2019

Mother Feeding Style and Health Outcomes of Children

Marie Youngblood
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Marie Youngblood

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Bruce Ragon, Committee Chairperson, Public Health Faculty
Dr. Lee Bewley, Committee Member, Public Health Faculty

Dr. Jagdish Khubchandani, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Mother Feeding Style and Health Outcomes of Children

by

Marie Youngblood

MEd University of Houston, 1987

BA, University of Wisconsin-Milwaukee, 1979

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

December 2018

Abstract

Childhood and adolescent obesity are pervasive among single mother households. Obesity causes many health risks including psychological/emotional illnesses. The purpose of this secondary analysis study was to examine the association between the parental feeding styles of single mothers and the degree that ethnicity moderates the rates of childhood obesity. Data from the National Longitudinal Survey of Youth were used with a total of 1,630 children in the study for a total of 842 minorities (African American and Hispanic American); 788 participates were not minorities (European American) with an average body mass indent of 15.9. Using the cross-sectional design, the quantitative study analyzed an association of parental feeding style and overweight/obesity. According to study findings, there was no statistical significance between the parental feeding style and ethnicity status. There was no statistical significance between the child's compliance with the mother's food choice, the child's frequency of compliance nor the child's compliance even when they don't want to eat with overweight/obesity when moderated by ethnicity. Finally, there was no statistical significance when moderated by ethnicity. Educating single mothers about habits and perceptions concerning food is critical so that they are aware they can offer wholesome nutritional food as food choices. Education is a determinate of health that would moderate the parental feeding style

Mother Feeding Style and Health Outcomes of Children

by

Marie Youngblood

MEd University of Houston, 1987

BA, University of Wisconsin-Milwaukee, 1979

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

December 2018

Dedication

I dedicate my dissertation to my children, Faith Brockers and her husband Michael Brockers; Isaiah Youngblood; Jeremiah Youngblood; and my grandchildren, MaKaela and Makhi Brockers. They have always been there for me, inspiring me in unique ways to continue and reminding me every day that I could do all things through Christ, who strengthens me (Philippians 4:13).

I have worked hard to obtain this doctorate not just for myself, but for my children and grandchildren. The result is that they can see God's handiwork in the flesh. Thank you for the unconditional love and magic of family. I appreciate it more than you will ever know.

Mom

Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Introduction

Childhood obesity is a highly prevalent chronic illness (Fitzgerald, 2013). From 2011-2014, 17% of children and adolescents aged 2-19 years were either overweight or obese (Centers for Disease Control and Prevention [CDC], 2017; Ogden et al., 2016). Parental feeding styles may be a contributor to obesity. Scholars have advocated for more studies on parental feeding styles to examine how it is associated with overweight and obese children and adolescents (Augustine & Kimbro, 2013; Huffman, Kanikreddy, & Patel, 2010; Kakinami, Barnett, Seguin, & Paradis, 2016; Robles et al., 2014). The purpose of this study was to examine parental feeding styles and its effect on childhood/adolescent overweight and obesity.

There are many overall health, emotional, and economic consequences of obesity and being overweight. The conditions of overweight and obesity create risk factors for morbidity and mortality (Deckelbaulm &Williams, 2001; Raj &Kumar, 2010). Obese children are more likely to develop life-threatening health conditions, such as high blood pressure, Type 2 diabetes, asthma, sleep apnea, early puberty, orthopedic problems, cardiovascular disease, and high cholesterol, all of which indirectly impact the costs of medical care (CDC, 2017; Deckelbaulm & Williams, 2001; Finkelstein, Fiebelkorn, & Wang, 2003; Karnik & Kanekar 2012; Koplan, 2005). Childhood overweight/obesity not only contributes to illnesses but also often leads to adult obesity associated with strokes, cardiovascular disease, hypertension, diabetes, and some forms of cancer (Obesity Society, 2015; World Cancer Research Fund /American Institute for Cancer Research,

2017). Children who are overweight/obese are more likely to be significantly obese as adults, which leads to increased health care costs (National Center for Health Statistics, 2016; Obesity Society, 2015). The health care costs due to overweight/obesity are estimated to be about $190.2 billion annually, or nearly 21% of the total direct medical costs of all illnesses (Crawley & Meyerhoefer, 2012). Childhood obesity costs approximately $14 billion per year, and the costs of obesity increase as obese children become adults (Cawley & Meyerhoefer, 2012; Segal, Rayburn, & Martin, 2016). Obese and overweight children are more likely to become overweight/obese adults who are less productive in the workplace (Cawley & Meyerhoefer, 2012; Segal et al., 2016).

Overweight and obese children are more likely to experience emotional/psychological problems, such as withdrawal from peer interactions, depression, anxiety, and feelings of chronic rejection (Bacchini et al., 2015; Deckelbaum & Williams, 2001). Obese children miss more school days than children of healthy weight (Geier et al., 2007). Overweight children are more likely to be stereotyped, which can lead to low self-esteem and negative body image (Bacchini et al., 2015; Strauss & Pollack, 2003). These psychological afflictions may lead to lifelong health problems, continually inhibiting the quality of life (QOL). Severely obese children and adolescents experience lower QOLs than those within normal weight ranges. Researchers have found parallels between obese children and adolescents and those who have cancer across a range of QOL domains (Gascon et al., 2004; Schwimmer, Burwinkle, & Varni 2003).

