7.1)
Education*			
High school graduate, GED, or some HS	12 (42.9)	2 (14.3)	10 (71.4)
Some college, college graduate, or some post-graduate	16(57.1)	12 (85.7)	4 (28.6)

^child height and weight were not reported for children by 5 fathers in the urban group and 3 fathers in the rural group.

*Urban/rural significantly different at $p < .05$

.Fathers' eating

In response to a question about eating on a typical day, fathers in the rural area mentioned foods that are common in a traditional southern diet (eggs and sausage for breakfast, red beans for lunch, smothered chicken, rice and gravy for dinner) whereas urban dads mentioned skipping breakfast or eating fruit or oatmeal, and sandwiches, turkey burger, or baked chicken for lunch, though dinner items among urban dads were more traditional, including red beans and fried chicken. Among rural dads, chips and cookies were popular snack items, whereas urban dads mentioned nuts and fruit along with potato chips.

Fathers in each group discussed the role of cultural influences on their own eating and that of their children. Opinions were mixed in both groups about the extent to which culture influenced eating, but the majority of dads indicated that it was much less an influence for their children than for themselves.

“I eat a lot of soul foods and fried foods, but not my son.”

“I think the new culture is a lot of fast/convenient foods, because my son doesn't eat a lot of cooked meals.”

A little over half of the participants in both rural and urban groups believed that what they ate influenced what their child ate; other participants believed that it did not.

The ways in which fathers influenced their children's eating included food purchasing (“I

buy a lot of fast food for him, so I influence him eating the wrong foods”), food preparation (“what we prepare and buy at home and order in restaurants influence (sic) their food choices”), and intake (“I eat veggies with my meals and [am a] picky eater, therefore my child mimics my behavior”). Perceptions of lack of influence were reflected in this series of quotes: “[my] child eats healthier [than I do]”; “[my] child...[is] a picky eater [and] won’t try [what I eat],” and “kids [should] make a lot of [their] own choices.”

One father in the rural group introduced a new theme in the context of discussing the influence of fathers’ eating on their sons’ eating, which was affirmed by other men in the group and suggested in all groups. This recurrent theme throughout the discussion addressed the importance of African American fathers in their sons’ lives: “young males emulate their fathers in every way, and men need to be aware of their influences over their male children and need to be a positive influence on their child’s eating habits and should encourage their child to maintain a good diet and exercise habits.”

Food Availability

Three fourths of fathers reported having some involvement in food shopping, mentioning that this represented a cultural shift in the role of fathers: “It used to be considered the woman’s job but now more women are working so we both do it.” They mentioned food preferences, health benefits, and food costs, in that order, as the most important factors affecting food selection: “We buy more of what they [children] want because we can’t afford to waste food”. There was an interplay among the role of African American culture, health, and food preferences related to purchases. For

example, participants avoided purchasing traditional soul foods because of their negative health connotations.

“When you have a set eating pattern from tradition, you tend to stay with it until you develop health issues and then you start choosing healthier foods.”

“Since bad health is associated with African American traditional eating habits, we try to stay away from certain foods.”

Parenting, Feeding Style, and Feeding Practices

When asked about fathers' involvement with their children's food choices and eating, participants in both groups expressed that it was important for fathers to be involved in this aspect of their children's lives, and more broadly: “it's very important that fathers be involved in their children's lives as a whole;” “fathers are the most influential parent at home.” Different perspectives were expressed about why involvement was important.

“It's important that African American men let their children know the value of eating right to be healthy because African American men lead statistics in high cholesterol and high blood pressure. Therefore, they need to teach their children to eat better.”

“If we want our children healthy as fathers, we have to direct them to eat healthier. I am directly involved with food purchasing and preparation and it's important that we be more involved and teach them early.”

Other fathers expressed a different perspective about fathers' feeding goals: “It's not the main focus of the father for kids to be healthy. It's more about just making sure they eat something so they won't be hungry.” Another elaborated: “Most fathers feed

their kids just to feed them to get full, but they feed them sugary beverages and unhealthy snacks. Fathers should be involved to supervise child food choices. We have to be more involved to decrease the chance of disease in our children.”

When asked about their feeding style or strategy with their children, most indicated it was “in between” restricting or pressuring to eat and allowing children to eat whatever they wanted.

“...in between but I monitor their intake of unhealthy foods and encourage healthier foods. I do pressure them more towards eating healthy foods.”

“...in between because my wife limits what they consume, but I am a little more liberal with them, but we do monitor.”

“We don’t bring anything in the house that we don’t want them to eat; therefore, we have more control.”

Fathers’ Role Modeling

Fathers were asked to describe a role model for healthy eating and physical activity and about the importance of being such a role model. Some gave very specific descriptions of what a father would do as a role model, suggesting such a father would “make healthy food choices...lead by example and teach the benefits of healthy eating and consequences of not eating healthy” as well as “make healthy foods available at home...prevent access to junk food..., exercise regularly.” The importance of being an active role model was reflected in the statement: “If you do it, they will do it. You can say eat fruits and vegetables all day, but if they see you do it, then they will be more likely to do it.”

Nutritional Knowledge

When asked about foods that were healthy for themselves, and foods healthy and to be avoided by children, fathers framed their responses using different categorizations.

Participants in both groups mentioned

1. specific foods to choose or avoid (e.g. choosing broccoli, greens, a variety of fruits, wheat bread, lean meat, low salt foods; avoiding or decreasing fast food, sweets, sodas and sugary beverages)
2. food groups (vegetables, fruits, whole grains) and nutrients (carbs and fats)
3. food preparation methods (avoiding frying; use of baking and grilling)
4. health outcomes (e.g. “long life”)
5. the costs of eating healthy (“expensive”)
6. feelings and beliefs concerning healthy eating ([healthy eating is like] “dieting” and “not fun”).

