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PARENTAL INFLUENCE ON RISK FACTORS FOR OBESITY IN AFRICAN AMERICAN SCHOOL AGED CHILDREN

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PARENTAL INFLUENCE ON RISK FACTORS FOR OBESITY
IN AFRICAN AMERICAN SCHOOL AGED CHILDREN

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Psychology:
Child Development

by
Brittney Joy Parish
December 2017

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ABSTRACT

The growing childhood obesity epidemic and its association with adverse health outcomes have prompted increasing research in the recent past. Researchers have examined numerous aspects of the obesity epidemic. For example, the impact of parent behavior on child behavior has been considered. Likewise, researchers have examined the connection between parent perceptions of obesity and concern regarding a child's weight status. Still other research has focused on the influence of a child's behavior on weight status.

Existing research has reported that within the African American community there is an apparent inaccuracy in perceptions regarding weight. Children who would be classified as overweight or obese according to body mass index (BMI) calculations are viewed by parents as having normal or healthy weight. Thus, among African-American parents, there is often no correlation between a child's weight status and the parent's perception of a weight concern. Moreover, it is not clear that there is a relation between parent concern regarding a child's weight status and the amount of physical activity that the child engages in among African-American individuals. Further, it is not clear what relations may exist among parent physical activity level, child physical activity level, and the child's BMI status. Finally, after conducting a semi-exhaustive study of the research, the links among child dietary habits, parent dietary habits, and the child's BMI status in the African American population have not been addressed.

The purpose of this study is to more closely examine the impact of risk factors such as parental physical activity, dietary habits, and parent concern and perception regarding weight on children's weight status within an African American sample.

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DEDICATION

I would like to dedicate my work to all the loved ones lost during this process. Dad, Grandma and Grandpa, I hope my work makes you proud.

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CHAPTER ONE

INTRODUCTION

Obesity

Obesity has been a concern mostly associated with adults. However, childhood obesity has recently become an area of interest in various fields including public health, social work, maternal and child health, child development, and others. In general, the term obesity has been defined in research as a physical condition wherein fat stored for natural energy exceeds healthy levels (Vieweg et al., 2007). Obesity also refers to an individual who is either overweight and/ or obese. However, there is no standard definition used for the terms overweight and obese (Flegal & Ogden, 2011). In general, the term overweight is often defined in research as an individual's weight compared to a range of weight. Obese is defined, in research, as an individual's amount of body fat compared to a range of weight (Flegal & Ogden, 2011). Within the literature these two terms are often used interchangeably, despite the two distinct classifications.

In order to determine whether a child is overweight or obese, researchers have recently begun to calculate the body mass index (BMI) (Flegal & Ogden, 2011). Both the Center for Disease Control and Prevention (CDC) and American Academy of Pediatrics believe BMI is the best way to monitor weight (Perpich et al., 2011). BMI can be calculated by dividing kilogram weight by height squared in meters (Flegal & Ogden, 2011). Due to the vast differences found among

children, the BMI standards are compared using reference values based upon gender and age (Flegal & Ogden, 2011). Most researchers consider children who exceed the 85th percentile to be overweight and those who exceed the 95th percentile to be obese (Flegal & Ogden, 2011). Katz states that definitions used for the terms overweight and obese may exclude children who may qualify as such rather than include them due to the negative characterization of the title. It is also suggested that more children may qualify as being overweight or obese, but are not given the label due to the exclusivity of definitions (Katz, 2011). Specifically, the parameters created to determine the overweight or obese status of children might be set too high. Regardless of the definition used for the two interchangeable terms, obesity is a topic of research interest, especially regarding children within the United States.

A History of Childhood Obesity

Childhood obesity is a relatively new phenomenon within the United States (Katz, 2011; Perpich et al., 2011; Haboush et al., 2010; Hughes, Areghan & Knight, 2005). In fact, prior to the 1960's the federal government and researchers did not consider childhood obesity to be a health concern. However, beginning in the late 1970's, the Center for Disease control began tracking children's weight nationally. In one of the first studies of this kind, which examined children between the ages of 2 and 19 years, during the period of 1976 through 1980, only .8% of children were classified as obese. However, approximately 20 years later, 3.8% of children were identified as obese; this

represents a 300% increase in incidence rate. Clearly, there has been a noticeable increase in childhood obesity over the years.

Other researchers have reported similarly alarming trends in obesity, as well. For example, Strauss and Pollack (2001) examined trends for childhood obesity from 1986-1998 and found an overall increase in BMI status for children between the ages of 4 and 12 years. Specifically, children from the 1998 cohort not only had a greater frequency of overweight status, they also weighed more than those from the 1986 cohort. Most recently Ogden and Carroll (2010) reported on the trends of childhood obesity based upon the National Health and Nutrition Examination survey; they found that between 1963 and 1970 children between the ages of 6 and 19 years who were classified as obese represented only 5% of the child population. However, over the next 30 years that percentage jumped to 19.6%. These findings provide greater evidence of the alarming nature of childhood obesity; not only is there a greater percentage of overweight or obese children between the two-time periods, but the weight of overweight children has also increased.

Current Status of Childhood Obesity. Childhood obesity has become a problem within our society. In fact, the United States has experienced the greatest increase in childhood obesity during the past 50 years when compared to all other countries (Katz, 2011; Perpich et al., 2011; Haboush et al., 2010; Hughes, Areghan & Knight, 2005). Due to this trend, researchers have taken great interest in addressing the childhood obesity epidemic. Specifically, Ogden,

Carroll, Curtin, Lamb and Flegal (2010) utilized BMI to classify children in the United States as normal weight, overweight and obese. Their results were astounding. Children who were categorized as overweight accounted for 31.7% of the entire child population within the country. In other words, approximately one- third of American children's weight exceeded the 85th percentile. Further, children between the age of 2 and 19 who were categorized as obese represented 17% of the American population. When combining these two categories, nearly half of all American children have currently fallen victim to the childhood obesity epidemic.

The previous statistics speak to the severity of childhood obesity within the United States. However, researchers have noticed a growing trend among African American children who have the highest prevalence of childhood obesity in comparison to other racial and ethnic groups (Caprio et al., 2008). Specifically, African American children represented 20% of the childhood obesity population in 2000 (Caprio et al., 2008). Other studies have offered similar conclusions. For example, Singh, Kogan, Van Dyck & Siahpush (2008) found African Americans to have an 80% chance of experiencing childhood obesity compared to their European American counterparts. Further, Ogden, Carroll, Curtin, Lamb and Flegal (2010) found 20% of African American children between the ages of 6 and 11 years were classified as overweight, equating to one fifth of the entire US child population. In terms of obese children, additional evidence of ethnic differences was reported by Singh, Kogan, Van Dyck and Siahpush (2008) who

found African American children are 2.3 times as likely to become obese when compared to European American children. Likewise, the CDC concluded that African American adolescents were more likely to be obese when compared to their European American counterparts (Hughes, Areghan & Knight, 2005).

Researchers have noted that gender is an important factor in the prevalence of childhood obesity within the African American community, as well. Throughout the literature, African American girls have been found to have the highest prevalence of being overweight (Hughes, Areghan & Knight, 2005), especially between the ages of 5 and 18 years (as cited by Perpich et al., 2011). For example, it is estimated that 1 in 4 African American girls can be classified as overweight (Hughes, Areghan & Knight, 2005). Moreover, African American girls between the ages of 2 and 19 years had a significantly higher likelihood of being overweight and obese compared to their European American counterparts (Ogden, Carroll, Curtin, Lamb and Flegal, 2010). Lastly, Lee et al. (2011) found African American girls exhibited a greater prevalence of being overweight or obese and their status as such is increasing at a faster rate compared to all other racial and ethnic groups. Regarding African American males, Singh et al. (2008) found them to have a 56% chance of being impacted by obesity compared to their minority counterparts. In conclusion, the rate of childhood obesity within African American community is alarming.

Ethnic differences have been found when socioeconomic status is considered, as well. Research has shown an inverse relationship between

childhood obesity and SES (Perpich et al., 2011). Typically, as the income of the household increases, obesity rates in children decreases. However, this trend has not been established in the African American population. Unlike other racial and ethnic groups, Haboush et al. (2010) found African American children had higher BMI's regardless of income. Similarly, Hudson (2008) reviewed literature regarding childhood obesity within the African American community and proposed that childhood obesity risk is prevalent throughout the low, middle, and high socioeconomic levels. Thus, current research findings clearly define the health disparity present among African American children compared to the general population.

Health Consequences

According to Perpich (2011), obesity is a disease that predisposes an individual to be at greater risk for adverse outcomes relating to health. Children who are overweight or obese have a greater propensity for developing respiratory problems, Type II diabetes, cardiovascular disease, high cholesterol, hypertension and psychosocial issues (Haboush et al., 2010; Hughes, Areghan & Knight, 2005; Welk & Joens-Matre, 2007; Strauss & Pollack, 2003). As children age and continue to remain overweight or obese, there is an increased risk for developing Type II diabetes and cardiovascular disease (Ebbeling, Pawlak & Ludwig, 2002; Katz, 2011). Clearly, obesity can have a significant impact on a child's physical and mental life (Caprio et al., 2008).

A study conducted by Oyetunji et al. (2012) examined childhood obesity and its correlation with comorbid diseases. African American children were found to have a higher prevalence of comorbidity (27.2%) when compared to their Hispanic (19.1%) and Caucasian (15.6%) counterparts (Oyetunji et al., 2012). One disease commonly associated with obesity is asthma. Black et al. (2012) examined the association between asthma and childhood obesity. The results showed a positive association between all children who were overweight and obese and the diagnosis of asthma. Specifically, African American children were found to be 1.93 times as likely to be diagnosed with asthma compared to non-Hispanic Caucasian children. Overall, African American children have the highest prevalence of asthma for children of all ages (Black et al., 2012). Due to asthma's effect on the respiratory system, children with the condition may be less likely to engage in physical activity which can lead to continual weight gain (Ebbeling, Pawlak & Ludwig, 2002). Weight issues are also related to other health concerns.

Another disease commonly associated with obesity is diabetes. A study by Haboush et al. (2010) sought to determine if there was a link between obesity and diabetes among a group of children from Nevada. Results found BMI's to be significantly higher for children with Type II diabetes than for those without the disease (Haboush et al., 2010). Liu et al. (2010) studied the prevalence of both Type I and Type II diabetes among overweight and obese children and found African Americans with Type I and Type II diabetes to have a higher prevalence

of obesity compared to other children in the United States (Liu et al., 2012). The development of diabetes can, in turn, impact other areas of the body such as the heart (Ebbeling, Pawlak & Ludwig, 2002).

Risk of cardiovascular disease has been found to correlate with childhood obesity. Brady et al. (2010) specifically studied the prevalence of hypertension among children. The study found African American children to have a higher prevalence of obesity compared to their non-African American counterparts. It was suggested that the connection between obesity and hypertension development is based on an increase in activity of the sympathetic nervous system which results in water and salt retention. Also, the study found African American children over the age of 13 years exhibited high diastolic and systolic blood pressure. Taken together, there is considerable evidence that obesity is related to numerous medical concerns. However, there appear to be associations with mental health outcomes, as well.