Effective interventions are needed to reduce the suffering of overweight and obese children. To develop interventions, however, it is essential to determine the social

and behavioral variables that contribute to their prevalence. The following factors have been identified as contributing to obesity and being overweight (Obesity Society, 2015): food choices, parental obesity, physical activity versus sedentary activity, eating patterns, parental feeding style, diabetes during pregnancy, low birth weight, excessive weight gain, formula feeding, parental eating, and physical activity demographics. By developing interventions that can reduce the number of children who are obese and overweight, several of the physical and mental illnesses associated with being overweight and obesity may decrease. This, in turn, would diminish health care costs. The overall reduction in overweight and obese children would positively impact society.

Background of the Study

Obesity rates have more than tripled among children since the 1970s, and they have quadrupled among teenagers (CDC, 2017). Ogden et al. (2016) indicated that 9.4% of children aged 2-5 years are overweight or obese. This overweight/obesity represented a 5% increase compared to results from 1976-1980 (Ogden & Carroll, 2010). For 6-to 11-year-olds, rates of overweight/obesity increased from 6.5% in 1976-1980 to 17.5% from 2011-2014 (Ogden & Carroll, 2010). The increase for adolescents was from 5.0% to 20.5% (Karnik & Karnekar, 2012; National Center for Health Statistics, 2016; Ogden et al., 2016).

Obesity and Single-Parent Households

The prevalence of single-parent households has increased. Thirty-four percent of children live in single-parent households (Livingston, 2014), and 23% of overweight/obese children live with single mothers (Augustine & Kimbro, 2013).

Overall, there is a higher percentage of overweight/obese children in single-parent households even after controlling for diet and physical activity factors (Augustine & Kimbro, 2015; Chen & Escarce, 2010; Huffman et al., 2010; Miura et al., 2017; Moens, Braet, Bosmans, & Rosseel (2009). Moreover, a higher percentage of overweight and obese children have been found to live in single-parent households than in two-parent households, and children in two-parent households are less likely to be obese (Augustine & Kimbro, 2015; Byrne, Cook, Skouteris, & Do, 2011; Bzostek & Beck, 2011; Miura et al., 2017; Schmeer, 2012). Only 16% of children in two-parent households are overweight/obese, compared to 22% in single family households (Augustine & Kimbro, 2015). The association between household structure and obesity is particularly notable among girls (Byrne et al., 2011; Miura et al., 2017). However, the household is not the only factor contributing to the higher rate of overweight/obesity in children, as income, racial background, education, and parental characteristics also appear to be significant variables that affect the prevalence of overweight/obese children (Augustine & Kimbro, 2015).

Obesity and Parental Feeding Styles

Augustine and Kimbro (2013) observed that parental feeding style influences food intake, eating frequency, and eating context, which impact a child's weight more than parental income. Human beings make food choices based on the amount of money they have while following personal and cultural practices. Augustine and Kimbro (2015) argued that the socioeconomic factors of parenting styles, culture, stress, and exposure moderate the interpersonal and intrapersonal levels of feeding styles.

Obesity and Income

Income is generally lower in single-parent homes, except in households run by single fathers (National Center for Health Statistics, 2016). Although lower income is associated with poor health, some health professionals believe that the higher overweight/obesity rates in these families are due to parenting style rather than income (Augustine & Kimbro, 2013; Huffman et al., 2010; Kanikami et al., 2015; Miura et al., 2017). Income is associated with poor health because of limited food choices; however, parenting style can improve health (and prevent obesity) despite scarce financial resources. Although children in poor households are more likely to be overweight/obese, nonimpoverished, preschool-aged children who live with authoritarian parents are 44% more likely to be overweight/obese (Kakinami et al., 2015). Overall, the children of authoritarian parents are more likely to be obese compared to children with authoritative parents (Kakinami et al., 2015; Rhee, 2008; Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Vollmer & Mobley, 2013), which demonstrates the more significant influence of parenting style than income on childhood overweight/obesity. Authoritarian parents put high demands on their children while providing limited feedback or explanations, causing stress that can lead to a variety of eating disorders, including overeating. Baumrind (1966) and Maccoby and Martin (1983) distinguished between authoritarian parenting, authoritative parenting, permissive parenting, and uninvolved parenting.

Obesity and Parenting Styles

Parenting behavioral dynamics include parenting styles and feeding styles. Specific parenting styles and parental feeding styles are associated with overweight/obesity in children as measured by body mass index (BMI). However, no researcher has examined the relationship between parental feeding styles and overweight/obesity as measured by BMI when moderated by minority status. Stasenko (2012) identified four parental feeding styles:

- Authoritarian feeding style: Directing the child's eating behaviors with strict guidelines
- Permissive feeding style: The child has the final say in what he or she eats
- Neglectful feeding style: Lack of structure without a reliable schedule
- Authoritative feeding style: Support the child to eat well, usually allowing a variety of foods

Knowledge Gap

Research on the effects of parental feeding styles has been limited, especially among low-income women and ethnic minorities; however, several scholars have indicated an association between parental feeding styles and weight (Faith et al., 2003; Hubbs-Tait, Kennedy, Page,Topham, & Harrist, 2008). Reicks et al. (2015) observed a link between permissive feeding styles and a lower intake of high nutrient foods, which can be a catalyst to poor food choices and obesity. Cardel et al. (2012) asserted that culture (education), gender, ethnicity, and socioeconomic status (SES) are factors that may moderate the effects of parental feeding styles. There appears to be an association

between parental styles and eating habits that may lead to higher rates of obesity and being overweight. Researchers should examine parental feeding styles and their association with childhood obesity and overweight. Low-income, single women who implement authoritative parental feeding styles, such as pressures to eat and food restrictions, may be more likely to have children with a higher prevalence of obesity (Hoerr et al., 2009; Kakinami et al., 2015; Reicks et al., 2015; U.S. Department of Agriculture, 2016).