Urban fathers seemed more aware of a variety of healthy food options, mentioning foods like turkey burgers, hummus, baked and veggie chips, oatmeal, nuts, and pasta, among others. Although most fathers could name healthy and less healthy food options, only one father in the urban group was able to explain My Plate and the Dietary Guidelines for Americans. All but a few were unfamiliar with these as representing dietary recommendations for Americans.

Child Weight Status

Fathers were asked to report their child’s height and weight, and then circle the child’s body size using silhouettes depicting children of varying weight status. Because eight fathers did not know their child’s height and/or weight, no attempt was made to compare perception with actual weight status. Because each child’s age, but not date of

birth, was reported, BMI for age was plotted on the appropriate gender-specific CDC growth chart, using the reported age (year, without months) for age (i.e. 11 years, 0 months for a child with a reported age of 11). Using this estimate of BMI for age and comparing with fathers' identification of child weight status, for the 20 fathers who reported child's weight and height, 14 underestimated, 1 overestimated, and 5 (4 urban, 1 rural) correctly selected their child's weight status. This quote expressed cultural perceptions about food choices and weight: "Older people thought being heavy was healthy but that is not the case because that heavy child was unhealthy. Older people always said 'eat all of your food, baby.' People look at my child being slim and says (sic) 'he needs to eat more' but he is okay being slim. But the African American culture looks at that as being unhealthy."

Discussion

Each food-related construct of the Parenting, Feeding, and Parent Characteristics layer of the Birch and Ventura model seemed to be relevant/applicable to the fathers interviewed in this study. Fathers did not all agree about whether their eating influenced that of their children. For those who believed it did, some expressed their influence as negative and others positive. They generally agreed that traditional foods consumed by African Americans were much less a part of their children's diets. Fathers referenced their children's consumption of fast foods and convenience foods, suggesting the influence of a Community Level factor from the Birch and Ventura model (2009). In recent years, there has been a decrease in meal preparation and foods consumed at home in the U.S. (USDA, 2014; Guthrie, Lin & Frazao, 2002). In 2014, there were 8,305 eating and drinking establishments in Louisiana, and restaurant sales were projected to

grow to \$8.7 billion in 2016 (National Restaurant Association, 2016). This growth is consistent with fathers stating that child food choices are influenced by a cultural shift away from traditional foods toward increased fast food consumption. In a single study published in 2006 that compared diets across three generations of African American women (grandmothers, mothers, and daughters; mean ages 65, 42, and 21, respectively), diet quality scores of grandmothers were positively related to those of mothers and negatively related to the daughters' scores, and there was no relationship between the mothers' and daughters' scores (Ikeda et al., 2006). These findings also suggest the role of influences beyond the parent ecological level of this model, and environmental influences on food intake and obesity have been well documented (Cobb et al., 2015).

Most men in this study had some involvement in food shopping and selection, and reported different factors that affected their food choices, including food preferences and costs, as well as health benefits. Flagg and colleagues (Flagg, Sen, Kilgore, & Locher, 2014) reported for a 2007-08 nationally representative sample that 67% of men indicated they were either the main food shopper or shared food shopping responsibilities. Black men were 1.84 times more likely than White men to report being the main meal planner/preparer and 1.59 times more likely to report being the main food shopper. Similar to the factors fathers in this study reported, taste, price, and healthfulness were identified as having the biggest impact on food purchasing decisions for the past 10 years, according to the national 2015 Food and Health Survey (IFIC Foundation, 2015).

With health benefits identified as a factor that influenced their food selection, it is not surprising that fathers in this study acknowledged that their children's health was affected by the types of foods they chose to make available in the home. Other

researchers have found relationships between home food availability and children's food intake (Couch, Glanz, Zhou, Sallis, & Saelens, 2014; Liang et al., 2013; Zarnowiecki, Dollman, & Parletta, 2014). Rural fathers also mentioned lack of access to affordable healthy foods in food stores, pointing to an influence in the outer, or community, level of an ecological model of child weight (albeit one that is not directly shown in either iteration of the child overweight ecological model (Birch & Ventura, 2009; Davison & Birch, 2001). In a study of healthy food availability conducted in an 18-county area of the Delta region of Arkansas, Louisiana and Mississippi, food cost was perceived as a barrier to healthy food purchase and consumption, and availability of a variety of healthy food items was lacking in local food stores (McGee et al., 2011). Access and availability may explain the differences noted in dietary patterns between urban and rural fathers, and suggest a higher level of obesity risk for rural families and their children. Challenges with access to healthy, affordable foods in the rural south is well documented (Blanchard & Lyon, 2006; Connell et al., 2007; Connell et al., 2012; Pinard, Byker Shanks, Harden, & Yaroch, 2016) and links between access to healthy foods and child weight status have been documented (Jennings et al., 2011), although evidence is equivocal (Lee, 2012; Shier, An, & Sturm, 2012).

Fathers discussed the importance of healthy eating to their children's future health, indicating concern that their children not experience the chronic health problems that plague men of their own generation. Short- and long-term health risks associated with child obesity are well documented (CDC, 2015). Little research was found about parental attitudes or beliefs related to children's future risk of chronic disease, although African American fathers in a study by Odum and colleagues (2014) affirmed the role of

parents in their children's health education. In spite of concerns about their children's future health, faulty perception of children's weight status by parents is not uncommon (Chen et al., 2014; Duncan, Hansen, Wang, Yan, & Zhang, 2015; Hernandez, Garcia, & Thompson, 2015; Towns & D'Auria, 2009). Minimal parental concern about child weight and its health implications are possible obstacles to obesity prevention (Park et al., 2013). However, future risk of chronic disease was found to be a major concern among the fathers in this study, which they linked to their feeding responsibility as fathers. They believed that it was important for fathers to be involved in feeding their children, but their individual approaches ranged from monitoring of foods available in the home to encourage healthy food consumption, to "just making sure they eat something so they won't be hungry." Some fathers described feeding responsibilities simply as a way for them to be involved with their children, a theme that was repeated throughout the focus groups as different model constructs were discussed. Data from the National Survey of Family Growth showed that non-Hispanic Black fathers frequently ate meals with their children (every day or several times a week for 95.9% of fathers with children under 5 and 87.3% of fathers with children 5-18) (Jones & Mosher, 2013). Recent research has begun to explore fathers' perceptions of their role as a father at mealtime, in relationship to specific feeding practices and in turn to child weight status, but this research is limited (Horodynski & Arndt, 2005; Mallan et al., 2014; Vollmer, Adamsons, Foster, & Mobley, 2015).