A number of studies have examined the mental health of children who are obese (e.g., Strauss & Pollack, 2001; Davidson et al., 2008; McCullough & Dempster, 2009). Research data have found BMI's to be significantly higher for children with mental health concerns compared to those without (Haboush et al., 2010). Strauss and Pollack (2003) stated that obesity has a significant impact on the emotional development of adolescents. These researchers examined childhood obesity and social marginalization. They found stigmatization and negative stereotypes were present among children who were overweight or

obese. Overweight children were found to be less likely to have a large number of friend nominations and a greater likelihood of being socially isolated. Children who are categorized as overweight or obese can be stigmatized or perceived by others in a negative way based upon stereotypes, which can result in a child developing a negative self-image. Having a poor self-image can potentially result in a child's lack of motivation to make changes to diet or increase exercise, both of which can lead to weight gain (Granberg, Simons & Simons., 2009).

Being overweight or obese has also been found to affect a child's self-concept and self-perception. Davidson et al. (2008) conducted a study to determine if weight status influenced 5-year-old girls' body esteem. They found girls' body esteem to be lower if they were identified as overweight or obese. Another study by McCullough and Dempster (2009), aimed to investigate if a relationship was present between childhood obesity and self-esteem. The study consisted of 8- to 9-year old children and found a relationship between poor self-perceptions, both physically and socially, and increased BMI. Lastly, Granber, Simons and Simons (2009) studied the relationship between social self-image and weight among African American girls between the ages of 10 to 15 years. The results indicated that for 10-year-old girls who were labeled visibly obese, there was no impact on social self-image until they reached mid-adolescence. Specifically, there was no relationship between body size and social self-image at 12 and 13 years of age. However, a small correlation was found between larger body size and social self-image for girls who were 14 and 15 years of age.

Thus, it appears as though weight status does not significantly impact African American girls' social self-image until adolescence. The way children view themselves impacts their behavior. If a child has a poor self-image, he or she may not be motivated to improve the areas in which they are dissatisfied (Furnham, Badmin & Sneade., 2002) Thus, it is important to consider childhood obesity's impact on mental health outcomes.

Childhood obesity has been found to impact all aspects of an African American child's life, both physically and mental health-wise. It is important to recognize the serious impact of obesity on children. Obesity has been shown to have lasting effects and the longer a child is classified as overweight or obese, the greater the likelihood of negative outcomes (Lee et al., 2011). Childhood obesity can present a major problem across the lifespan because children will most likely become adults who experience a variety of diseases associated with weight issues (Haboush et al., 2010; Lee et al., 2011).

CHAPTER TWO

CONCEPTUAL FRAMEWORKS

A Childhood Obesity Model: Parent and Child Engagement in Physical Activity, Dietary Habits and Obesity

Bronfenbrenner's ecological model describes development from a contextual perspective and offers an excellent template for the study of childhood obesity. The ecological model is a systems-based theory that explores the influence of significant variables such as parents and culture on child development and the child's influence on these variables (Bornstein & Lamb, 2011). The ecological model is comprised of four different, but interrelated systems (i.e., the microsystem, mesosystem, exosystem, and macrosystems). The microsystem is defined as societal roles, forms of activities, and relationships the child encounters in a direct setting with certain social, physical, and symbolic features that result in the ability to allow or prevent involvement in continual intricate interactions with the direct environment. The mesosystem is defined as connections and progressions of two or more systems that include the child. The exosystem is defined as connections and progressions of two or more systems; however, one of the systems does not include the child but indirectly impacts the setting in which the child resides. Lastly, the macrosystem is defined as the influence of culture on all other systems (i.e., the micro, meso and exosystems). Each aspect of the ecological model is important and can greatly influence the development of a child.

Davison and Birch (2001) have suggested the use of Ecological Systems Theory as a model for researching childhood obesity. They created a model specifically for the study of childhood obesity based on Bronfenbrenner's Ecological Theory. The model is comprised of four parts. The microsystem is defined as a child's weight status (i.e., normal weight, overweight or obese). The mesosystem consists of the interaction between the microsystem and a child's characteristics. Child characteristics are defined as variables such as physical activity, dietary habits, gender, age, and sedentary activities (Davison & Birch, 2001). The exosystem consists of parental characteristics that influence the mesosystem. Parent characteristics include parent dietary habits, physical activity, and encouragement of child physical activity. Lastly, the macrosystem consists of the influence of ethnicity and culture on the microsystem, mesosystem and exosystem.

Within the model, child characteristics and risk factors are impacted by weight status. Child characteristics such as age and gender have been found to significantly impact a child's weight status. For example, depending upon the age or sex of a child, researchers have found differing associations between these variables and weight status. Likewise, risk factors such as dietary intake and physical activity have been associated with child weight status. Equally important in the study of childhood obesity are parental characteristics such as dietary intake, physical activity, parent perception, and parental concern. Parents are influential role models and their involvement in healthy dietary behaviors and

physical activity can impact a child's participation in such activities. Lastly, the influence of ethnicity and culture on all systems is significant. Researchers have reported trends among different ethnicities when examining dietary habits, physical activity, and perceptions and concerns regarding weight status. Therefore, in order to properly assess and research childhood obesity, a contextual model including both child and parent characteristics, risk factors, and culture should be utilized to gain better insight in possible predictors of this epidemic.

Child and Parent Factors and Ethnicity

Physical activity is an important variable associated with childhood obesity. Researchers have defined physical activity as an increase in metabolism that leads to a burning of calories, increase in cardiovascular health and decrease in stored body fat (Perpich et al., 2011). In order to maintain or lose weight, individuals must engage in differing levels of physical activity. These activities are often placed in three categories of intensity: low, moderate, and vigorous. Depending upon the level of physical activity the outcome will differ. Ultimately, researchers have found that moderate and vigorous levels of physical activity offer the best health results (Strong et al., 2005).

Childhood obesity can be combated through participation in physical activity. Physical activity can take place in the form of exercise, play, sports, or dance. Several researchers and government entities recommend that 3 to 5 days of the week, children should engage in 30 to 45 minutes of moderate to

vigorous forms of physical activity (Strong et al., 2005). In fact, Strong et al. (2005), based on a review of evidence-based physical activity recommendations, concluded that school-age children should engage in 60 minutes of age appropriate and fun forms of physical activity at moderate to vigorous levels every day in order to produce the maximum outcome. Despite these recommendations, children are not engaging in adequate amounts of physical activity (Chung et al., 2012).

The amount of physical activity children engage in has been found to differ by age. For example, Sallis, Prochaska, and Taylor (2000) found age and physical activity exhibited a negative relationship in 70% of the studies they reviewed. As children age, the amount of time they engage in physical activities declines (Chung et al., 2012; Strong et al., 2005; Sallis, Prochaska, & Taylor, 2000). Marino et al. (2012) examined the amount of play, a form of physical activity, preschool children aged 3 and 4 engaged in. Preschool children were found to have over 2 hours of play per day (Marino et al., 2012), which exceeds daily recommendations. Recently, Chung et al. (2012) conducted a study examining physical activity and BMI status of children between the ages of 6 and 17 years with data collected from the National Health and Nutrition Survey (NHANES). Results provided great insight regarding physical activity and children. Overall, children spent a small amount of time engaging in prolonged physical activity. However, when physically active, children engaged in more moderate than vigorous levels of activity. Younger children were found to exhibit

greater physical activity and met the recommended amounts more so than older children. Another study by Chung et al. (2012) found younger children to be more physically active when compared to older age groups. Further, Gortmaker et al. (2012) studied physical activity of children over two-time periods, 2003-2004 and 2005- 2006, and found similar results as previous studies. Specifically, younger children between the ages of 6 to 11 were found to be more physically active than older children 12 to 19 years of age. However, an increase in the amount of physical activity engaged in by children between the ages of 6 and 11 was not found within the two-time periods, it remained the same. Another study examining physical activity amongst children between the ages of 9 and 15 also found younger children to be more active (Nader et al., 2008). According to Nader et al. (2008), 9- to 11-year old children within the study met the recommended guidelines for physical activity; however, by 15-years-old less than half of the children had met the recommended guidelines. The results of previously mentioned studies further support the claim that younger children engage in an adequate amount of physical activity while older children do not.

Not only does age influence physical activity, differences are also present with regard to gender. When examining the physical activity level of children, researchers have found consistent differences between the girls and boys. In numerous studies, researchers have found that boys engage in greater amounts of physical activity at all ages (Gortmaker et al., 2012, Gustafson & Rhodes, 2006; Nader et al., 2008; Belcher et al., 2010;). Specifically, Nader et al. (2008)

found boys engaged in more moderate physical activity than girls at age 9 years and were more active on weekdays than on weekends. On the other hand, the decline in physical activity as children age was the same among boys and girls. As noted earlier, children within the U.S, demonstrate a decline in meeting physical activity recommendations as they get older.

A third child-related factor impacting engagement in physical activity is television viewing. Physical activity has been replaced with sedentary behaviors such as television watching. The American Academy of Pediatrics (2012) recommends that children watch less than 2 hours of television daily. Researchers have identified watching television, video games, use of computers, and talking on the telephone as forms of physical inactivity that are substantial factors that predict the likelihood of children being classified as overweight (Strong et al. 2005). Janssen et al. (2005) conducted a study reviewing school-aged children from around the world. They found that children who watched greater amounts of television were less physically active which was associated with a greater propensity for being classified as overweight in industrialized countries like the United States. Specifically, Rosenberg et al. (2010) found that children with televisions in their bedroom had higher BMI's compared to those without (as cited in Perpich et al., 2011). Lowry et al. (2002) studied high school students' sedentary lifestyles and BMI status. An association was found between watching television and a sedentary lifestyle, which was defined as an inability to meet the recommended guidelines for physical activity. Likewise, researchers

also found an association between watching television and being overweight. Other studies regarding the amount of television watched and weight have reported similar results. Whitt-Glover et al. (2009) found children who were overweight and obese engaged in more television viewing than those with a normal weight. Specifically, one study found watching 3 or more hours of television a day led to a 63% increased risk of childhood obesity compared to those who watched less than one hour every day (Singh, Kogan & Dyck, 2008). Clearly, children who engage in sedentary behaviors such as watching television have a greater propensity to be classified as overweight or obese.

Not only do children themselves have an impact on engagement in physical activity and dietary habits, but parents do as well. Researchers have identified parents as having an important role in the amount of physical activity children engage in (Edwardson & Gorely, 2010; Gustafson & Rhodes, 2006; Hargrove, 2012; Heitzier et al, 2010; Green, Riley). Like children, adults within the United States have been reported to not engage in an adequate amount of physical activity. The Center for Disease Control (CDC) recommends that adults engage in two and half hours of moderate physical activity per week. According to the CDC, only 21% of American adults met these physical activity guidelines. This could conceivably be a contributing factor to the growing childhood obesity epidemic based upon an ecological interpretation of parent-child influence.

Clearly, parents serve as role models (Edwardson & Gorely, 2010; Gustafson & Rhodes, 2006; Heitzier et al, 2010); thus, parents who engage in

physical activity may be demonstrating the importance of the health behavior which could fortify the value of physical activity in children (Heitzler et al., 2010). Heitzler et al. (2010) suggested that parents influence children's physical activity more by modeling the behavior rather than simply being supportive of it. Likewise, researchers have found positive associations between parents' physical activity and children's physical activity. For example, Gustafson & Rhodes (2006) conducted a literature review examining correlations between parent and child physical activity. Parent physical activity moderately predicted the physical activity of children. Overall, most studies they reviewed found positive correlations between parent and child physical activity.

There appears to be age differences in the parent-child physical activity relation, as well. Younger children are more influenced by parent physical activity than older children (Edwardson & Gorely, 2010). Pugliese and Tinsley (2007) found congruent results. These findings could reflect the fact that as children age, peers become a more prominent source of influence than parents. On the other hand, research has found younger children to be more physically active and the parents' physical activity may be a contributing factor. Edwardson and Gorely (2010) conducted a literature review of studies examining parent and child physical activity. Results indicated that both the mother's and father's leisure physical activity influenced children's physical activity between the ages of 6 and 11 years. However, older children were not influenced by parent

physical activity. These findings may reflect the lack of parent influence during adolescence as stated previously.