Interventions implemented at the organizational, community, and policy levels for childhood obesity have been mostly ineffective as indicated by the unabated rise of childhood obesity, particularly among low-income, single-parent households (National Center for Health Statistics, 2014). Developing applications that can lower the prevalence of overweight and obesity in low-income, single parent households are essential for the health of children and young adults. In this study, I analyzed parental feeding styles in low-income, single women households to determine a possible association between the measured degrees of being overweight or obese in children and parental styles.

Problem Statement

Overweight and obese children suffer from many health problems, such as Type 2 diabetes, metabolic syndrome, high blood pressure, and high cholesterol. There are also associated social/emotional consequences of being obese or overweight, including low self-esteem, depression, and behavioral/learning problems (Bacchini et al., 2015; Mayo Clinic, 2016; National Center for Health Statistics, 2015; Sahoo, Sahoo, Choudhury, Sofi, & Bhadoria, 2015). These difficulties not only lead to childhood illness and disease but to

higher health care costs exceeding 98 billion dollars in 2004 (CDC, 2008; CDC, 2017; Segal et al., 2016).

Obesity is defined as an excess of body fat. Although there are no guidelines concerning when being overweight ends and being obese begins (Dehghan, Akhtar-Danesh, & Merchant, 2005; Sahoo et al., 2015), children and adolescents are considered overweight when their body fat reaches 25% and 30%, respectively, or at or above the 85th percentile but below the 95th percentile. Obese children and adolescents of either sex and in the same age group are at or above the 95th percentile (National Center for Health Statistics, 2015).

The CDC (2015b) defined individuals as overweight when they reach the 95th BMI percentile; individuals are at risk of being overweight when they are between the 85th and 95th BMI percentiles. The causes of overweight/obesity vary, and they are not well understood, especially with regards to the higher rates found among single mothers. There are several etiologies for overweight/obesity, and although genetics are influential, environment, lifestyle, and culture are also primary factors in overweight/obesity prevalence (Cardel et al., 2012; CDC, 2015b; Grundy, 1998; Hill & Peters, 1998).

Through the application of socioecological theory, parental feeding style interventions may be developed to prevent childhood obesity because parents have a significant degree of influence on children's eating habits (Haines et al., 2016; Kakinami et al., 2015; Miura et al., 2017; Scaglioni, Salvioni, & Galimberti, 2008). Parental feeding style can be defined as the degree to which a parent supervises the types of foods his or her child eats (control/demandingness versus response of the parental feeding style), the

frequency of the consumption of that food, as well as the setting in which that food is consumed. Parenting demonstrates the degree of demands and control imposed on the child, as well as the parental response to the child in those parental feeding interactions (Haines et al.,2016; Hoerr et al., 2009; Kakinami et al., 2015; Ventura & Birch, 2008). Parental feeding style is observed at both the intrapersonal and interpersonal levels of the socioecological theory (Haines et al., 2016; Kakinami et al.,2017; Scaglioni et al., 2008). Parents' characteristics such as weight, dietary intake, food preferences, eating location preferences, and SES (race, income, education) are factors that may impact intrapersonal behavior. This, in turn, affects the interpersonal dynamics of their style of parenting and how much and how often their child eats.

Parental SES (ie., education, race, and income) is at the intrapersonal level. Income, which was examined in this research, focuses not only on self-reported income, but also on factors such as neighborhoods, car, and home ownership and how they affect the intrapersonal parenting associated with children's eating habits, including context, frequency, and amount (Caprio et al., 2008; Scaglioni et al., 2008). Interventions at the intrapersonal and interpersonal levels emphasizing parental feeding styles of the social ecological framework would involve social changes in habits, values, and practices that affect a person's cultural influences and the prevalence of overweight/obesity (Augustine & Kimbro, 2013; Dunleavy, 2014; Huffman et al., 2010).

There is a positive relationship between single parent households and obese or overweight children (Augustine &Kimbro, 2015). Although single parent households tend to have lower incomes (Acs & Nelson, 2003; Augustine & Kimbro, 2015), factors

directly causing children to become overweight or obese are attributed neither to lower income nor its component conditions (i.e., parents' eating habits and parents' weight), but rather to higher caloric consumption (Huffman et al., 2010). As the number of single parent households increase, the rates of obese and overweight children also rise (Archer, 2015). However, scholars do not know if this is true among low-income, single parents of varying ethnicities. Other possible mitigating factors in overweight/obesity in children and adolescents are parent's eating habits, weight, and SES.