Fathers in the present study were not familiar with formal recommendations regarding dietary intake (My Plate, Dietary Guidelines for Americans, REF), although they did have an understanding of food groups that comprise a healthy diet, healthy food

selections within those groups, and healthy preparation methods. The importance of adherence to the Dietary Guidelines for Americans in reducing disease mortality was recently demonstrated in a large, prospective study of low-income, mostly African American adults from 12 southeastern states (Yu et al., 2015). However, knowledge of dietary guidance was not related to adherence, based on a systematic review that included three studies published between 1992-2013 that evaluated both (Haack & Byker, 2014). In contrast, Hendrie, Coveney, and Cox (2011) provided empirical evidence for a connection between parental nutrition knowledge and child weight status, and also found that knowledge was associated with general parenting style and child feeding practices in Australian parents of children 5-10 years old. Fathers' knowledge about appropriate child feeding practices (Bilal et al., 2014), similarly to the topic of fathers' perceptions of their responsibilities for child feeding, has not been explored much as of yet, and is equally important as, if not more important than, fathers having general knowledge of nutrition.

This study was not without limitations, foremost that the external validity of the findings is limited by the sampling method and small sample size. Participants may have responded to questions in a socially desirable manner. The qualitative nature of the study did not allow us to empirically test the Child Overweight Ecological Model upon which the study was framed. The insider/outsider perspective of the researcher as a person active in ministry at the urban church and with family connections to the rural church may have affected responses of the participants, as well as creating bias in the interpretation of the findings. However, the insider perspective might also have contributed to an atmosphere of trust between the researcher and participants.

Findings from this study should be validated with additional research to empirically evaluate the applicability of the Child Overweight Ecological Model to the population of interest, both in terms of explaining factors that impact child obesity in this region, as well as for use in developing interventions targeting African American fathers.

Findings of interest relative to future research and intervention planning include the following. First, this study and a rapidly growing body of research suggest that fathers should be an important intervention focus. Fathers in this study were involved in their children's feeding and eating, and seemed knowledgeable of foods and cooking methods that contribute to a healthy diet, although they differed in both how they perceived their role in feeding, and in how they executed it. Secondly, future research should explore whether these fathers' expressed concern about their children's future disease risk could be used to motivate behavior change in populations with a high prevalence of chronic disease. African American men have the highest mortality rate and worst overall health status of any U.S. demographic subgroup (Arias, Kochanek, & Anderson, 2015; CDC 2013; Health Status, 2007), and data on cancer incidence and survival rates in Louisiana are indicative of the overall worse health condition of African American men in that state compared to other demographic groups in Louisiana and the U.S. (Jones-Jack et al., 2013). Lastly, African American churches with men's ministries, such as the two from which the fathers in this study were recruited, may offer a culturally relevant and supportive setting within which to promote child health and engage fathers and children in health promotion programming. However, the relevance and suitability of this setting for reaching a broad audience of African American fathers should be explored.

CHAPTER V – MANUSCRIPT TWO

In 2015, Louisiana was ranked 50th for overall health, 47th for obesity, and 48th out of 50 states for physical inactivity (United Health Foundation, 2016). Louisiana was joined by other Deep South states including Arkansas, Mississippi, and Alabama, which share similar sociodemographic characteristics, at the bottom of the rankings. The 2012 Louisiana Report Card on Physical Activity and Health for Children and Youth (Pennington Biomedical Research Center, n.d.) indicated that 27.1% of Louisiana children 2 to 19 years of age were overweight or obese, only 24.2% of children met federal guidelines for aerobic physical activity, and 41.1% and 34.5% of Louisiana adolescents, respectively, exceeded recommended TV/video and computer/computer games screen time limits. As is the case for other Deep South states where non-Hispanic Whites and non-Hispanic Blacks make up the majority of the population, the rate of child overweight and obesity in Louisiana is higher for non-Hispanic Black children than for non-Hispanic White children, 42.3% and 30.5%, respectively, in 2007 (Data Resource Center for Child and Adolescent Health, n.d.).

In the face of the child obesity epidemic across the U.S., the Centers for Disease Control and Prevention has developed a Youth Physical Activity Guidelines Toolkit (CDC, 2015b), which emphasizes the complementary roles of schools, families, and communities in promoting physical activity. Several recent reviews have examined correlates of and influences on child physical activity (Biddle, Atkin, Cavill, & Foster, 2011; Craggs, Corder, van Sluijs, & Griffin, 2011; Mitchell et al., 2012; Sterdt, Liersch, & Walter, 2013; Trost & Loprinzi, 2011; Van Sluijs, Kriemler, & McMinn, 2011; Webber & Loescher, 2013), and a small number examined influences on child sedentary

behavior (Hoyos Cillero & Jago, 2010; Pate, Mitchell, Byun, & Dowda, 2011; van der Horst, Paw, Twisk, & Van Mechelen, 2007; Verloigne, Van Lippevelde, Maes, Brug, & De Bourdeaudhuij, 2012). Parental influences emerge as a major theme throughout the child physical activity literature, and are considered in the sedentary behavior literature as well. In a systematic review of 76 studies on family- and school-based correlates of 10 to 12-year-old children's energy balance-related behaviors, parental rules and restriction regarding screen-time and sedentary behaviors was the strongest correlate of child sedentary behavior, and was negatively related (Verloigne et al., 2012). Other family factors significantly related to children's sedentary behavior were parental ethnicity, physical activity preferences, knowledge about physical activity, and having family dinners (all negatively related), as well as number of TVs in the home, eating in front of the TV, parental overweight, parental sedentary time, sedentary time with parents, parental enjoyment of screen-based behavior, and household income - all positively related to child sedentary behavior. In a systematic review of 71 studies on screen-viewing correlates for young children, non-White ethnicity, family TV viewing, parental rules, and parental body mass had a strong association (Hoyos Cillero & Jago, 2010). Evidence was insufficient to establish a relationship between monitoring and child screen-viewing.