In regards to how parent and child gender may be associated with physical activity, researchers have reported inconsistent results. Gustafson and Rhodes (2006) reported a correlation between a mother's and child's physical activity. Specifically, active mothers were found to have children who were twice as active as children who had moms who did not engage in physical activity. Bois et al. (2005) also found a mother's physical activity was associated with children's physical activity aged 9 to 11 years, but the same was not true for fathers. However, Gustafson and Rhodes (2006) reviewed a study that found a mother's influence on girl's physical activity was significantly correlated throughout childhood, but only at 12 years of age for boys. Davison et al. (2004) also found no association among boys and their mother's physical activity (as cited in Gustafson & Rhodes, 2006). Similarly, Edwardson and Gorely (2010) found mother's physical activity to significantly influence a girl's physical activity over time, whereas it possessed a shorter influence for boys. It was also found that the influence of mother's modeling physical activity did not change over time, whereas there was an increase in fathers' influence. Gustafson and Rhodes (2006) also found the relationship between physical activity of fathers and sons to be significant. Specifically, they found a father's level of physical activity to be correlated with a boy's physical activity overall, while girls' level of physical activity only correlated with the amount of moderate physical activity fathers'

engaged in on a weekly basis. Overall, it was suggested that fathers' physical activity was perhaps a better correlate with boys' physical activity rather than girls'. In conclusion, both parents have been shown to play vital roles in children's physical activity engagement.

Researchers have also found associations between parental concern and children's physical activity (Jackson, Crawford, Campbell & Salmon, 2007; Moore, Harris & Bradlyn, 2012). Parental concern is defined as a parent expressing concern regarding a child's weight status. Jackson, Crawford, Campbell and Salmon (2007) studied parental concern and physical activity and found parents of overweight children were more concerned about children's physical activity levels than those with children of normal weight. Likewise, parents also expressed more concern when they perceived their children to be less active or slower than others (Eckstein, Mikhail & Ariza, 2006; Jackson, Crawford, Campbell, Salmon, 2007). Concerned parents had children who were less physically active when compared to parents with no concern (Jackson, Crawford, Campbell, Salmon, 2007). The concerns expressed by parents were valid because their children were both overweight and less physically active. Interestingly, concerned parents were found to be less likely to engage in physical activity at least once per week with their child (Jackson, Crawford, Campbell, Salmon, 2007). In other words, despite the concern parents had for the lack of physical activity their children engaged in, they were not active in physical activity with the child. Their lack of physical activity with the child may

also reflect an overall lifestyle of physical inactivity. Conversely, Moore, Harris, Bradlyn (2012) studied parental concern and childhood obesity management. They found a higher likelihood of attempts to increase children's physical activity among concerned parents than those with no concern. Age differences have been found regarding parental concern and children's physical activity. Most researchers have found parents of older children, six years of age and older, to express greater concern for children's physical activity (Eckstein, Mikhail & Ariza, 2006; Jackson, Crawford, Campbell, Salmon, 2008). Despite parental concern for older children's lack of physical activity, it is interesting that these parents were not found to engage in physical activity with their children. Ultimately, physical activity and parental concern are important aspects of childhood obesity due to the parent's influential role in a child's life.

Parental influence reaches beyond physical activity. Children's dietary behaviors are formed in the home (Brown & Ogden, 2004; Kral & Rauh, 2010; Rosenkranz & Dziewaltowski, 2008;). In particular, Golan et al. (2004) believe the parent's role regarding children's dietary behaviors is critical (as cited in Rosenkranz & Dziewaltowski, 2008). Parents create the food environment. Specifically, parental influence on children's dietary behaviors has been associated with childhood obesity (Birch & Davison, 2001; Crossman, Sullivan & Benin, 2006; Rhee, 2008; Rosenkranz & Dziewaltowski, 2008). Researchers have focused primarily on parental influence within preschool populations. However, it is pertinent to examine their influence on the middle childhood

population because of the remarkable increase in prevalence of children being classified overweight and obese during this developmental period.

The parents' role in children's dietary behaviors and food preference is intricate. One aspect of how parents may impact children's dietary behavior revolves around behavior modeling. Behavior modeling relates to parent and child eating habits (Brown & Ogden, 2004). For example, Fisher found that parents who had low fat diets and who consumed fruits and vegetables also had children with similar dietary behaviors (as cited in Rhee, 2008). Likewise, Brown and Ogden (2004) found an association between parents' healthy or unhealthy food diets and children's diets. Parents' unhealthy snack food consumption indirectly influences snack foods consumed by children. Brewis (2006) suggested that parents who fail to eat the recommended servings of fruits and vegetable might contribute to children's consumption of unhealthy foods (as cited in Rosenkranz & Dzewaltowski, 2008). Parents who model unhealthy food consumption teach children to engage in the same behaviors. Consequently, eating unhealthy food has been associated with obesity (Hartline-Grafton, Johnson, Rice, Webber, 2009; Ludwig, Peterson and Gortmaker, 2001; Must, Barish and Bandini, 2009; Vernarelli, Mitchell, Hartman, Rolls, 2011). Peripich et al. (2011) found children who lived with a parent or guardian with an unhealthy lifestyle, eating high fat foods, were at a higher risk for obesity compared to those with healthy lifestyles. Therefore, parent food modeling should be considered as

an important aspect of children's dietary behaviors due to its strong association with childhood obesity.

It is clear that child and parent factors are associated with children's physical activity and dietary habits. Additionally, ethnicity appears to be a critical variable, as well. Physical activity impacts the lives of all children. Much like the general child population, age and gender differences have been found within the African American community. Pate et al (2004) found African American preschoolers to engage in a greater amount of vigorous physical activity than European American children (as cited in Hudson, 2008). This finding is congruent with results of previous studies regarding the general child population. Whitt-Glover et al. (2009) reviewed behavioral data collected by National Health and Nutrition Examination Survey (NHANES) regarding physical activity. Findings suggest African American children between the ages of 6 and 11 years have a higher rate of physical activity compared to their European American counterparts. These findings are contrary to other research that examined the same age range. Recently, Gortmaker et al. (2012) found African American children between the ages of 6 and 11 years did not exhibit an increase in the amount of physical activity engaged in over time when compared to their European American counterparts. In fact, a negative interaction was found between physical activity and the 6 to 11 year age range for African Americans within the two time periods, 2003-2004 and 2005-2006. It appears as that African American children's physical activity decreased between this age range. African

American children within the study did exhibit a somewhat greater amount of physical activity during the first period of assessment but failed to increase their physical activity engagement overtime. These findings mirror the trend of an increased prevalence of childhood obesity across age amongst African American children. Findings regarding the lesser prevalence of physical activity amongst older children can also be found within the African American community. Studies involving large national samples found African American adolescents participated in less physical activity when compared to their European counterparts (as cited by Hudson, 2008). Likewise, Lindquist found older African American children were not as physically active as their European American counterparts (as cited in Hudson, 2008). Specifically, Eisenmann, Bartee and Wang's (2002) study found a decline in African American girls' physical activity from childhood to adolescence (as cited by Lown & Brauschweig, 2008). African American girls' lack of physical activity may account for their higher prevalence of childhood obesity rates across all race and ethnic groups. Researchers have also found other gender differences. For example, Whitt-Glover et al. (2009) found African American boys engaged in a greater rate of physical activity in contrast to girls across all races and ethnicities between the ages of 6 and 19 years. Hudson (2008) conducted an integrative review on obesity and African American children, and cited research examining the relationship between African American girls' weight and physical activity. Hudson (2008) cited research by Adkins, Sherwood, Story, and Davis (2004) which reported an inverse correlation between physical

activity and BMI for girls between the ages of 8 and 10 years (as cited in Hudson, 2008). Likewise, other researchers have found BMI to be lower for physically active girls compared those who were inactive (Lown and Braunschweig, 2008; Jago et al., 2004). Another supporting finding described in Jago et al. (2004) suggested that girls who were physically active might also engage in healthy eating behaviors (e.g. having a low fat diet), more so than those who did not have as much physical activity (as cited in Hudson, 2008). Lastly, Lutfiyya et al. (2008) examined childhood obesity rates amongst African American children and found those who were school-aged and overweight or obese to have a considerably higher chance of not engaging in an adequate amount of physical activity. Thus, there appears to be consistent evidence that physical activity and weight are significantly associated in the African-American child population.

African American children like children from other ethnic groups have also adopted a sedentary lifestyle, which likely is associated with obesity. Caprio et al.'s (2008) literature review found African American children watched more television than all other racial and ethnic groups. Whitt-Glover et al. (2009) found African American girls between the ages of 6 to 11 years had greater amounts of sedentary time when compared to their European American counterparts. The same results were also found for African American girls between the ages of 12 to 15 years from middle class families. One sedentary behavior frequently studied by researchers is television viewing. Hudson (2008) cited research that found 63% of African Americans compared to 37% of European American

children watched three or more hours of television per day (2008). Recently, Taveras et al. (2010) found African American children older than 2 years of age were more likely to have a television in the bedroom compared to European Americans. Not surprisingly, television watching appears to be associated with obesity among African-American children. Singh, Kogan, Dyck, Siahpush (2008) conducted a study examining race and ethnicity and behaviors associated with childhood obesity and found a positive correlation between watching three or more hours of television and childhood obesity risk. The same study found African American children who watched three or more hours of television a day to be 2.5 times more likely to develop obesity compared to European American children. African American children not only watch more television on average, their sedentary behavior had a more detrimental effect, over three-fold difference between financially well off European American children and poorer African Americans.

Overall, research suggests African American children spend a substantial amount of time watching television (Hudson, 2008). Despite the pronounced difference in television viewing within the African American population, some research has produced alternate results. For example, Lowry, Wechsler, Galuska, Fulton and Kann (2002) found watching television was not predictive of overweight status for African American females and an increase in physical activity was associated with a decrease in television viewing for African American males. Despite the confounding results reported by Lowry et al (2002)

researchers have found television viewing increases the risk of obesity among African American children. In conclusion, sedentary behavior has been associated with higher BMIs and an increased likelihood of becoming overweight or obese; taking part in these behaviors appears to have a greater impact on African American children's obesity rate and solidifies the need to research this topic to gain more insight on this health disparity.

Similarly, research findings for the general adult population, adults within the African American community play an important role in children's physical activity. African American adults were found to be less likely to meet federal physical activity guidelines when compared to non-Hispanic white counterparts (www.cdc.gov, 2012). A study by Tucker, Welk & Beyler (2011) found African American adults did not engage in the same level of moderate physical activity when compared to European American counterparts. Based upon previously reviewed studies, this suggests that African American children may be less physically active. Further, whether African American parents express concern regarding children's physical activity or not may be related to children's own physical activity. Research examining this variable with an African American population is scarce. However, the current limited research findings are similar to those found within the general population.

Purpose of Current Project. The growing childhood obesity epidemic and its association with adverse health outcomes have prompted increasing research in the recent past. Researchers have examined numerous aspects of the obesity

epidemic. For example, the impact of parent behavior on child behavior has been considered. Likewise, researchers have examined the connection between parent perception and concern regarding a child's weight status. Still other research has focused on the influence of a child's behavior on weight status. An especially interesting trend in these works is the possibility that there may be ethnic differences; particularly, it could be that African-American parents and children may perceive the notions of being overweight or obese differently than individuals from other ethnic groups.