Purpose of the Study

The purpose of this quantitative research was to evaluate if the parental feeding styles of low-income, single women are associated with obese or overweight children and to what degree ethnicity affects that association. The independent variable in this study was parental feeding styles, and the dependent variable was the dichotomous categorical variable overweight/obese as measured by BMI. Children with a BMI in the 85th percentile or higher were coded as 1, and those with a BMI of less than the 85th percentile were coded as 0. Minority ethnicity status was the moderator dichotomous variable. The dichotomous of 0 was nonminority, and 1 was minority ethnic status. There has been an increase in the prevalence of overweight/obese children over the past several decades (CDC, 2017), and the prevalence of single-parent households increased from 9% to 26% between 1960 and 2014 (Mather, 2010; Pew Research Center, 2015). Single-parent homes were analyzed in this study for potential correlations between parental behavioral dynamics and overweight or obese children.

Although children and adolescents from low-income, single parent households are more likely to be overweight/obese, neither low-income nor single parenting are considered significant factors in the high rates of this disorder, nor is a higher prevalence of obesity significant across racial/ethnic groups in the single parent household category (CDC, 2017; Food Research & Action Center [FRAC], 2015; Huffman et al., 2010). Single-parent households have an overweight/obesity rate of 41%, while the rate is 10% lower for two-parent households (Huffman et al., 2010; National Center for Health Statistics, 2016). There is a 20% greater likelihood that children will be obese in low-income households; however, they have a respective 44% and 26% higher chance of developing obesity in an authoritarian or neglectful household (Kakinami et al., 2015). More research is needed to discover the influence of all parental feeding styles on childhood overweight/obesity including authoritative, authoritarian, neglectful, and permissive (Faith, 2003; Hubbs-Tait et al., 2008).

Research Questions and Hypotheses

There were three research questions that were examined in this study. The three research questions and their associated hypotheses are listed below. The research questions below are the parental feeding style questions used in the National Longitudinal Survey of Youth (NLSY).

RQ1: Is there an association between the amounts of food choice a single mother gives her child and obesity when moderated by minority ethnic status?

$H_0$1: There is no association between the amount of food choice a single mother gives her child and obesity when moderated by minority ethnic status.

H_a1: There is an association between the amount of food choice a single mother gives her child and obesity when moderated by minority ethnic status.

RQ2: Is there a relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status?

$H_0 2$: There is no relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status.

$H_a 2$: There is a relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status.

RQ3: Is there a relationship between how an obedient child is when told to eat food they do not want to eat and obesity when moderated by minority ethnic status?

$H_0 3$: There is no relationship between how obedient a child is when told to eat food they do not want to eat and obesity when moderated by minority ethnic status

$H_a 3$: There is a relationship between how obedient a child is when told to eat food they do not want to eat and obesity when moderated by minority ethnic status

Theoretical Framework

The social ecological theory (Bookchin, 1964; Winch, 2012) was the theoretical framework for this dissertation. Social ecological theorists examine how individual behaviors are both shaped by and help form the social environment. I emphasized the McLeroy, Steckler, Bibeau, and Glanz (1988) approach to the social ecological model including its multiple levels of behavior and reciprocal frameworks of influence. These intrapersonal, interpersonal, organizational, community, and public policy levels are in

continual interaction changing behaviors and cause new behaviors to interact within the five levels (CDC, 2015b; McLeroy et al., 1988; Winch, 2012.).

At the individual level, intrapersonal characteristics influence behavior, knowledge, skills, and self-efficacy; the interpersonal level includes the relational processes among family, friends, and peers who help establish norms and provide emotional support along with a sense of group identity. The organizational level includes churches, stores, and community organizations that set rules, regulations, and policies to promote or restrain certain types of behavior. The community that encompasses the previous levels either promotes or restrains behavior according to its norms. The public policy level is represented by local, state, national and global laws and policies where official interventions are formulated for behavioral improvement (National Center for Health Statistics, 2014; Winch, 2012). The social ecological model has been applied to a variety of behavioral fields in public health.

Parenting dynamics are evolving at the intrapersonal and interpersonal levels of the socio ecological model because children who are overweight react differently to parental dynamics (Arredondo et al., 2006). As a child gains weight, he or she may begin to react differently to the parent's feeding style. However, the organizational, community and public policy levels of behavior must still be considered, although I analyzed the parental feeding style at intrapersonal and interpersonal levels.

The McLeroy et al. (1998) version of the social ecological model does not account for interactions influenced by race, gender, or income that impacts social class, which is a person's behavior related to the ideas/values that surrounds him or her. These

factors were analyzed at the intrapersonal and interpersonal levels in this study in which I also explored the personal eating choices of children in independent and nonindependent settings. Specifically, I examined the relationship between parental feeding styles of low-income, single women and child overweight /obesity moderated by ethnic minority status. Although a number of scholars have attempted to explain the prevalence of these parental feed styles among single parents (Augustine & Kimbro, 2015; Huffman et al., 2010; Kakinami et al., 2015; Van der Horst et al., 2007), an explanation requires a more complex perspective of the issue. This study's analysis included a multifocal examination of parental feeding style of single woman, weight, and ethnic minority status.

Nature of the Study

The quantitative method was chosen for this study because I wished to determine if there was a statistically significant relationship between parental feeding style among low-income woman and child overweight/obesity when moderated by ethnic minority status. The qualitative method was not appropriate to address this question because it relies on anecdotal and non-numerical data (Creswell, 2013; Leedy & Omrod, 2013). This research question can only be answered using quantitative data for two reasons. First, a linear relationship can only be assessed objectively numerically (Field, 2013). Second, moderation analysis can only be implemented and measured numerically (Field, 2013). Therefore, the quantitative method was the only design appropriate for this study.