The most recent meta-analysis on parental correlates of child physical activity analyzed findings of 112 studies (Yao & Rhodes, 2015). The authors reported a medium effect size for overall parental support and child physical activity, and suggested that parental support might be an important consideration for future physical activity interventions. They also reported that parental gender moderated the relationship

between parent and son physical activity (but not parent and daughter), with a significantly stronger relationship for fathers than mothers. These researchers also indicated as a limitation that many of the parental respondents in the reviewed studies were mothers and recommended further investigation of the role of fathers' parental support and child physical activity. Lloyd and colleagues (Lloyd et al., 2014) in a study of 70 families and children (aged 8.4 ± 2.4) reported that fathers' and mothers' influence on child physical activity and screen time differed, specifically with regard to self-reported use of limit setting, monitoring, and control. These authors recommended including both fathers and mothers in future research on parenting related to these health behaviors.

Given the higher rates of child overweight and obesity among African American children, there is interest in considering parental and specifically paternal influences on child physical activity and sedentary behavior in this population in particular. In a national survey of children 9 to 15 years of age, the odds of Black children exceeding recommended screen-time limits were double those for White children (Carlson et al., 2010). Children were less likely to exceed recommended limits when parents had rules or limits on screen time, but these findings were not reported by race/ethnicity. In a systematic review of 103 studies that considered parental support and modeling of physical activity, Trost and Loprinzi (2011) called for more research that included multi-ethnic populations, identifying only a few studies that included African American parents, and noting that these suggested that African American children receive less parental support for physical activity than Caucasian children. Webber and Loescher (2013) conducted a systematic review of 21 studies of parent role modeling of healthy

eating and physical activity for middle-school age African American children, only five of which focused exclusively on physical activity. Of these, three included only daughters and mothers/female caregivers, one included daughter/parent dyads (34 of 37 were mothers), and the fifth did not report parent or child gender. The authors concluded that the evidence for parent role modeling as an influence on children's healthy weight was weak, and called for more research on factors that influence parents to engage themselves and their children in physical activity and on the influence of parents' physical activity beliefs and perceptions about role modeling of physical activity on children's body weight. To help address gaps in the literature related to physical activity parenting, the purpose of this research was to investigate African American fathers' perceptions regarding child obesity and the influence of fathers on physical activity and screen time of children. The Parenting, Feeding, Parent Characteristics level of Birch and Ventura's Ecological Model for the Etiology of Childhood Overweight [Child Overweight Ecological Model] (Figure 5.1; Birch & Ventura, 2009) served as the conceptual framework for the study. Specific constructs found in this level of the model include parents' activity patterns, encouragement of activity, and monitoring TV (screen) hours, which are theorized to affect child physical activity and sedentary behavior, and in turn child weight. Other constructs related to child eating are also found in the Parenting level of the model and were part of the same project, but are addressed in a separate paper. A secondary aim of this study was to explore fathers' perceptions related to the influence of African American culture on their parenting related to physical activity.

Methodology

This qualitative study using focus groups was grounded in a pragmatic orientation (Creswell, 2008). Pragmatism focuses on addressing practical problems. The researcher's interest was in gaining practical information that could be used to design programs for African American fathers to address obesity in school age African American children.

Setting and Participants

Participants were recruited from two African American churches in two southeastern Louisiana parishes (counties), located in the Lower Mississippi Delta region of Louisiana. The Lower Mississippi Delta region in the Deep South has a high proportion of African American residents, 32.4% vs. 13.2% for the U.S. as a whole (Delta Regional Authority, 2016), and high rates of child obesity (Lower Mississippi Delta Intervention Research Consortium, 2004). Both churches in this study were affiliated with historically African American denominations; one was located in an urban parish and the other in a rural parish (U.S. Department of Agriculture, 2016). Each was selected because it offered a men's ministry and had a youth department and programming, and a pastor who was willing to endorse the project and cooperate with the researcher in recruitment of participants. Both churches had large to moderate-size congregations (2000 and 500 members, respectively).

Convenience sampling was used to recruit fathers who met the following eligibility criteria: men who were members of the selected churches, over the age of 18; had children between the ages of 6 – 11; and lived with their children. To recruit participants, flyers were posted in the church, and announcements were included in the

bulletin and made from the pulpit. A brief screening form was completed by interested men following a church service, to establish eligibility and provide contact information. The researcher contacted men who met the eligibility criteria by telephone to confirm and schedule participation. The University of Southern Mississippi Institutional Review Board approved the study. Written informed consent was obtained at the start of each focus group. The targeted sample size for all focus groups was approximately 25.

Data Collection Tools and Instruments

The focus group guide included questions related to each construct of the Parenting, Feeding, and Parent Characteristics level of the Ecological Model for Childhood Overweight (Birch & Ventura, 2009). The questions relevant to physical activity and screen time are found in Table 5.1, and those related to food and feeding are reported in Chapter IV, Manuscript 1. The questions were reviewed by a panel of experts in qualitative research and child nutrition and obesity, and their feedback and recommendations for modification were incorporated. Questions were then pretested for clarity and understanding with two African American men from the selected churches who did not participate in the focus groups. No changes were made after pretesting. Demographic questions included respondent's age, marital status, education level, employment status, and self-reported height and weight. Respondents were also asked to report the number and age of all children in their household, and the height and weight of the oldest child in the specified range (reference child), if known.