Existing research has reported that within the African American community there is an apparent inaccuracy in perceptions regarding weight (Skelton, Busey & Haven, 2009). Children who would be classified as overweight or obese according to BMI calculations tend to be viewed by parents as having normal or healthy weight (Becker & Carrel, 2009). Thus, among African-American parents, there is often no correlation between a child's weight status and the parent's perception of a weight concern. Moreover, it is not clear that there is a relationship between parent concern regarding a child's weight status and the amount of physical activity that the child engages in among African-American individuals. Further, it is not clear what relations may be true among parent physical activity level, child physical activity level, and the child's BMI status. Finally, no work has examined the links among child dietary habits, parent dietary habits, and the child's BMI status in the African American population.

The purpose of this study is to more closely examine the impact of risk factors such as parental physical activity, dietary habits, and parent concern and perception regarding weight on children's weight status within an African American sample. The following hypotheses will be evaluated in this project:

- 1) It is hypothesized that no relationship between child BMI score and parent perception of weight status will be found.
- 2) It is hypothesized that no relationship between parental concern and child physical activity will be found.
- 3) It is hypothesized that the effect of parent physical activity level on child BMI is mediated by child physical activity level within the sample. (Figure 1)
- 4) It is hypothesized that the effect of parent dietary habits on child BMI is mediated by child dietary habits within the sample. (Figure 2)

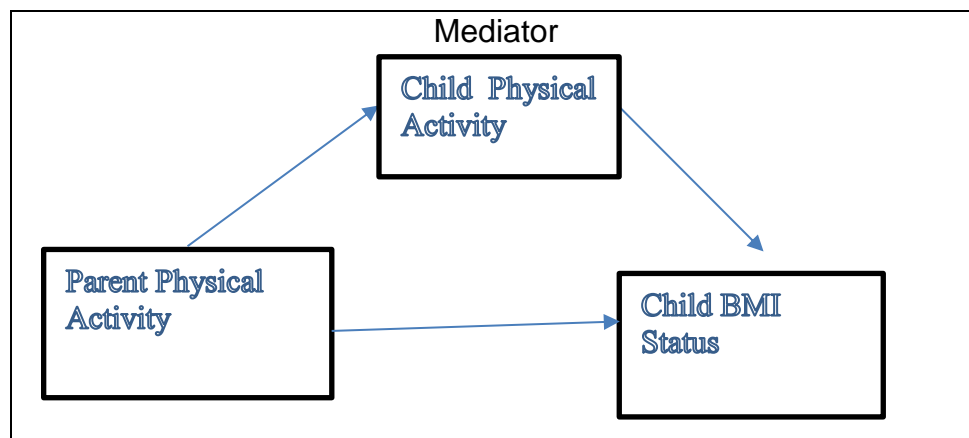


Figure 1. Hypothesis 3: Proposed Mediation for Parent Physical Activity, Child Physical Activity and Child Body Mass Index

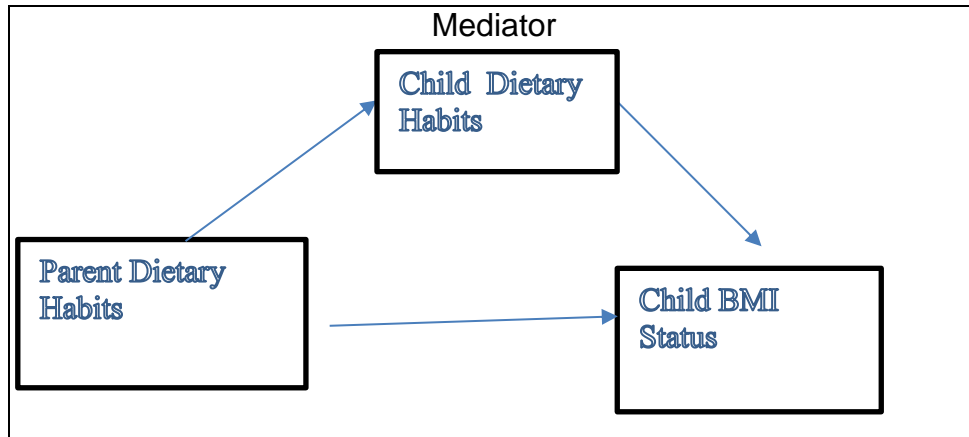


Figure 2. Hypothesis 4: Proposed Mediation for Parent Dietary Habits, Child Dietary Habits and Child Body Mass Index

CHAPTER THREE

METHODS

Participants

Twelve parent-child dyads from a San Bernardino charter school participated. Due to the nature of the project, all participants had to identify as African American or black. The child participants were between the ages of nine and 12. Parent participants age ranged from 29- 59 years of age. Seven students were male and five were female. Six parents were mothers and six were fathers. Most parent participants had completed some college coursework or had finished a college degree. According to the CDC guidelines, five children were identified as having a healthy weight, three were overweight and four were obese. See Table 1 for demographic statistics.

Table 1. Demographic Information for Participants and their Parents (N=12)

	Child Participant	Parent Participation
Parent Education		
9-12 Grade		1 (7.7 %)
High School diploma		5 (38.5 %)
Some College		6 (46.2 %)
Graduate Degree		
Parent Gender		
Mother		6 (46.2%)
Father		6 (46.2%)
Child BMI Status		
Healthy	5 (41.7%)	
Overweight	3 (25 %)	
Obese	4 (33.3%)	

Measures

Physical Activity Questionnaire for Adults (PAQ-AD) (Kowalski, Crocker, Donen, 2005). Refer to Appendix A. The seven- item PAQ- AD is a 7-day recall questionnaire that measures general levels of physical activity on a five-point scale (Copeland, Kowalski, Donen & Tremblay, 2005). The first question asks the respondent how often he/she engages in various physical activities (e.g., hiking, basketball, swimming, walking, jogging, running, dance, etc.) during a week. Possible responses range from “no participation”, “1-2 times”, “3-4 times”, “5-6 times” to “7 times or more a week”. An overall activity score is derived from the average level of participation across all activities. Questions two through five focus on morning, lunch, evening and weekend physical activity (e.g., playing sports, participating in exercise classes, doing strenuous household or child rearing activities). Possible responses are “none”, “1 time last week”, “2 or 3 times last week”, “4 to 5 times last week” and “6 or 7 times last week”. Question six asks respondents to best describe their physical activity during the week. Possible responses are “All or most of my free time was spent doing things that involve little physical effort”, “I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)”, “I often (3-4 times last week) did physical things in my free time”, “I quite often (4-5 times last week) did physical things in my free time”, “I very often (6 or more times last week) did physical things in my free time”. The last question asks respondents how often they engage in physical activity (e.g., playing sports,

exercise classes, strenuous occupational activity) each day of the week.

Possible responses are “none”, “little bit”, “medium”, “often”, and “very often”.

Each is rated on a scale of 1 to 5. A composite (full scale) score for the PAQ -AD is derived by finding the average across the seven items. A score of 5 indicates high levels of physical activity. A score of 1 indicates low levels of physical activity. Convergent validity was demonstrated in two studies with 247 and 184 participants (Copeland, Kowalski, Donen & Tremblay, 2005). A moderate relationship was found in both studies between the PAQ-AD and other self-report physical activity tools ($r = .53$ to 0.64) and ($r = 0.56$ to 0.63), a physical activity recall interview ($r = 0.24$), and direct measurement of physical activity ($r = 0.26$ to 0.43) (Copeland, Kowalski, Donen & Tremblay, 2005).

Food Frequency Questionnaire (Vereecken, Keukelier & Maes, 2004).

Refer to Appendix A. The 4-item food frequency questionnaire is a seven day recall survey that measures consumption frequency for fruits, vegetables, sweets and non-diet sodas on a 6-point scale. Responses range from “Rarely/ Less than once a week” to “More than once a day”. A score of 6 indicates high intake of specific kinds of foods, while a score of 1 indicates low intake of specific kinds of foods. Convergent validity of the food frequency questionnaire was demonstrated with 159 participants (Vereecken, Keukelier & Maes, 2004). Small to moderate relationships were found between the food frequency questionnaire and a 3-day food diary. Validity coefficients ranged from $.37$ to $.62$.

Child Feeding Questionnaire (Birch, Fisher, Grimm-Thomas, Markey, Sawyer & Johnson, 2001). Refer to Appendix A. Parental perceptions and concern regarding a child's weight and diet will be measured by two subscales from this 31-item questionnaire. The child feeding questionnaire consists of 7 subscales, each with its own score that is derived based upon a 5-point scale. This study will utilize the "perceived child weight" and "concern about child weight" subscales. The parent concern about child's weight subscale has good reliability ($\alpha = .81$). The perceived child weight subscale is also reliable ($\alpha = .73$). Items on the perceived child weight subscale asks for a parent's perception of the child's weight during different developmental periods (i.e., what is your child's weight: during the 1st year of life, as a toddler, as a preschooler, kindergarten through 2nd grade, 3rd through 5th grade and 6th through 8th). Possible responses include "markedly underweight", "underweight", "normal", "overweight" and "markedly overweight." Higher scores indicate heavier perceived child weight. Current research convention examines parent perception of a child's weight status at the present time rather than an average across developmental periods in African American samples (Anderson, Hughes, Fisher & Nicklas, 2005). These researchers also changed the response of "markedly overweight" to "very overweight". Therefore, this study will utilize the item that reflects the child's current developmental period, either 3rd through 5th grade or 6th through 8th, depending upon the children's current grade. The three questions regarding the parent's concern about child weight subscale ask respondents about concern

regarding their child eating too much, dieting to control weight and becoming overweight. A parent responds to each item on a 5-point scale (unconcerned, a little concerned, concerned, fairly concerned and very concerned). A total parental concern score will be derived by finding the average score across all questions. A high score indicates greater concern, while a low score indicates less or no concern.

Demographic Questionnaire: Parent participants completed a survey constructed by the researcher asking for age, gender, ethnicity, and level of education. Refer to Appendix A.

Body Mass Index (BMI): BMI is determined by a ratio between weight and height. Refer to Appendix B. The child was weighed on a digital scale by the researcher using Center for Disease Control (CDC) guidelines. The child was asked to remove his/her shoes and jacket (if he/she is wearing one). The child's weight was recorded to the nearest tenth. The child's height was measured by the researcher using CDC guidelines. Measurements were taken in a room without carpet and floor molding. Children were asked to place feet together, flat on ground and next to wall. The child was positioned so that his/her heels and shoulders and head touch the wall. He/she was also asked to look straight ahead with eyes parallel to the floor. A flat object was placed on crown of the head and a mark was made on paper next to wall. Measuring tape was used to measure the distance between the base of floor and mark on paper. BMI was calculated by dividing weight by height (i.e. weight/height). The age- and gender

specific child BMI cut-off points provided by the 2012 CDC growth charts will be used to determine weight status (normal, overweight, obese) and BMI scores ranging from 18.5 to 25 are labeled normal, 25 to 30 are overweight, over 30 are obese. Children who were below the 5th percentile will be categorized as underweight. Children in the 5th and 84th percentile rank were identified as healthy/typical weight. Children in the 85th to 94th percentile rank were categorized as overweight. Finally, children at the 95th percentile or above were noted as obese.