I examined the relationship between parental feeding style among low-income woman and overweight/obesity among children when moderated by ethnic minority status. For the study, I quantitatively measured the association between the continuous

independent variable, which was the parental feeding style, on the continuous dependent variable of weight and obesity while being moderated by the categorical variable of ethnic minority status. Analyses of secondary data of parenting behavior (parental feeding styles) among various races and ethnicities was also conducted to investigate their relationship with the dependent variable of obesity/nonobesity.

Definitions

Adolescents: Aged from 12 to 19 years.

Authoritarian parenting feeding: Directing the child's feeding (Stasenko, 2012).

Authoritative parenting was feeding: The parents' model and guide of the child's food choices (Stasenko, 2012).

Caloric intake: The number of calories a person eats (Reicks et al., 2016).

Children: Aged from 0- to 12-years-old.

Eating context: The circumstances or setting in which a person eats (ie., in a restaurant or while driving; Reicks et al., 2016).

Eating frequency: The number of times a person eats (Reicks et al., 2016).

Initiative : New programs to solve a problem (DeMattia & Denney, 2008).

Interpersonal: The interaction between two people as influenced by their intrapersonal factors (CDC, 2015b).

Intrapersonal: The components that cause an individual to think and behave as he/she does (CDC, 2015b).

Neglectful parental feeding: The parent shows no interest or awareness of what his/her child eats; there is no structure (Stasenko, 2012).

Obesity: BMI is at the 95th percentile or higher (CDC, 2017).

Overweight: BMI is between the 85th to less than 95th percentile (CDC, 2017).

Permissive parental feeding: The child is allowed to eat whatever and whenever he/she wants (Stasenko, 2012).

Assumptions

I assumed that authoritative parents are more likely to positively influence their children in all aspects of life, although modifiable factors could affect that positive impact. Therefore, an authoritative feeding style was the style most likely to influence good eating habits. I assumed that an authoritative feeding style helps develop healthy eating despite income, education, and race. It was assumed that parents' influence, due to intrapersonal characteristics, impacts the feeding relationship with their children (interpersonal).

Scope and Delimitation

The focus of this research was on single, low-income mothers. I retrieved single mothers from the cohort of young women in the NLSY to track their life circumstances, decisions, labor, and other life scenarios. These single women represented young women of the general population; some particular demographics were not equally represented because there was an overrepresentation of minorities, young, and less educated women.

Limitations

Because purposeful sampling was used for the NLSY, the cohort may not represent the attitudes/perspectives of all men and women in the population. The purposeful sampling was implemented to study young men and women across the

country including Alaska, but Creswell (2009) stated that purposeful sampling hinders the capture of diverse thinking. Additionally, this research was limited because the questionnaires were based on the recall abilities of children and their parents. Although the NLSY tested for reliability and validity, possible bias must be considered. Those who interviewed the participants may have had a bias that influenced the answers even though they were trained interviewees who met the participants in person or conducted the interview by phone. Young, less educated mothers from minority groups were overrepresented in the cohort

Significance

The conditions of overweight and obesity create risk factors for morbidity and mortality (Deckelbaulm & Williams, 2001; Raj &Kumar, 2010). Obese children are more likely to develop life-threatening health issues, such as high blood pressure, high insulin, Type 2 diabetes, asthma, sleep apnea, early puberty, orthopedic problems, cardiovascular disease, and high cholesterol, all of which indirectly impact the costs of medical care (CDC, 2017; Deckelbaulm & Williams, 2001; Finkelstein et al., 2003; Karnik & Kanekar, 2012; Koplan, 2005). Childhood overweight/obesity not only contributes to illnesses, but also leads to adult obesity, which is associated with strokes, cardiovascular disease, hypertension, diabetes, and some forms of cancer (Obesity Society, 2015; World Cancer Research Fund /American Institute for Cancer Research, 2017). Children who are overweight/obese are more likely to be significantly obese as adults (National Center for Health Statistics, 2016; Obesity Society, 2015). The health care costs due to overweight/obesity are estimated to be about 190.2 billion dollars annually or nearly 21%

of the total direct medical costs of all illnesses (Crawley & Meyerhoefer, 2012). Childhood obesity costs are estimated at $14 billion per year, and expenses increase as obese children become adults (Cawley & Meyerhoefer, 2012; Segal et al., 2016). Obese and overweight children are more likely to become overweight/obese adults who are less productive in the workplace (Cawley & Meyerhoefer, 2012; Segal et al., 2016.) The cost to the nation is $190.2 billion per year with $14 billion due to overweight/obese children (Crawley & Meyerhoefer, 2012; Segal et al., 2016). This cost makes up almost 25% of health care cost of overweight/obesity (Crawley & Meyerhoefer, 2012; Segal et al., 2016).

Interventions should not take place at the public policy dimension of social ecological theory by mandating the education of the parents of obese children and adolescents at the community/organizational level (Bookchin, 1964; CDC, 2014; Winch, 2012). Rather, the costs of health care may decline with the employment of effective interventions at the intrapersonal and interpersonal level, and social change will occur as a result of developing tools focused on engendering healthy habits, values, and practices in the parental dynamics of feeding styles. This change gives power back to the family. Regardless of income level, parents can learn to adopt values and attitudes that lead to healthy habits, and they can model healthy behavior for their children.