Table 4

Physical Activity and Screen Time Questions, by Model Construct

Construct	Focus group question
Parent Activity Patterns and Encouragement of Activity	
	Describe your own physical activity or inactivity and the impact of the African American culture on these behaviors
	In what ways do you think children's physical activity behaviors are influenced by the African American culture or their father's behaviors?
	Describe some ways that fathers can encourage physical activity in children.
Monitoring TV and Sedentary Behavior	What are your thoughts on children spending time using technology? (TV, computer, cell phone, etc.)
	Do the fathers you know monitor their children's screen time?
	In what ways do you think fathers' sedentary behavior (TV watching, computer and telephone usage, etc.) affects children's level of activity vs sedentary behavior?
Parental Role Modeling	
	How would you describe a role model for children as it relates to physical activity?
	How important is it for fathers to be a role model for their children for physical activity? For you personally?
Closing	Is there anything else that you would like to add concerning African American fathers and physical activity behaviors?

Data Collection Procedures

The researcher, assisted by a recorder/note taker, conducted the focus groups in a meeting room at each church. Both were African American women, who had been trained by Dr. Richard Krueger, and had extensive experience conducting and analyzing focus groups in the Lower Mississippi Delta region. The focus group assistant audio-recorded the sessions and made notes on verbal and non-verbal aspects of each group. All participants received healthy refreshments and a \$5 Subway gift card. Two groups

were conducted in each setting, which ranged in duration from 75 to 81 minutes.

Immediately after each session, the facilitator and recorder debriefed, by reviewing field notes and noting any additional observations, including non-verbal behavior.

Data Analysis and Interpretation

Quantitative data were entered into SPSS. Rural and urban groups were compared using independent samples t-tests for continuous variables and chi-square tests of independence for categorical variables. Statistical significance was established at $p \leq .05$.

The researcher transcribed the focus groups and analyzed the data using a deductive content analysis approach (Elo & Kyngas, 2008; Hsieh & Shannon, 2005). The parenting level of the Birch and Ventura model (2009) served as the analysis framework. Each transcript with corresponding field notes was analyzed independently by the researcher and the recorder. Each analyst coded each transcript using the specified categories. Each analyst also looked for emerging themes not captured by the original thematic categories. Data saturation was reached within each setting with two groups. After initial independent coding of transcripts, the two analysts discussed their categorization of data and resolved any differences. In terms of reflexivity, the primary researcher is a member of the urban church, and has family connections to the rural church. About half of the participants in the urban church focus groups were the researcher's colleagues in ministry at the urban church. These participants were aware of the profession of the researcher (nutrition and dietetics) but had not interacted with her in a professional or nutrition education role previously.

Results

Participants are described in Table 5.2. There were no differences between the urban and rural fathers in age (41.7 ± 5.5), marital status (82.1% married), or BMI (31.2 ± 4.4), and the mean age of the reference child (10.0 ± 1.4) did not differ between groups. Urban fathers' education level was higher than that of rural fathers. Child BMI, based on fathers' report of child height and weight, did not differ between groups, but eight fathers were not able to report this information. Generally, there were few differences in responses between urban and rural groups. Where these occurred, they are noted.

Table 5

Participant Characteristics

	Total (n=28)	Urban (n=14)	Rural (n=14)
Variable	Mean (SD)		
Father age	41.7 (5.5)	40.1 (4.8)	43.3 (6.0)
Father BMI	31.2 (4.4)	30.3 (3.6)	32.1(5.1)
Number of children	3 \pm 1.3	2.6 \pm 1.0	3.4 \pm 1.6
Reference child age	10.0(1.4)	9.9 (1.8)	10.1(0.9)
Child BMI ^{^*} (total n=20; urban=9, rural=11)	22.7(4.2)	20.3 (3.1)	24.6 (4.0)
	n (%), by variable		
Marital status			
Married	23 (82.1)	10 (71.4)	13 (92.9)
Never married, divorced	5 (17.8)	4 (28.6)	1 (7.1)
Education*			
High school graduate, GED, or some HS	12 (42.9)	2 (14.3)	10 (71.4)
Some college, college graduate, or some post-graduate	16(57.1)	12 (85.7)	4 (28.6)

[^]child height and weight were not reported for children by five fathers in the urban group and 3 fathers in the rural group.

*Urban/rural significantly different at $p < .05$

Fathers' Physical Activity and Encouragement of Child Physical Activity

Fathers were asked to describe their own physical activity and its influence on their children's activity. Half the fathers reported that they worked out regularly, four that

they were active in the context of their work, and the remainder that they were not active due to lack of time. Walking, weight training, and recreational sports like baseball and basketball were mentioned most frequently.

Fathers saw themselves as encouraging physical activity in their children by engaging in fun activities with them “like volleyball, dodge ball, baseball, bike riding,” and by modeling physical activity. A majority of fathers in the urban group expressed that it was important both that they be active and that they encourage their children to be active. One father put it this way: “participate with them. It’s easier to do it and they come join. When I play sports they want to get involved. When dad gets involved, everyone wants to get involved.” The particular role of fathers influencing sons was noted by a father in the rural group: “My sons like to do things they see me do. Boys like to do things that fathers are involved in whether good or bad.”

Monitoring TV and Sedentary Behavior

A little over half of the fathers monitored their children’s screen time; of those who did not, some said they needed to start. About half said there should be a balance between inside and outside time for children. All fathers in both groups agreed that too much inside time is a major contributor to child obesity and health issues, and fathers from one group expressed that too much inside time affects children’s social skills.

“Kids need to go outside and be more physically active to improve their health and social skills. We played outside when we were young and there was less child obesity, sickness and disease.”

“It’s a whole different era. Kids have so much technology and it’s easier for parents to allow them to do inside activities. Kids don’t know outside games anymore. It

is a matter of us teaching them the importance of physical activity in what we present to them and how we present it.”

When asked about the influence of their own sedentary behavior, almost all of the fathers felt their children emulated their activity or sedentary behaviors. Participants in both groups reemphasized that children want to do what they see their fathers doing and urban fathers again stressed that it was important to be active with them.