Physical Activity Questionnaire for Older Children (PAQ-C) (Kowalski, Crocker, Donen, 2004). Refer to Appendix B. The nine- item PAQ- C is a 7-day recall questionnaire that measures general levels of physical activity on a five-point scale (Copeland, Kowalski, Donen & Tremblay, 2005). The PAQ-C has good reliability (girls $\alpha = .83$ and boys $\alpha = .80$) (Kowalski, Crocker & Donen, 2004). The first question asks the respondent how often he/she engages in various physical activities (e.g., hiking, basketball, swimming, walking, jogging, running, dance, etc.) during a week. Possible responses range from “no participation”, “1-2 times”, “3-4 times”, “5-6 times” to “7 times or more a week”. An overall activity score is derived from the average level of participation across all activities that are asked about. Question two asks the respondent how often he/she was active during physical education (PE). Possible responses are “I don’t do PE”, “hardly ever”, “sometimes”, “quite often” “always”. Questions three and four ask the respondents what they do during recess and lunch. Possible

responses are “sat down (talking, reading, doing schoolwork)”, stood around or walked around”, “ran or played a little bit”, “ran around and played quite a bit” and “ran and played hard most of the time”. Question five asks the respondent how many days he/she was actively engaged in any physical activity right after school. Possible responses “none”, “1 time last week”, “2 or 3 times last week”, “4 times last week” and “5 times last week”. Question six asks the respondent how many evenings he/she was actively engaged in any physical activity. Possible responses “none”, “1 time last week”, “2 or 3 times last week”, “4 or 5 times last week” and “6 or 7 times last week”. Question seven asks respondents how many times he/she engaged in any physical activity on the last weekend. Possible responses are “none”, “1 time”, “2-3 times”, “4-5 times”, “6 or more times”. Question eight asks respondents to best describe their physical activity during the week. Possible responses are “All or most of my free time was spent doing things that involve little physical effort”, “I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)”, “I often (3-4 times last week) did physical things in my free time”, “I quite often (4-5 times last week) did physical things in my free time”, “I very often (7 or more times last week) did physical things in my free time”. The last question asks respondents how often they engage in physical activity (e.g., playing sports, games, doing dance, or any other physical activity) for each day of the past week. Possible responses are “none”, “little bit”, “medium”, “often”, and “very often”. Each has a response scale of 1 to 5. A composite (full scale)

score for the PAQ –C is derived by finding the average score across the nine items. A score of 5 indicates high levels of physical activity. A score of 1 indicates low levels of physical activity.

Procedure

The study was approved by California State University, San Bernardino's Institutional Review Board. The researcher spoke to the principal regarding the study and was granted permission to proceed with data collection. A mandatory parent meeting was attended by the researcher to recruit participants. Parents were given information regarding the study and were told to approach the researcher if interested. Participants were made aware of the voluntary nature of the study and were told of their right to refuse or discontinue at any time. They were also informed that the surveys contained no identifying information and would require no more than 30 minutes to complete the PAQ, FFQ, CFQ and demographic survey. Potential participants were given a consent form and research packet. Parents were asked to return research packets to the 5th grade teaching assistant. After receiving the signed consent form, the researcher compiled a coded parent and child research identification list. The assigned number was placed on the child and parent packets. The researcher was given permission by the principal to collect child data after 2 p.m. The researcher went to the 4th, 5th and 6th grade class to collect data from the children. Children were given an assent form and the details of the study were thoroughly explained. Each child who provided assent for participation were weighed with a digital

scale and their height measured for BMI calculations. This information was placed on a data sheet in the numbered child packet. After being weighed, children were asked to complete the questionnaire packet that consisted of a PAQ-C and FFQ. All collected data was maintained in a locked file cabinet.

CHAPTER FOUR

RESULTS

Means and Standard Deviations

Means and standard deviation for parent physical and child physical activity, dietary habits, parent perception and concern of child's weight and child BMI scores and percentiles are found in Table 2 and 3. For this project, a child whose BMI is less than the 5th percentile would be considered underweight and if greater than the 95th he/she would be considered obese. Children's BMI scores ranged from 15.7 – 30.2 with an average of 20.17. Overall, all children fell within the normal/healthy weight range. Parents were asked to provide a rating regarding their child's weight status. On average, parents rated their children as being the "normal" weight range. Parents were asked to provide a rating regarding their concern for child's current weight. Parental concern scores ranged from 1- 4.6 with an average of 2.33. Overall, parents expressed a little concern for their child's weight. Parents and children were asked to provide a rating regarding the amount of physical activity they engaged in over a 7-day period. Parent physical activity scores ranged from 1.46- 4.46 with an average score of 2.92. On average, parents engaged in low to moderate levels of physical activity. Child physical activity scores ranged from 2.36- 4.45 with an average of 3.52. Children engaged in moderate levels of physical activity throughout the week. Overall, both parent and child were physically active 3-4 times per week. Parents and children were asked to provide a rating regarding

the amount of fruits and vegetables they consumed throughout the week. On average, parents consumed moderate to high levels 4.33 of fruits and vegetables which is equivalent to 5-6 days a week. Parents were also asked to provide a rating regarding the amounts of soda and carbohydrates they consumed throughout the week. Parent consumed low levels 2.80 of sodas and carbs on average. Likewise, children consumed moderate amounts of fruits and vegetables 3.91 and low amounts of soda and carbs 2.74.

Overall, parents engaged in low amount of physical activity, expressed low amounts of concern for their child's weight, consumed moderate to high amounts of fruits and vegetables and low amounts of soda and carbohydrates. On average, children were categorized as having normal/healthy weight, engaged in moderate levels of physical activity, consumed moderate amounts of fruits and vegetables and low amounts of soda and carbohydrates.

Table 2. Means and Standard Deviations for Parent Variables(N=12)

Parent Variables	Means (SD)
Perception of Weight	3.25 (.45)
Concern	2.33 (1.28)
Physical Activity	2.92 (1.01)
Fruit and Vegetable Consumption	4.33 (1.41)
Soda and Carb Consumption	2.80 (.982)

Table 3. Means and Standard Deviations for Child Variables(N=12)

Child Variable	Means (SD)
BMI Score	20.17(4.21)
BMI Percentile	71.33(23.15)
Physical Activity	3.52 (.68)
Fruit and Vegetable Consumption	3.91 (1.50)
Soda and Carb Consumption	2.74 (1.20)

Hypotheses

The first hypothesis stated that there would be no relationship between the child's BMI score and parent perception of weight status. Parametric assumptions were considered prior to running the analysis. The data met all assumptions. Specifically, scatterplots were evaluated to demonstrate collinearity within the sample. See Figure 3. As parent perception of weight increased, child BMI increased as well. In this project, parent perception of weight shared a positive relationship with child's BMI status [$r = .63$]. In terms of practical significance, parent perception of weight had a large effect, $\beta = .39$, on child's BMI status (Keith, 2015). Overall, the hypothesis was not supported.

The second hypothesis stated that there would be no relationship between parental concern and child physical activity. Parametric assumptions were considered prior to running the analysis. The data met all assumptions. Specifically, scatterplots were evaluated to demonstrate collinearity within the sample. See Figure 4. Concerned parents did not have children that were more

physically active. In this project, parent concern was not significantly associated with a child's physical activity [$r=.30$]. In terms of practical significance, parental concern had a moderate effect, $\beta = .09$, on child's physical activity (Keith, 2015). Overall, the hypothesis was not supported.

The third hypothesis was that a child's physical activity would mediate the relationship between parent physical activity and child weight. A Hayes mediation script was run (Figure 5). Standardized beta coefficients were utilized to indicate effect. Parent physical activity had a moderate effect $\beta = .13$ on child physical activity. Child physical activity had a moderate effect $\beta = .10$ on child weight. Parent physical activity had a moderate direct effect $\beta = .23$ on child weight. Parent physical activity had a large total effect $\beta = .25$ on child weight. Lastly, there was no indirect effect of parent physical activity on child weight $\beta = .01$, 95% CI = $-.2037, .2816$ (Keith, 2015).. These results do not support the mediational hypothesis. Refer to Figure 5.

The fourth hypothesis was that a child's dietary habits (Fruits and Veggies / Carbohydrates and Sodas) would mediate the relationship between parent dietary habits (Fruits and Veggies / Carbohydrates and Sodas) and the child's weight. In the first analysis, a Hayes mediation script was run (Figure 6). Child fruit and vegetable consumption was run as a mediating variable. Standardized beta coefficients were used to indicate effect size. Parent fruit and vegetable consumption had a small effect ($\beta = .07$) on child fruit and vegetable consumption. Child fruit and vegetable consumption had a small effect ($\beta = -.04$)

on child weight. Parent fruit and vegetable consumption had a moderate direct effect ($\beta = -.20$) on child weight. Parent fruit and vegetable consumption had a moderate total effect ($\beta = -.20$) on child weight. Lastly, there was no indirect effect of parent fruit and vegetable consumption on child weight $\beta = -.003$, 95% CI = $-.1956, .3630$ (Keith, 2015). These results do not support the mediational hypothesis. Refer to Figure 6.

In the second analysis, a Hayes mediation script was run with child soda and carbohydrate consumption as a mediator (Figure 7). Standardize beta coefficients indicated effect size. Parent soda and carbohydrate consumption had a large effect ($\beta = -.30$) on child soda and carbohydrate consumption. Child soda and carbohydrate consumption had a no effect ($\beta = .00$) on child weight. Parent soda and carbohydrate consumption had no direct effect $\beta = .01$ on child weight. Parent soda and carbohydrate consumption had a no total effect ($\beta = .01$) on child weight. Lastly, there was no indirect effect of parent soda and carbohydrate consumption on child weight ($\beta = -.001$), 95% CI = $-.4986, .3360$ (Keith, 2015). These results do not support the mediational hypothesis. Refer to Figure 7.