The findings from this study may advance the social ecological concept that the environment, as well as the parents' interaction with that environment, affect children's health. The findings aid in developing interventions that reduce the prevalence of obesity among children, which will have an impact not only on the interpersonal/intrapersonal

level but the other four levels as well of the social ecological theory with multiple levels of social interaction.

Significance to the Theory

The intrapersonal level of the parent impacts the interpersonal interactions between parents and their children, and the dynamics of these relations influences children's development and emotional wellbeing. The influence of the parental interpersonal level is also associated with children's eating habits (Lo, Cheung, Lee, Tam, & Keung, 2015; Scaglioni et al., 2008). Each level of the social ecological framework interacts with all the others, and each level impacts the parent's intrapersonal level. A parent's income, race, gender, and educational level impacts that person as an individual and places him/her within groups that may be associated with obesity. Scholars have found associations between parental feeding styles and children's weight (CDC, 2015b; Haines et al., 2016; Hoerr et al., 2009; Kanikami et al., 2015; Ventura & Birch, 2008).

Single mothers are prevalent in low-income houses and educational groups and should be studied at the intrapersonal and interpersonal levels to find associations between their children's eating habits and rates of obesity. In this study, I investigated the impact of the interpersonal and intrapersonal level of parental feeding styles by analyzing the effects of the parental feeding styles of single mothers, who represent a growing segment of the population.

Significance to Practice

The findings of earlier research on parent feeding styles indicated a need for further study so that the most effective interventions against childhood

overweight/obesity can be created and put into action (Augustine & Kimbro, 2015; Huffman et al., 2010). This study will add to current understandings of the effects of parental feeding styles and the preponderance of certain parental feeding styles and their consequences with these children's weight. Studies on parental feeding styles among single mothers and other demographics are important for the creation of interventions at the intrapersonal and interpersonal levels that will be effective for this demographic.

Significance for Social Change

Research concerning parental feeding styles and their influence on children's eating habits and resulting obesity can lead to social change (Huffman et al., 2010). Interventions that decrease the effects of health determinants through reeducating parents will be more effective than imposed measures on decreasing the prevalence of obesity and overweight among both children and parents. Such a change will result in fewer health and medical problems and a reduction of their associated emotional and economic costs.

Summary and Transition

The lack of research at the individual and family levels in current initiatives and studies focused on overweight/obesity is problematic. Weight loss efforts will not be successful until the niche of the individual is examined, which includes a person's identity and how he or she interacts with his or her family (DeMattia & Denney, 2008). Interventions must be considered at the individual and family levels as well as at the societal level (DeMattia & Denney, 2008). To provide policy recommendations, I

investigated the associations between intrapersonal and interpersonal interactions and rates of obesity in children and adolescents.

Chapter 2 provides the literature review for this study.

Chapter 2: Literature Review

Introduction

Obesity is associated with health problems causing morbidity and mortality (CDC, 2017; Deckelbaulm & Williams, 2001). Obesity and overweight have become more prevalent among children and adolescents (National Center for Health Statistics, 2015; Ogden et al., 2016; Segal et al., 2016). Many interventions have been proposed and implemented to address childhood overweight/obesity, particularly at the level of public policy, but these efforts have largely failed to decrease the prevalence of the disorder. There is a need to consider causes of and interventions for child and adolescent obesity at the individual and family levels (intrapersonal and interpersonal). Such an investigation should include an examination of parental feeding styles that influence children's eating behaviors. Few researchers have examined the relationship between parental behaviors and children's weight. Therefore, scholars should focus on the influence a parent has on a child's weight (Haines et al., 2016; Lo et al., 2015).

Literature Search Strategy

The Walden Library was used to find sources for the literature search. Various search engines were used by incorporating the key words *parenting feeding styles* and *eating habits*. The search engines included CINAHL Plus, ProQuest Nursing & Allied Health Source, ProQuest Health &Medical Collection, Science Direct, and EBSCO. Most of the literature was peer-reviewed. Other works included articles from government postings, such as the CDC (2014, 2015, 2016, 2017), the World Health Organization, the FRAC (2017), the Department of Health and Human Services (2012), the European Food

Information Council (2012), the National Institutes of Health (2012), the Mayo Clinic (2016), and the United States Department of Agriculture (2013). I focused on literature and articles that had been published within a 5-year range, although older works exemplifying the development of childhood obesity research and parental feeding behavior studies were included. Peer-reviewed articles were mostly published from 2011-2016 while other literature was published between 1998- 2011.

Theoretical Foundations

The social ecological theory provided the conceptual foundation of this dissertation. This area of research was primarily developed by Bookchin (1964) as a critique of the U. S. sociopolitical system and its antiecological and unethical tendencies. Bookchin advocated that an individual impacts his/her social/ecological environment and is impacted by that same social/ecological environment. This approach is both reconstructive as well as transformative concerning social and environmental issues. A person is both impacted and influenced by his/her surrounding social and ecological environment in a reconstructive as well as transformative to social and environmental issues. Bronfenbrenner further refined the theory in the ecological framework for human development during the 1970s and 1980s. Bronfenbrenner (1977, 1979) argued that to fully understand human development, social scientists must examine the entire ecological system in which the process of development occurs. This system is comprised of five distinct yet overlapping levels of influence: the microsystem, which comprises a child's immediate surroundings such as family, church, or school; the mesosystems that connect microsystems; and the exosystem that represents the larger social system in which the

child and family interact to the macrosystem; the realm of culture, education and values; and the temporal dimension or chronosystem, which encompasses both internal physiological changes (aging and maturation) and the historical context of family and other social interactions. Scholars have applied this framework in public health as a means of assessing healthy lifestyles and accounting for harmful behaviors (McLeroy et al., 1988). Later models have reframed the levels as intrapersonal, interpersonal, organizational (institution), community, and public policy (CDC, 2015b; Winch, 2012).