“Kids mimic what their parents do.”

“...[it is] important for black men to be a part of their children’s lives, physical activity and health, and to be a positive role model.”

“...a lot of kids want their dad to be active with them.”

“...if father is not active, the child won’t be active.”

Fathers’ Role Modeling

Fathers were asked to describe a role model for healthy eating and physical activity and about the importance of being such a role model. Some gave very specific descriptions of what a father would do as a role model, including someone who “exercises regularly [and] encourages [their children] to do so,” is “self-motivated, works out at least 30 minutes daily, and makes healthy food choices, who “explains the benefits and lets their child see the benefits. You can’t just tell them, you have to show them.” One father also mentioned other benefits of role modeling for their children: “Fathers being an active role model to their children gives them a sense of confidence and pride and it boosts the child’s confidence level.”

In response to the closing question, responses reflected additional thinking on the theme of serving as role models. Almost all fathers in both rural and urban groups stated

that fathers need to be better role models for their children and encourage them to eat better and be more active. The majority of fathers said that the focus group brought more awareness to the importance of their role as a father to guide their children in making better choices related to their health.

“Fathers my age encourage their children to make better choices than this younger generation like 20-year-old fathers; they are a different breed”

“Kids eating and exercise habits are a reflection of the parent. So we need to do a better job to be role models.”

“These questions made me realize the importance of my role to guide my child to make better food choices and to be more active.”

“This has been a self-check for me because when raising your kids, you don’t really think of how you can impact your child’s health, but it’s made me more aware that I need to be more of a positive role model. After hearing these questions, I think most fathers need to be more aware and make better eating choices and exercise more. It’s very important that dads are very involved with every aspect of their child’s life and especially with their eating to avoid serious medical issues.”

African American Culture and Physical Activity Parenting

Urban and rural fathers differed in their perspectives about the role of African American culture in their own or their children’s physical activity. The majority of rural fathers felt that it impacted both their own and their children’s physical activity. Most urban fathers thought it did not influence their own activity, whereas half felt it did influence their children’s. African Americans’ involvement in sports was the main cultural reference, as expressed in these quotes:

“African American men are sports oriented... My father was a coach and I have a military background and physical activity has always been a part of my daily regimen, and I imparted that into my child.”

“Yes, because my son is around a lot of African American athletes, so he plays football and stays in shape. I encourage him to exercise and I lead by example.”

“My kids play baseball and basketball because of the African American culture and because they see other kids do it.” This latter quote also stresses the role of peers in encouraging physical activity in children.

And more broadly in reference to being a role model, it’s “very important that African American males be a positive example for their children” and, from another father, “It’s important that we portray a strong image inside and out to our children.”

Discussion

Findings on the influence of fathers’ physical activity on children’s activity suggest that these fathers perceived that they play a key role that is more important than environmental factors, which are often cited as barriers to physical activity in communities of color (Joseph, Ainsworth, Keller, & Dodgson, 2015). Fathers in this study indicated that it was important for them to encourage their children to be physically active, and suggested that the best way to do so was by engaging in activity with their children. Fathers described engaging in activities that require little equipment or special facilities, and in fact the rural fathers mentioned being in the country, where physical activity resources may be more limited, as an asset to being physically active. In a systematic review that examined 38 family-environmental correlates of child physical activity, the strongest evidence was found for parental/family physical activity, maternal

physical activity, and doing physical activity with parents (Verloigne et al., 2012). Trost and Loprinzi (2011) in their review also found a positive association between parental physical activity and child physical activity for 6-12 year-olds (41% of reported associations were positive and significant), but considered this evidence inconclusive. Parental support for physical activity was also associated with child physical activity. Of the 91 studies reporting an association, 63 (69%) were positive and significant. For paternal support, 57% (8/14) of reported associations were positive and significant, in contrast to 38% (5/13) for associations with maternal support. Yao and Rhodes' (2015) recent meta-analysis of 112 studies found a moderate effect for parental support and child physical activity. A qualitative study of African American adolescents' and pre-adolescents' perceptions of the influence of their parents' social support and role modeling on their physical activity found that youth reported receiving tangible support in the form of parent participation in physical activity (Wright et al., 2010). In a randomized controlled trial targeting fathers' and their children's physical activity, Lloyd and colleagues (Lloyd et al., 2014) found that father and child co-physical activity explained 59.5% of the intervention effect on children's physical activity, which increased significantly over the course of the intervention. It is promising that in the face of evidence supporting the benefit of co-physical activity and the perception of youth that parent participation is supportive, these fathers expressed interest in and enthusiasm for participating with their children.

More than half the fathers in this study indicated they monitored their children's screen time. Concern regarding the effects of screen time/technology on health and social skills, as well as the need for children to be outside and active, were mentioned by

respondents as reasons for monitoring, or saying they should if they were not already doing so. Parental rules were related to child sedentary behavior in two systematic reviews, one of studies on young children (Hoyos Cillero & Yago, 2010) and the other on 10 to 12-year-old children (Verloigne et al., 2012). In an Australian study which included 70 families, mothers' but not fathers' monitoring was associated with child screen time (Lloyd et al., 2014). Fathers self-reported less monitoring behavior than mothers. It is possible that the fathers in the present study who affirmed monitoring children's screen time were responding in a socially desirable manner, or that awareness of the importance of monitoring children's sedentary behavior has increased since this trial was conducted in 2011-12.