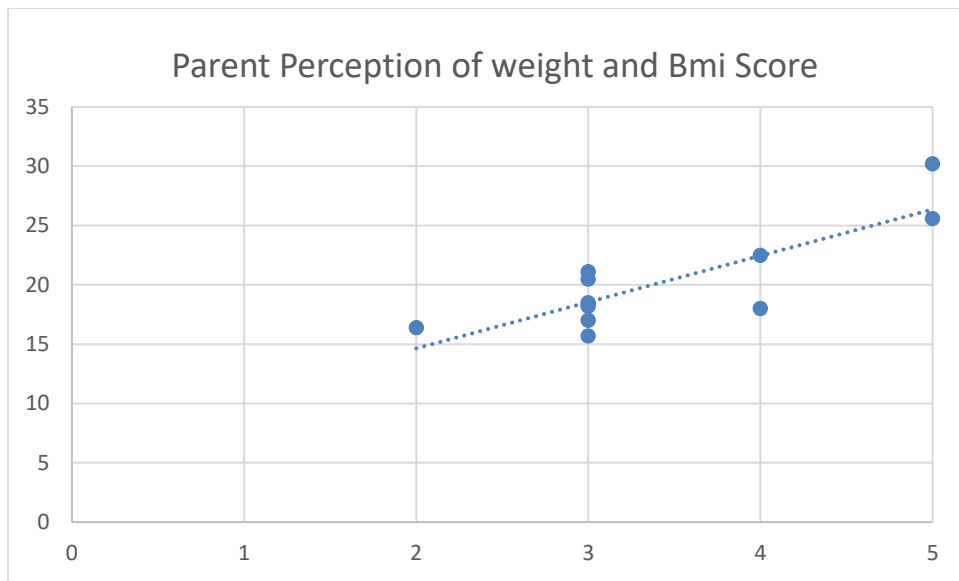


Figure 3. Hypothesis 1 Scatterplot

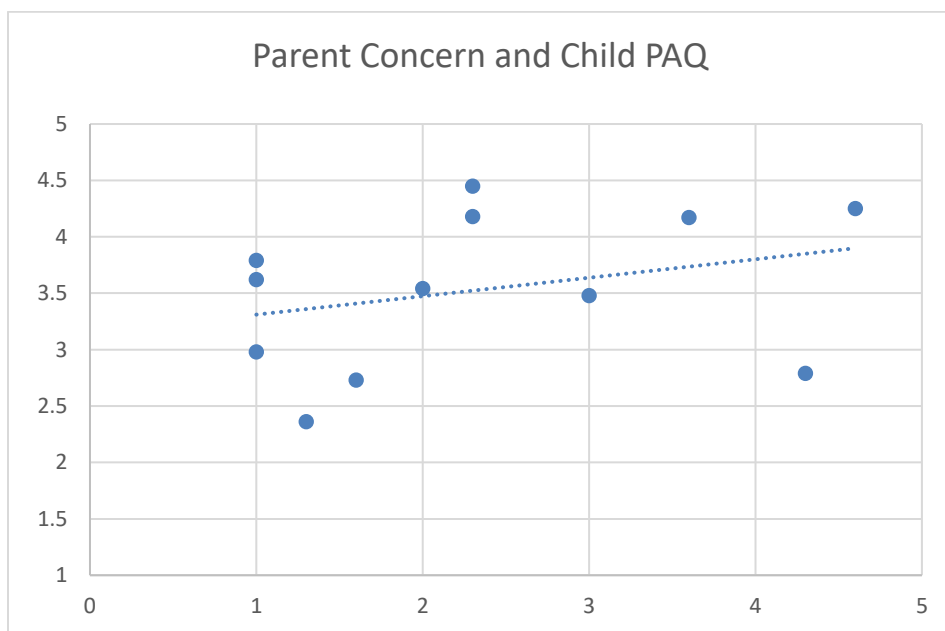


Figure 4. Hypothesis 2 Scatterplot

Table 4. Standardized Betas for Hypothesis 3

Variables	Standardized Beta
Parent PA & Child PA	.13
Child PA & Child weight	.10
Parent PA & Child weight	.24(.23)
Indirect effect of Parent PA on child weight	.01

Table 5. Standardized Betas for Hypothesis 4a

Variables	Standardized Beta
Parent F&V & Child F&V	.07
Child F&V & Child weight	-.04
Parent F&V & Child weight	-.20(-.20)
Indirect effect of Parent F&V on child weight	.00

Table 6. Standardized Betas for Hypothesis 4b

Variables	Standardized Beta
Parent C&S & Child C&S	-.30
Child C&S & Child weight	.00
Parent C&S & Child weight	.01(.01)
Indirect effect of Parent C&S on child weight	.00

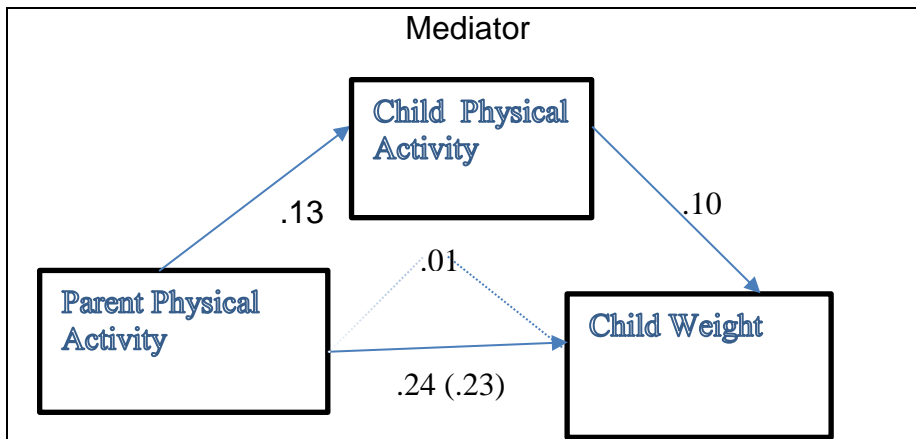


Figure 5. Hypothesis 3: Mediation for Parent Physical Activity, Child Physical Activity and Child Weight

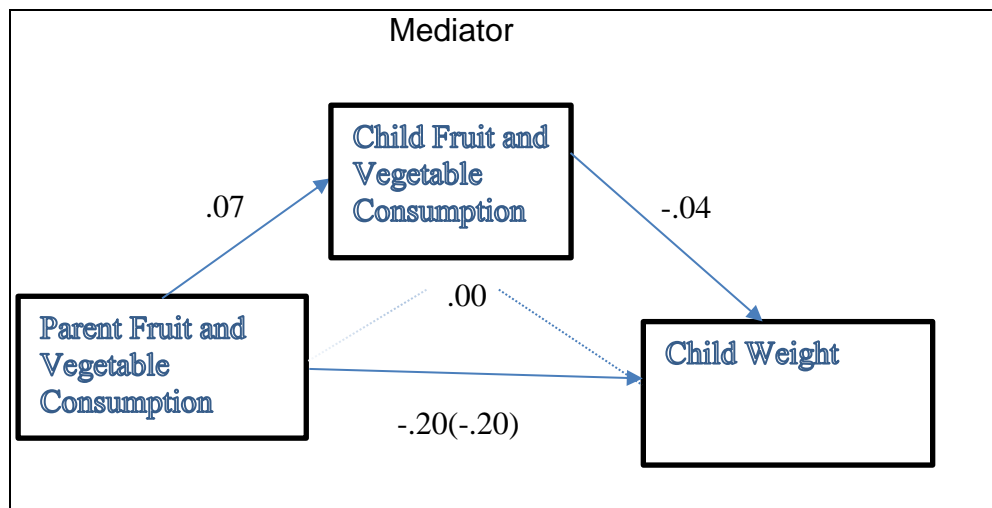


Figure 6. Hypothesis 4a: Mediation for Parent Fruit and Vegetable Consumption, Child Fruit and Vegetable Consumption and Child Weight

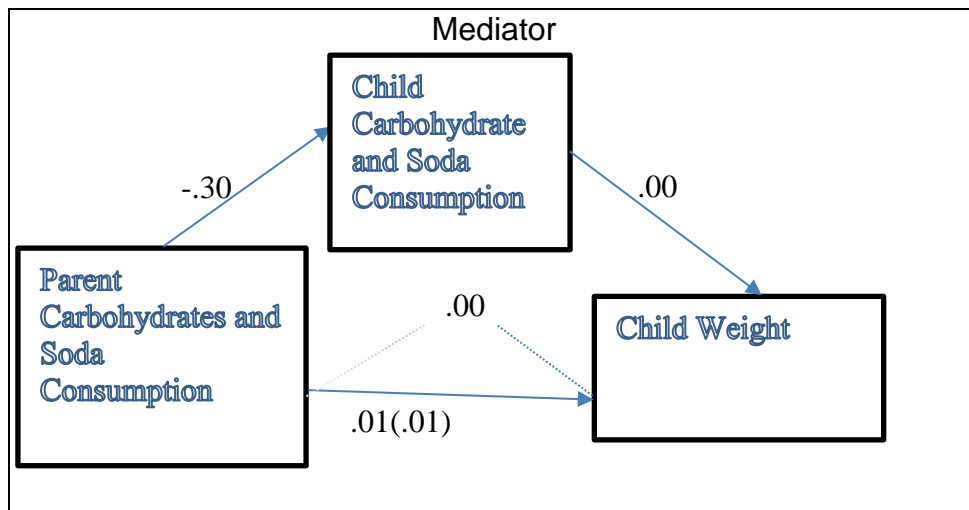


Figure 7. Hypothesis 4b: Mediation for Parent Carbohydrate and Soda Consumption, Child Carbohydrate and Soda Consumption and Child Weight

CHAPTER FIVE

DISCUSSION

Parents are an important role model and have a profound impact on children's behaviors (Edwardson & Gorely, 2010; Gustafson & Rhodes, 2006; Heitzier et al, 2010). While examining the role of parental influence, several factors should be considered to have a well-rounded contextual perspective. Specifically, ethnicity is a critical variable that helps provide a greater understanding of an individual and his/her experiences. To date, there is limited research that focuses on parental concern for children's weight status in the African American population. Particularly, scarce research exists that considers the relationship between African American parent and child dietary habits and physical activity. Therefore, the purpose of this study was to determine if parent perceptions and concern is associated with a child's weight status within an African American population. Furthermore, an Ecological systems theory model was used to evaluate if the relationship between parent dietary and physical behaviors and child weight status was mediated by child dietary and physical behaviors.

One goal of this study was to determine if a relationship was present between parent perception of a child's weight and the child's actual weight status; it was predicted that no relationship would be present between parent perception of a child weight and the child's weight status (i.e., BMI). This hypothesis was not supported. Practically, the effect sizes were too large to

indicate significance and explained 39 % of the variance. Past research has yielded mixed findings regarding this relationship. For instance, Vivian, Becker and Carrel (2012) found that 3 out of 4 African American parents perceived their child to be overweight, when in fact, the child was not overweight. Effect sizes were not considered in the study. These findings mirror other research studies which demonstrated that African American participants did not accurately perceive their child's weight. For example, Skelton, Busey and Haven (2006) found African American parents inaccurately perceived children at risk of being overweight or who were overweight as having a normal or healthy weight; however, effect sizes were not considered in this study.

Researchers from differing fields, medical and psychological, have attempted to examine the relation between parent perception and a child's weight status. Many researchers utilize the Ecological Systems theory to investigate the connection between parent and child. Despite the vast amount of research examining parent perception and child weight status, researchers have been unable to determine which parent factors are significantly associated with a child's weight status. Throughout the research literature, parents are identified as strong influences on their children's behaviors, nonetheless, the current study was unable to provide additional clarity. Since the current study only considered the relationship between parent perceptions of weight and a child's weight status (i.e., BMI), future studies should perhaps examine the link between Parent BMI status and a child's BMI status. If parent's inaccurately/accurately perceive their

own weight, it may have a correlation with their perception of the child's weight status. Parents' BMI status could be calculated and their perception of their own weight, could be assessed. Specifically, if a parent's BMI status fell within the overweight or obese category and they perceive it as normal/healthy, they may be more likely to perceive their overweight/ obese child as normal/healthy as well. An in-depth examination of these variables may give researchers and medical professionals insight on how to approach childhood obesity by further exploring how ethnicity impacts parent perception of their own weight in addition to their child's weight.

The second goal of the study was to determine if there was a relationship between parental concern for a child's weight status and a child's physical activity; it was predicted that parental concern regarding weight status would not be correlated with the amount of physical activity a child engaged in. Practically, the effect was too large to indicate significance and explained 9% of the variance. Contrary to current study findings, Jackson, Crawford, Campbell and Salmon (2007) found that parents who were concerned about weight had less active children when compared to parents who did not express concern within a general population. Effect sizes were not considered in the study. No other research studies were found that specifically examined the effect and relationship among African American parental concern of child weight status and child physical activity. The current findings provide a new area of exploration.

Despite the lack of research specifically targeting the African American population, some aspects of the relationship between parent concern of a child's weight status and child physical activity have been examined. Specifically, Thompson (2003) found that African American parents who expressed concern for their children's weight would advocate for more engagement in physical activity. However, no analysis was done to examine if their parental concern led to an actual increase in physical activity. If concerned parents encouraged or provided opportunities for children to engage in physical activity, this may result in greater engagement. Likewise, Moore et al, (2012) found that parents attempted to increase their children's engagement in physical activity when they expressed concern. However, effect sizes were not considered in this study.