The social ecological model of public health is centered on the interactions among and between individuals and their living conditions that are constant and dynamic. An individual behaves the way that he/she does because of his/her environment that is impacted by these behaviors. Socioeconomic factors are among the primary shapers of his/her environment. There is a high prevalence of poorly educated women with limited resources who endure poor living conditions that are all determinants of health. Being poor and less educated influences the individual's development (intrapersonal) that affects how he/she interacts with his/her environment (interpersonal). The personality of the individual, which has been shaped by family interactions and community and organizational relationships, dynamically affects how that individual perceives family members, friends, organizations, his/her community, and public policies. As defined by the social ecological model, how that individual perceives those entities at various levels determines how he/she will interact within the family, organization, and community, as well as how he or she will accept or reject public policy (CDC, 2015b).

The social ecological theory has been applied as an intervention in issues like drug abuse and domestic violence (Belsky, 1980) as well as for such public health concerns as colorectal cancer control (CDC, 2015b). When the social ecological theory is applied to decrease determinants causing disease, poor living conditions, or violence, the determinants of health or the socioeconomic factors become specific to the problem. To decrease violence, determinants such as education, age, and income are considered, but the analysis also includes current substance abuse and the history of an individual's substance abuse. The social ecological theory allows for the application of determinants of health to study the dynamics related to the problem and to develop the most appropriate intervention(s) for that problem.

The social ecological theory can be applied to obesity as well. Childhood obesity is influenced by internal physiological and psychological factors, as well as external family, peer and community interactions, and socioeconomic conditions. Because the social ecological theory model focuses on the dynamics of individuals in their environment, it extends beyond the analysis of a single possible cause of the problem to examine a multitude of causes (if applicable) at any of the five levels in the social ecological model.

Literature Review

Obesity

Obesity has increased over the decades. There has been a steady growth in rates of childhood and teenage overweight and obesity over the past 25 years (Karnic & Karnekar, 2012; National Center for Health Statistics, 2016). The CDC (2017) observed

that over the past 3-4 decades, obesity has doubled among children aged up to 11 years and has quadrupled among teenagers (12-18 years). Because obesity is a health problem, its increase in prevalence is a public health concern. In surveys from 1976-1980 and 2013-2014, children as young as 2-to 5-years-old showed a significant overweight increase from 5% to 9.4%, with a peak of 13.9% in 2003-2004; the rate for the 6-11 age group nearly tripled from 6.5% to a 17.5%, with a peak of 19.6 in 2007-2008; the adolescent rate quadrupled, rising from a rate of 5.0% to reach an all-time high of 20.5% (Ogden & Carroll, 2010; Ogden et al., 2016).

The emotional and psychological challenges caused by obesity are lifelong. Children/adolescents who are overweight/obese experience a poorer QOL than those of normal weight in that they are more likely to experience negative interactions with peers, miss school due to chronic health conditions, and suffer a concomitant loss of self-esteem (Schwimmer et al., 2003).

Costs of Obesity

The total health and medical costs associated with obese children, adolescents, and adults have reached $190.2 billion, of which $14 billion is due to child obesity (Cawley & Meyerhoefer, 2012). Obese children often become obese adults (Obesity Society, 2017). There are medical costs and expenses related to obese individuals' lack of job growth in businesses and organizations. The absentee rate of obese employees costs the nation about $4.3 billion dollars annually because of limited productivity, which stagnates economic growth (Cawley, Rizzo, & Haas, 2007; National League of Cities, 2016; Segal et al., 2016).

The Rise of Poverty

As the weight of children and teenagers has increased, there has also been a growth in the number of single-parent households over the past several decades. Single parent households have increased since 1960 when only 9% of the households were led by single mothers and 73% were led by married couples (Livingston, 2014). By 2013, married households had declined to 46%, and the share of single-parent households had increased to 33% (Livingston, 2014).

Statistically, 39.6% of single parents live in poverty, and 51.9% live in extreme poverty while only 7.6% of married couples live in poverty (U.S. Census Bureau, 2016b). Of the single mother households, 49% had never married, and over one-third of single mothers (34.4%) were food insecure, which means that more than half of their income goes to housing (USDA Economic Research Service, 2013). With an income of about $200 a week for a family of three, housing is more than likely to be in a poor neighborhood (Joint Center for Housing Studies, Harvard University, 2011; Lino, 2014; USDA Economic Research Service, 2013).

Challenges of Poverty

Low-income status is associated with many challenges. There are usually fewer quality grocery stores in poorer neighborhoods (FRAC as cited in Bell, Mora, Hagan, Rubin, & Karpyn, 2013; Ver Ploeg et al., 2010). Residents of low-income neighborhoods usually have limited access to full-service grocery stores and are forced to rely on convenience stores and corner stores that often lack the capacity to store fresh foods and vegetables (FRAC, 2017). Food with no nutrients and higher calories tend to be

associated with poor diet and obesity. The presence of a neighborhood grocery store is a barometer to indicate the availability of fresh foods and produce at reasonable costs, although there are other types of stores that offer food, such as smaller fridge retailers and convenience stores (Treuhaft & Karpyn, 2010).