Perceptions of fathers in this study differed regarding the influence of African American culture on both their and their children's physical activity. Rural fathers were more affirming of an influence on their own physical activity than urban fathers, but about half of each group thought it influenced their children's physical activity associated with involvement in sports. Although the concept of African American men as athletes has been suggested to be a manifestation of alternative images of masculinity that have emerged because masculine ideals associated with the dominant culture may be challenging for African American men to attain (Roberts-Douglass & Curtis-Boles, 2013), fathers in this study who affirmed a cultural influence saw the interest in and exposure to sports as having a positive impact on physical activity. Incorporating cultural preferences into physical activity interventions targeting fathers and their children may be important, but formative assessment to determine group norms is important. Further, a 2009 review of physical activity interventions targeting African American adults

provided little evidence for the comparative effectiveness of culturally adapted interventions (Whitt-Glover & Kumanyika, 2009). Two recent reviews that considered cultural adaptation of health behavior interventions suggest a limited understanding at present of the processes of adaptation or the role of adaptation in intervention effectiveness (Barr-Anderson, Adams-Wynn, DiSantis, & Kumanyika, 2013; Sanders Thompson, Johnson-Jennings, Bauman, & Proctor, 2015), and one of those (Barr-Anderson et al., 2013) calls for further research on the specific aspects of African American family involvement that are operative in obesity-related behavior change in African American children.

The findings from this study suggest that promoting co-physical activity and parental support for child physical activity among African American fathers might be well-received by fathers as well as effective in promoting child physical activity. A concluding question in each focus group had to do with fathers' perceptions related to being a role model for their children in matters of healthy eating and physical activity. Fathers felt strongly about the importance of being a role model in their children's lives, in the sense of educating about, encouraging, and demonstrating positive lifestyle behaviors related to eating and physical activity. The importance of fathers' role modeling as it relates to child physical activity was demonstrated in a systematic review by Edwardson and Gorely (2010), who reported a positive relationship of role modeling to child's leisure-time physical activity. Fathers in the present study expressed a broader perspective on the importance of role modeling in a recurrent theme throughout the entire focus group sessions, related to the importance of the African American father's "identity as [a] strong father figure/role model, [especially] to sons." Fathers mentioned that

“young males emulate their fathers...,” “...that boys...like to do things [that their] fathers [are] involved in, good or bad,” that African American men need to be a part of their children’s lives, and that their being an active role model helps to instill a sense of confidence and pride in their children. Jones and Mosher’s (2013) study of a nationally representative sample of fathers of children ranging from birth to 18 years of age suggests that Black fathers are equally involved in their children’s lives as White or Hispanic fathers. Roberts-Douglass and Curtis-Boles (2013), in a study of college age African American men, found that fathers and grandfathers were perceived by these young men as the most salient influence on their establishing their identity as African American males. Clearly the fathers in the present study understood the importance of their functioning as a role model for their children, but not all may have realized the implications for their child’s health in the future. Cooper (2015), in a commentary on African American fathers and their role in boys’ development, stressed the need for greater “understanding [of] fathers’ impacts on the health and well-being of African American boys...” (“Developmental Considerations in Research,” para. 2). Such an emphasis may be important to incorporate in programs and interventions targeting fathers and child obesity.

This study was not without limitations. First, the generalizability of the findings is limited by the sampling method and small sample size. Responses may have been affected by social desirability. The qualitative nature of the study did not allow the researcher to empirically test the Child Overweight Ecological Model upon which the study was framed. The researcher, who was active in ministry at the urban church and had family connections to the rural church, but did not act in her role as a nutrition

professional in either setting, had both an insider and outsider perspective. This may have affected the responses of the participants, and could have led to bias in the interpretation of the findings. The insider perspective could also have created a level of trust between the researcher and participants that might not otherwise have been there.

Implications

Findings from this small study were generally supported by research on parental influences on child physical activity and sedentary behavior conducted in other populations. This suggests that factors such as paternal co-activity, paternal support for child physical activity, and parent monitoring and rules related to child sedentary activity could be considered when developing interventions in populations similar to the sample in this study. Additional research is needed to determine whether and how African American culture impacts father-child physical activity, as well as whether there are differences in perceptions about cultural influences between urban and rural fathers that would in turn have implications for culturally tailoring interventions.

CHAPTER VI - SUMMARY AND CONCLUSIONS

The purpose of this research was to investigate perceptions of African American fathers in southeast Louisiana regarding child obesity and the influence of fathers on healthy food consumption, physical activity, and sedentary behavior in African American children. Fathers affirmed the importance of their role in their children's eating and physical activity and acknowledged its relationship to their children's overall health. Each construct in the Parenting, Feeding, Parent Characteristics level of Birch and Ventura's Ecological Model for the Etiology of Childhood Overweight (Birch & Ventura, 2009) seemed relevant to the fathers in this study. Further, fathers' role modeling, which was an added construct, seemed to resonate strongly with these fathers, who viewed it within the context of African American family and culture. These fathers affirmed the importance of the father in the family, and the positive influence fathers could be regarding children's healthy eating and physical activity.

The fathers in this study noted ways in which the broader environment, depicted as community and demographic factors in the Ecological Model, impacted their behavior. They discussed the changing food environment, and availability of fast food, as an influence on their children's eating. Rural fathers pointed out the benefits of the rural environment in promoting child physical activity.

African American culture could also be considered as part of the environmental layer beyond the family, where the valuing of traditional soul food (usually seen as less healthy foods) and involvement in sports activities was seen by some fathers as a salient influence on family eating and physical activity.

This study used an applicable theoretical framework to study constructs relevant to child obesity in a population that is at high risk but that has been underrepresented in child obesity research. Study limitations included its convenience sampling method and small sample size, limiting the external validity of the findings. Responses of participants may have been affected by social desirability. Further, the qualitative nature of the study did not allow us to empirically test the Child Overweight Ecological Model upon which the study was framed. The insider/outsider perspective of the researcher as a person active in ministry at the urban church and with family connections to the rural church may have affected responses of the participants, as well as created bias in the interpretation of the findings. However, the insider perspective might also have contributed to an atmosphere of trust between the researcher and participants.