Interestingly, Jackson et al, (2007) found that parents who expressed concern did not engage in more physical activity with their children. Parents who only suggest or advocate for their child to be physically active without engaging in physical activity themselves may be ineffective. In the same vein, Heitzler et al. (2010) found that parents influence physical activity by modeling the behavior rather than only being supportive of children's engagement. Overall, limited research has been done to investigate factors that may account for the relationship between African American parental concern and child physical activity.

The third goal of the study was to determine if the relationship between parent physical activity and a child's weight is mediated by the child's physical

activity. The mediation hypothesis was not supported. The effect sizes found among the variables were too large for practical significance. Specifically, a moderate effect was found between parent physical activity and a child's physical activity; moreover, a moderate effect was found between a child's physical activity and the child's weight and a large effect was found between parent physical activity and a child's weight. See Figure 3. Past research has only considered differences between mother's and father's physical activity and its relationship with a child's physical activity (Bois et al., 2005; Edwardson & Rhodes, 2006; Gustafson & Rhodes, 2006). Future research should consider the role of parent gender while examining child physical activity and child weight. Research suggest that parents are important physical activity role models (Edwardson & Gorely, 2010; Green, Riley, Hargrove, 2012; Gustafson & Rhodes, 2006; Heitzler et al, 2010;). Likewise, when parents engage in physical activity, it may heighten its importance to children (Heitzler et al., 2010). The lack of a mediation effect may have been the product of sampling concerns. Thus, a more representative sample may result in a mediation effect.

The fourth goal of the study consisted of two parts. The first was to determine if the effect of parent fruit and vegetable consumption on a child's weight would be mediated through children's consumption of fruit and vegetables. This hypothesis was not supported. Small and moderate effects were found among the variables, A small effect was found between parent and child fruit and vegetable consumption and child fruit and vegetable consumption

and his/her weight status. Moderate effects were found between parent fruit and vegetable consumption and a child's weight status. See Figure 4a. The small effect found between parent and child fruit and vegetable consumption supports the idea of parents being influential role models for children's diet. Fisher (2002) found that parents who had low fat diets and consumed fruits and vegetables also had children with similar dietary behaviors (as cited in Rhee, 2008). Past research supports the idea of parents being influential in this regard. Therefore, future studies should further examine these variables with a more representative sample and a more in depth dietary habit measure. These additions may result in a mediation effect being found.

The second part of the fourth goal sought to determine if the relationship between parent soda and carbohydrate consumption and a child's weight is mediated by the children's soda and carbohydrate consumption. The mediation hypothesis was not supported. Practically, the effect sizes were too large to indicate significance. See Figure 4b. The main effect found between the parent carbohydrate soda consumption is an important area of further exploration. Numerous studies have reported that parents who model unhealthy eating behaviors teach their children to do the same which has been associated with obesity. No effects were found between a child's soda and carbohydrate consumption and the child's weight nor between parent soda and carbohydrate consumption and a child's weight. See Figure 4b. Researchers have found associations between high consumption of unhealthy food and obesity

(Vernarelli, Mitchell, Hartman, Rolls, 2011; Hartline-Grafton, Johnson, Rice, Webber, 2009; Ludwig, Peterson and Gortmaker, 2001; Must, Barish and Bandini, 2009). Parents are responsible for the food environment, particularly in terms of shopping and feeding practices. Within the existing literature parent gender has been considered an important factor when exploring childhood obesity. Therefore, gender should be considered in future studies. On average, most parents and children within the study consumed low amounts of soda and carbohydrates. This may account for the lack of significant findings. Being that no mediation was found but a main effect for parent and child carbohydrate and soda consumption was present, perhaps a more representative sample would yield statistical and practical significance.

Overall, none of the hypotheses resulted in practical significance. African American parents had an accurate perception of their child's weight status. Parent concern did not influence a child's physical activity. Child physical activity did not mediate the relationship between a parent's physical activity and child's BMI status. Child fruit and vegetable consumption did not mediate the relationship between a parent's fruit and vegetable consumption and child's BMI status. Lastly, child soda and carbohydrate consumption did not mediate the relationship between a parent's soda and carbohydrate consumption and child's weight.

The participants' dietary habits and physical activity followed trends found in research. Children engaged in moderate amounts of physical activity as

defined by the CDC (www.cdc.gov, 2012). In the same vein, parents engaged in low amounts of physical activity which mirrors the trends found not only within the African American community, but the U.S. population in general (www.cdc.gov, 2012).

Ethnicity did not appear to be associated with parent perceptions, parent concern of child's weight, and children's physical activity. The results were representative of other research findings within the U.S. population. This suggests that ethnicity may not have been an influential factor among parent participants. There are several possible reasons for the findings in the current study. First, the parent participants in this project had high levels of education. Second, given the small sample, it is possible that parents with certain characteristics participated. For example, the parents who did complete the survey may have recognized the importance of the work and decided to take extra time out of their busy schedules to complete and return the questionnaire. Even with the potential bias the study results do suggest that African Americans may have the same approach to concern as the general population.

Lastly, despite the lack of significant mediation results, research in general strongly supports parental influence on children's behaviors (especially on behaviors that are connected to childhood obesity). Parents modeling healthy physical activity and dietary habits remain an important component of the child obesity model. Their influence impacts various aspects of a child's life. It is

important to further explore parental characteristics to better understand child characteristics.

Limitations

The study's findings provided insight on areas that require further exploration, however some limitations were present. First, the small sample resulted in limited statistical power. Specifically, of the 26 parents who agreed to participate, only 12 returned the survey packet. Perhaps an incentive would have yielded a greater response from participants and increased the power of the study. Collecting data from several schools may also help increase the sample size. Secondly, more robust measures may be helpful. If the physical activity measure examined engagement over a longer timeframe, it may provide greater insight on the average amount of physical activity parents and children engage in. Likewise, if the dietary measure examined specific food items over a longer timeframe greater insight may be gained regarding parent and child general eating habits.

Conclusion

In general, the study was not able to find solid support of the hypotheses. However, the findings did suggest that these variables and the relations among them should be further explored. Overall, researchers should continue to consider the various ways parents effect children's physical and dietary behaviors.

APPENDIX A
PARENT QUESTIONNAIRE PACKET

Parent Packet

Cover

ID No. _____

Child's Grade _____

Today's Date _____

Note: The information collected from the questionnaire will be used for research only. All information will remain confidential. Please put questionnaire in envelope and seal when finished and turn in to front office at school. If you have any questions, please contact Brittney Parish. Thank you for your cooperation.

Physical Activity Questionnaire (Adults)

Identification Number:

Date:

<!--#echo var=

We are trying to find out about your level of physical activity from *the last 7 days* (in the last week). This includes activities that make you sweat, make your legs feel tired, or make you breathe hard, such as team sports, running, strenuous occupational activities, and others.

Remember:

1. There are no right and wrong answers— this is not a test
2. Please answer all the questions as honestly and accurately as you can — this is very important

-
1. Physical activity in your spare time: Have you done any of the following activities **in the past 7 days** (last week)? If yes, how many times? (Mark only one circle per row.)

| | No | 1-2 | 3-4 | 5-6 | 7 times or more |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Rock Climbing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Rowing/canoeing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tennis/squash | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Stair climber (or other similar equipment) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Walking for exercise | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Heavy yard work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jogging or Running | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bicycling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Aerobics (or other exercise class) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Swimming | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Baseball, softball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Dance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Football | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Badminton | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Soccer | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | | | | | 7 times or more |
| | No | 1-2 | 3-4 | 5-6 | 7 times or more |
| Volleyball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Basketball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Skating (in-line/ice) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cross-country skiing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ice hockey | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Martial arts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Weight training | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other: | | | | | |
| <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

2. **In the last 7 days during the morning**, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)

- None ☐
- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 or 5 times last week ☐
- 6 or 7 times last week ☐

3. **In the last 7 days after lunch and before supper**, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)

- None ☐

- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 or 5 times last week ☐
- 6 or 7 times last week ☐

4. **In the last 7 days** *during the evening*, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)

- None ☐
- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 or 5 times last week ☐
- 6 or 7 times last week ☐

5. **On the last weekend**, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)

- None ☐
- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 or 5 times last week ☐
- 6 or 7 times last week ☐

6. Which *one* of the following describes you best for the **last 7 days**? Read *all five* statements before deciding on the *one* answer that describes you.

- A. All or most of my free time was spent doing things that involve little physical effort. ☐
- B. I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics). ☐

- C. I often (3-4 times last week) did physical things in my free time. ☐
- D. I quite often (5-6 times last week) did physical things in my free time. ☐
- E. I very often (7 or more times last week) did physical things in my free time. ☐

7. Mark how often you did physical activity (for example: playing sports, exercise classes, strenuous occupational activity).

| | None | Little Bit | Medium | Often | Very Often |
|-----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Monday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tuesday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wednesday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Thursday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Friday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Saturday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sunday | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes ☐

No ☐

If Yes, what prevented you?

Copeland, J. L., Kowalski, K. C., Donen, R. M., & Tremblay, M. S. (2005). Convergent Validity of the Physical Activity Questionnaire for Adults: The New Member of the PAQ Family. *Journal of Physical Activity and Health*, 2(2), 216-229. doi:10.1123/jpah.2.2.216

Food Frequency Questionnaire

We are trying to find out about your average amount of food consumption.

Remember:

1. There are no right and wrong answers-this is not a test.
2. Please answer all the questions as honestly and accurately as you can- this is very important.

Please circle the best response for each question.

How many times in a week do you consume:

1. Fruit

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

2. Vegetables

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

3. Sweets

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

4. Non-diet soda

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

5. Carbohydrates (i.e. white rice, white bread, pizza, muffins, bagels, chips)

| | | | | | |
|-------------------------------|-------------|-----------------|-----------------|------------|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Rarely/ Less than once a week | Once a week | 2-4 days a week | 5-6 days a week | Once a day | More than once a day |

Vereecken, C., Keukelier, E., & Maes, L. (2004). Influence of mothers educational level on food parenting practices and food habits of young children. *Appetite*, 43(1), 93-103. doi:10.1016/s0195-6663(04)00043-1

Child Feeding Questionnaire

1. When your child is at home, how often are you responsible for feeding him/her?

| | | | | |
|-------|--------|------------------|------------------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Seldom | Half of the time | Most of the time | Always |

2. How often are you responsible for deciding what your child's portion sizes are?

| | | | | |
|-------|--------|------------------|------------------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Seldom | Half of the time | Most of the time | Always |

3. How often are you responsible for deciding if your child has eaten the right kind of foods?

| | | | | |
|-------|--------|------------------|------------------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Seldom | Half of the time | Most of the time | Always |

4. Your Childhood (5 to 10 years old)

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| Very underweight
overweight | underweight | normal | overweight | markedly |

5. Your adolescence

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| Very underweight
overweight | underweight | normal | overweight | markedly |

6. Your 20s

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

7. At present

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

8. Your child during the first year of life

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

9. Your child as a toddler

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

10. Your child as a pre-schooler

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

11. Your child kindergarten through 2nd grade

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

12. Your from child 3rd through 5th grade

| | | | | |
|--------------------------------|-------------|--------|------------|----------|
| 1 | 2 | 3 | 4 | 5 |
| very underweight
overweight | underweight | normal | overweight | markedly |

13. Your child from 6th through 8th grade

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

very underweight underweight normal overweight markedly
overweight

14. How concerned are you about your child eating too much when you are not around her?

| | | | | |
|-------------|--------------------|-----------|------------------|------|
| 1 | 2 | 3 | 4 | 5 |
| Unconcerned | a little concerned | concerned | fairly concerned | very |
| concerned | | | | |