Findings from this study should be validated with additional research to empirically evaluate the applicability of the Child Overweight Ecological Model to the population of interest, both in terms of explaining factors that impact child obesity in this region, as well as for use in developing interventions targeting African American fathers. Findings suggest a number of implications for future research. First, findings support a body of literature suggesting that fathers should be an important intervention focus. However, the small sample size, convenience sampling, and consequent limited generalizability require that study findings be validated in a larger population. Future research should explore African American fathers' knowledge and practices related to child feeding. Empirical data is needed to understand African American fathers' co-physical activity with children, and the specific ways in which they provide support for children's activity, as well as monitor their sedentary behavior. Additional research is

needed to establish the extent to which culture plays a role in supporting/encouraging physical activity, considering the possibility of urban/rural differences. These fathers' affirmation of the importance of the role of the African American father in the family and concern about future health outcomes of their children are other factors that should be explored further for their relevance to intervention development.

APPENDIX A – Focus Group Questionnaire

Focus Group Questionnaire

Parent Eating Behaviors

1. Describe a typical day of eating for you?
2. Is there anything specific about AA culture that affects fathers' eating or their influences on their children's food choices or eating?
 - a. Where do you eat? How often? What kinds of foods? Who prepares?
3. In what ways do you think children's food choices and eating are influenced by their father's eating?
 - a. Food choices: do kids, your kids, eat the same foods as their dad?
 - b. What about eating patterns – meals, snacking, meals prepared at home vs. elsewhere?

Parent Physical Activity Patterns and Encouragement of Activity

4. Describe your own physical activity or inactivity and the impact of the African American culture on these behaviors?
 - a. Active at work, sports, exercise, gym?
 - b. Work, relaxation, fitness?
5. In what ways do you think children's physical activity behaviors are influenced by their fathers' behaviors?
 - a. Children's active play, involvement in active sports
 - b. Is there anything specific about AA culture that affects fathers' physical activity or their influences on their children's activity?
6. Describe some ways fathers can encourage physical activity in children.

Food Availability

7. What involvement do fathers you know have in food shopping or making food available in the home?
 - a. What kinds of things affect the foods that you typically have at home? (i.e. money, transportation, available grocery store)
8. Is there anything specific about AA culture that affects fathers' involvement in making food available at home?

Parenting Feeding Style and Feeding Practices

9. What are your thoughts about fathers' involvement in their child's/children's food choices and eating?
 - a. What goals do you think fathers have when feeding children?
10. Parents use different styles when feeding their children. Some may restrict their children's access to certain foods or pressure their children to eat, while others may let their children eat whatever they want. Others are in between. How would

you describe your child feeding strategy during meal times and whether or not AA culture impacts your feeding style?

Monitoring TV and Sedentary Behavior

11. What are your thoughts on children inside playing games and using technology inside versus outside activities? Do the fathers you know monitor their children's screen time?
 - a. Limit the amount of screen time their children have?
 - b. Control whether children have electronic devices (TV, videogame) in their bedrooms?
12. In what ways do you think fathers' sedentary behavior affects children's level of activity vs sedentary behavior?

Parental Role Modeling

13. How would you describe a role model for children as it relates to healthy eating and physical activity?
14. How important is it for fathers to be a role model for their children for healthy eating and physical activity? for you personally?

Nutrition Knowledge

22. When you hear the words "healthy eating," what comes to mind, and is your perception of this term influenced by African American culture?
23. What foods do you eat that your children should eat that are healthy?
24. What foods do you think children should avoid?
25. Have you heard of MyPlate or the Dietary Guidelines for Americans? If so, what does it mean to you?

Child Weight Status

26. The sheet I am giving you shows silhouettes of AA children of different weights and sizes. Please circle the one that most closely resembles your oldest child who is between the age of 5 and 12. Now place a check in the box that describes your child's weight. Do you consider him or her to be a) underweight; b) normal weight; c) overweight; d) obese?

Closing Question

27. Is there anything else that you would like to add concerning African American fathers and child eating and physical activity behaviors?

APPENDIX B – IRB Approval Letter



INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15112002

PROJECT TITLE: An Evaluation of African American Fathers' Perceptions and Influence on Child Food Choices and Physical Activity Behaviors in Louisiana

PROJECT TYPE: New Project

RESEARCHER(S): Valerie Richardson

COLLEGE/DIVISION: College of Health

DEPARTMENT: Food and Nutrition Systems

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Exempt Review Approval

PERIOD OF APPROVAL: 11/20/2015 to 11/19/2016

Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX C – Demographic Questionnaire

First Name _____

Date _____

Telephone # _____

Age _____

Email Address

1. What is your marital status?

___ Married

___ Divorced

___ Widowed

___ Separated

___ Never married

___ A member of an unmarried couple

2. What is the highest grade or year of school you completed?

___ Never attended school or only attended kindergarten

___ Elementary school (Grades 1 through 8)

___ Some high school (Grades 9 through 11)

High school graduate (Grade 12 or GED)

Some college or technical school (College 1 year to 3 years)

College graduate (college - 4 years)

Some graduate (post-bachelor's) or professional school

Graduate (e.g. M.S., Ph.D.) or professional degree (M.D., D.M.D., PharmD)

3. What is your current employment status?

Employed

self-employed

Out of work for one year or more

Out of work for less than 1 year

a Student

a homemaker (or maybe stay at home dad)

retired

unable to work

4. Do you have children between the ages of 6-11 living in your household?

Yes

No

5. Please list of the age of each child under 18 who lives in your household (for more than 8 children, write in their ages in the space to the right of the table)

Child	Age
Child #1	
Child #2	
Child #3	
Child #4	
Child #5	
Child #6	
Child #7	
Child #8	

6. How much do you weigh without your shoes?

_____ lbs

7. About how tall are you without shoes?

_____ ft _____ inches

8. Do you know how much your oldest child between the ages of 6-11 weighs? If so, how much?

_____ lbs

9. Do you know how tall your oldest child between the ages of 6-11 weighs? If so, how much?

_____ ft _____ inches

10. Are you involved with taking your child to eat, purchasing food, or preparing food for your children?

___ Yes

___ No

11. Would you be willing and available to answer some questions about your child's eating and physical activity behaviors?

Yes

No

If so, what day and time is best to meet to speak with you? _____.

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