15. How concerned are you about your child having to diet to maintain a desirable weight?

| | | | | |
|-------------|--------------------|-----------|------------------|------|
| 1 | 2 | 3 | 4 | 5 |
| Unconcerned | a little concerned | concerned | fairly concerned | very |
| concerned | | | | |

16. How concerned are you about your child becoming over weight?

| | | | | |
|-------------|--------------------|-----------|------------------|------|
| 1 | 2 | 3 | 4 | 5 |
| Unconcerned | a little concerned | concerned | fairly concerned | very |
| concerned | | | | |

17. I have to be sure that my child does not eat too many sweets (candy, ice cream, cake or pastries)

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

18. I have to be sure that my child does not eat too many high-fat foods

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

19. I have to be sure that my child does not eat too much of her favorite foods

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

20. I intentionally keep some foods out of my child's reach

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

21. I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

22. I offer my child her favorite foods in exchange for good behavior

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

23. If I did not guide or regulate my child's eating, she would eat too many junk foods

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Disagree slightly disagree neutral slightly agree agree

24. If I did not guide or regulate my child's eating, she would eat too much of her favorite foods

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| Disagree | slightly disagree | neutral | slightly agree | agree |

25. My child should always eat all of the food on her plate

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| disagree | slightly disagree | neutral | slightly agree | agree |

26. I have to be especially careful to make sure my child eats enough

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| disagree | slightly disagree | neutral | slightly agree | agree |

27. If my child says "I'm not hungry", I try to get her to eat anyway

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| disagree | slightly disagree | neutral | slightly agree | agree |

28. If I did not guide or regulate my child's eating, she would eat much less than

| | | | | |
|----------|-------------------|---------|----------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| disagree | slightly disagree | neutral | slightly agree | agree |

29 How much do you keep track of the sweets (candy, ice cream cake, pies, pastries) that your child eats?

| | | | | |
|-------|--------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | rarely | sometimes | mostly | always |

30. How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?

| | | | | |
|-------|--------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | rarely | sometimes | mostly | always |

31. How much do you keep track of the high-fat foods that your child eats?

| | | | | |
|-------|--------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| Never | rarely | sometimes | mostly | always |

Anderson, C. B., Hughes, S. O., Fisher, J. O., & Nicklas, T. A. (2005). Cross-cultural equivalence of feeding beliefs and practices: The psychometric properties of the child feeding questionnaire among Blacks and Hispanics. *Preventive Medicine*, 41(2), 521-531. doi:10.1016/j.ypmed.2005.01.003

Demographics

1. Your Age: _____
2. Mother: _____ Father: _____
3. Child gender: Male _____ Female _____
4. Your Ethnic Background:
_____ African American/Black
_____ Asian/Asian American
Specify: _____
_____ European American
_____ Hispanic American/Latin(o/a)
Specify: _____
_____ Native American
_____ Other
Specify: _____
5. Level of Education:
_____ 9th - 12th grade
_____ High School diploma
_____ Some college
_____ College degree
_____ Graduate degree

Self-created Demographic questionnaire

APPENDIX B
CHILD QUESTIONNAIRE PACKET

Child Packet

Cover

| | |
|---------------------|-------|
| ID No. | _____ |
| Grade | _____ |
| Today's Date | _____ |

Child BMI

ID No. _____

Height _____

Weight _____

Percentile _____

Status _____

Physical Activity Questionnaire (Elementary School)

Identification Number:

Date: _____ Age: _____

Sex: M F _____ Grade: _____

We are trying to find out about your level of physical activity from ***the last 7 days*** (in the last week). This includes activities that make you sweat, make your legs feel tired, or make you breathe hard, such as team sports, running, strenuous occupational activities, and others.

Remember:

3. There are no right and wrong answers— this is not a test
4. Please answer all the questions as honestly and accurately as you can — this is very important

-
9. Physical activity in your spare time: Have you done any of the following activities **in the past 7 days** (last week)? If yes, how many times? (Mark only one circle per row.)

| | No | 1-2 | 3-4 | 5-6 | 7 times or more |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Skipping | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Rowing/canoeing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| In-line skating | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tag | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Walking for exercise | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bicycling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jogging or Running | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Aerobics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Swimming | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Baseball, softball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Dance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Football | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Badminton | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Skateboarding | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Soccer | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Street hockey | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Volleyball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Floor hockey | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Basketball | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ice skating | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cross-country skiing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ice hockey/ringette | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other: | | | | | |
| <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. **In the last 7 days** during your physical education (PE) classes, how often were you very active (for example: playing hard, running, jumping, throwing)? (Check one only.)

- I don't do PE..... ☐
- Hardly ever..... ☐
- Sometimes..... ☐
- Quite often..... ☐
- Always..... ☐

11. **In the last 7 days**, what did you do most of the time at *recess*? (Check one only.)

- Sat down (talking, reading, doing schoolwork)..... ☐
- Stood around or walked around..... ☐
- Ran or played a little bit..... ☐
- Ran around and played quite a bit..... ☐
- Ran and played hard most of the time..... ☐

12. **In the last 7 days**, what did you normally do at *lunch* (besides eating lunch)?
(Check one only.)

- Sat down (talking, reading, doing schoolwork)..... ☐
- Stood around or walked around..... ☐
- Ran or played a little bit..... ☐
- Ran around and played quite a bit..... ☐
- Ran and played hard most of the time..... ☐

13. **In the last 7 days**, on how many days *right after school*, did you do sports, dance or play games in which you were very active? (Check one only.)

- None..... ☐
- 1 time last week..... ☐
- 2 or 3 times last week..... ☐
- 4 or 5 times last week..... ☐
- 6 or 7 times last week..... ☐

14. **In the last 7 days**, on how many *evenings*, did you do sports, dance, or play games in which you were very active? (Check one only.)

- None..... ☐
- 1 time last week..... ☐
- 2 or 3 times last week..... ☐
- 4 or 5 times last week..... ☐
- 6 or 7 times last week..... ☐

15. **On the last weekend**, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)

- None..... ☐
- 1 time last week..... ☐
- 2 or 3 times last week..... ☐
- 4 or 5 times last week..... ☐
- 6 or 7 times last week..... ☐

16. Which *one* of the following describes you best for the **last 7 days**? Read *all five* statements before deciding on the *one* answer that describes you.

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

17. Mark how often you did physical activity (for example: playing sports, exercise classes, strenuous occupational activity).

| | None | Little Bit | Medium | Often | Very Often |
|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Monday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tuesday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wednesday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Thursday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Friday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Saturday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sunday..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes ☐

No ☐

If Yes, what prevented you?

Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual. Manuscript, University of Saskatchewan, Saskatoon, SK.

Food Frequency Questionnaire

We are trying to find out about your average amount of food consumption.

Remember:

1. There are no right and wrong answers-this is not a test.
2. Please answer all the questions as honestly and accurately as you can- this is very important.

Please circle the best response for each question.

How many times in a week do you consume:

1. Fruit

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

2. Vegetables

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

3. Sweets

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

4. Non-diet soda

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week Once a day More than once a day

5. Carbohydrates (i.e. white rice, white bread, pizza, muffins, bagels, chips)

1 2 3 4 5 6

Rarely/ Less than once a week Once a week 2-4 days a week 5-6 days a week

Vereecken, C., Keukelier, E., & Maes, L. (2004). Influence of mothers educational level on food parenting practices and food habits of young children. *Appetite*, 43(1), 93-103. doi:10.1016/s0195-6663(04)00043-

APPENDIX C
IRB APPROVAL LETTER

**INSTITUTIONAL REVIEW BOARD (IRB)
CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO**

Human Subjects Protocol Change Form

DATE: 03/05/15

IRB NUMBER: #13027

REVIEW CATEGORY:

EXEMPT ☐

EXPEDITED ☐

FULL BOARD ☒

Note: All changes to your originally approved protocol, *no matter how minor*, require IRB approval before implementation.

INVESTIGATOR(s) / RESEARCHER(s): Brittney Parish

E-mail Address: parishb@coyote.csusb.edu

DEPARTMENT: Psychology

PROJECT TITLE: Parental influence on risk factors for obesity in African American school- aged children

Please return this fully completed form to the IRB Coordinator, Mr. Michael L. Gillespie, in the Office of Academic Research. Attach additional sheets if necessary to describe in detail any changes to the original approved protocol or methodology related to your research or the human subjects thereof.

Attached are an updated recruitment of participant section, data collection methodology, new informed consent and research flyers for both participant pools. I updated the recruitment of participant section, by adding a new participant pool, church. I updated the data collection section, by including new methodology for the church. The attached informed consent change consist of the removal of the words parent meeting. I also created a flyer for the church.

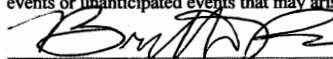
Have there been any adverse events or unanticipated problem(s) that relate to the research conducted and/or human subjects utilized in your research, since your protocol was originally approved? You are required to fill out the (AE) adverse event report if an adverse event occurred during the conduct of your research (see IRB website). Fill that form out and turn it in with this protocol change form.

YES ☐

NO ☒

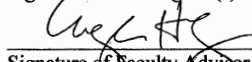
Investigator(s) Assurance:

The information and answers to the questions above is true and accurate to the best of my knowledge and I understand that prior IRB approval is required before initiating any changes that may affect the human subject participant(s) in the originally approved research protocol. I also understand that in accordance with federal regulations I am to report to the IRB or administrative designee any adverse events or unanticipated events that may arise during the course of this research.


Signature of Investigator(s) / Researcher(s)

Date

3/4/15


Signature of Faculty Advisor for Student Researchers

Date

3/4/15


Signature of IRB Chair or IRB Chair Designee Approving this Change

Date

3/6/15

Approval of renewed protocol / methodology is granted from: 01/17/15 through 01/16/16

*Please renew one month before
project end date if not done with
your study. Thank you. Michael*

APPENDIX D
INFORMED CONSENT FORM

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO

College of Social and Behavioral Sciences
Department of Psychology

INFORMED CONSENT

You and your child in grades 4th, 5th and 6th are invited to participate in a study designed to understand the physical activity, dietary habits and child's eating habits of African Americans. Only one parent/guardian and child can participate. If you have more than one child, only the oldest sibling can participate. This study is being conducted by Brittney Parish under the supervision of Prof. Eugene Wong, Professor of Psychology, California State University, and San Bernardino. The University asks that we obtain your consent before your participation in this study. This form should bear the official IRB stamp of approval as it has been approved by the Institutional Review Board, California State University, and San Bernardino. The university requires that you give consent for you and your child's participation.

In this study you will receive a packet consisting of a survey regarding your dietary habits, child feeding practices and exercise activities. After completing survey, please turn in packets to Brittney Parish. Your child will receive a survey regarding their dietary habits and exercise activities. Then a female researcher will measure his/her height and weight. This process will take approximately 20 minutes to complete. Once complete, the researcher will collect your child's survey. All of your responses will be held in the strictest of confidence by the researchers.

Your participation in this study is voluntary and you have the right to refuse to answer any questions or discontinue participation at any time. This study involves no risk beyond those routinely encountered in daily life, nor any direct benefits to you as a participant. However, this study will help us to understand dietary and exercise routines in families.

If you have any questions or concerns about this study, please contact Eugene Wong at (909) 537-5573 or ewong@csusb.edu.

By signing my name below, I acknowledge that I have been informed of, and that I understand, the nature and purpose of this study, and I freely consent to participate and allow my child to participate.

Parent's/ Guardian's Signature: _____ Date: _____

Child Name _____

California State University, San Bernardino
Institutional Review Board Committee
APPROVED 01/17/15 VOID AFTER 01/16/16
IRB# 13027 CHAIR Judy Sylva by [signature]

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