There are fewer grocery stores in poor areas and more convenience and smaller type grocery stores. Low-income zip codes have fewer grocery stores than wealthier neighborhoods, but they have 1.3 times more convenience stores. Convenience stores and smaller grocery stores are less likely to have fresh produce and other nutritious food. These same neighborhoods also have a higher percentage of fast food restaurants selling inexpensive food with high fat content and (FRAC, 2017; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2006).

Most households in poverty cannot afford to purchase a car to get to grocery stores that are further away. Most of their limited funds go to housing (Single Mother Guide, 2015). The absence of a vehicle makes it difficult for these families to travel to grocery stores with fresh perishable food (Ver Ploeg et al., 2010). With limited transportation, they are more likely to buy food in bulk that is usually nonperishable and has less nutritional value. Not only do the poorer neighborhoods have limited access to fresh, nutritious food because of fewer grocery stores and the lack of transportation, these nutritious foods tend to be more expensive than the sugary, refined grains and high fat food items. Grocery stores correlate to better eating habits such as fruit and vegetable consumption. Poor neighborhoods with a higher percentage of fast food restaurants and convenience stores tend to experience higher rates of unhealthy eating and increased

weight gain because of the high caloric intake and the low nutritious value of available food (Bell et al., 2013; FRAC, 2017).

Overweight/Obesity and Poverty in Single Mother Households

Significant associations have been demonstrated between single-mother-headed households and child and adolescent obesity. Not only have single parent households increased, but even after controlling for diet and physical activity factors, the majority of overweight children and teenagers live in those households. Children of female-headed households have been reported to consume more total fat, saturated fat, and sweetened beverages than those living in two-parent households (Anderson & Whitaker, 2010; Bowman & Harris, 2003). Single parents are more likely to allow children to eat alone, eat from fast food restaurants, and eat larger portions of food. All of these factors are more likely to increase body fat (Huffman et al., 2010; National Center for Health Statistics, 2016).

Chen and Escarce (2010) found that by fifth grade, 26% of obese children were from single-mother families compared to 22% from two-parent families, while Augustine and Kimbro (2013) found that only 17% of overweight/obese children and teenagers live in two-parent households compared to 23% from households led by single mothers. On the other hand, children in single-father headed households that are associated with greater economic resources had the lowest obesity rates at 15% (Augustine & Kimbro, 2013). These differences indicate a connection between SES, poverty, and the development of obesity. Parental feeding styles affect eating frequency, caloric intake, and eating context.

Education and Food Choices

When grocery stores are placed in low-income neighborhoods, little change has been observed in the eating habits of residents. Low-income individuals who have greater access to grocery stores in their neighborhoods buy the same fatty, sugary, and refined grain foods as those who have little access to grocery stores (Boone-Heinonen et al., 2011; Elbel et al., 2015; Sanger-Katz, 2015; Treuhaft & Karpyn, 2013). Although there is some association between income and the types of food purchased, there are links between patterns of food consumption and education, particularly at the school-based level coupled with family and community components (Wang et al., 2013). Therefore, changing habits and perceptions about food and diet is critical. Perceptions and habits about food are aspects of sociocultural identity and life experience. Moreover, stress coping techniques, which sometimes have associations with eating habits (particularly eating disorders), are also often influenced more by education and cultural background than income (Augustine & Kimbro, 2013).

Parental feeding styles educate children and adolescents about their eating habits. When controlling for parental feeding styles, single parenting and income become less correlated with weight/obesity. Although obesity rates have been relatively low among children who experience authoritative parental feeding behaviors, children of two authoritarian parents often have higher incomes and have a 44% chance of being overweight or obese, while children of neglectful parents have a 26% obesity rate (Kanikami et al., 2015). Parental feeding style influences overweight and obesity rates

more than family household type and income (Augustine & Kimbro, 2013; Kanikami et al., 2015).

Food insecurity and obesity can coexist. Food insecurity has an association with obesity in some research, yet there is no clear causality (Treuhaft & Karpyn, 2013). Although there is less healthy food in neighborhoods that house low-income individuals, this does not automatically correlate to low incomes or food insecurity with obesity (FRAC, 2017). Low income and obesity can be independent of one another, as children who live in two-parent households of particular types of parental feeding style can suffer from higher obesity rates than lower-income, single parents with authoritative feeding styles (Augustine & Kimbro, 2013; Kanikami et al., 2015). There are other factors that are associated with obesity.

Whether or not there are grocery stores with fresh, nutritious food in the low-income single mother's neighborhood, the single mother still chooses a consumer. Food choice is not only about how much money a person has, but is also influenced by culture (education). A parent buys food based on his or her income but also within the parameters of his or her culture, exposure, and personal practices. Education, which affects culture, has more influence on what someone will buy (Augustine & Kimbro, 2013). Education also reflects exposure that may change cultural influence.

Culture, stress, and exposure are aspects of parental feeding styles that operate within the household. What a person learns from his or her family and culture, as well as how a person responds to individual stress, affects the parental feeding style that is later shared with a person’s children (Augustine & Kimbro, 2013). The poor and the wealthy

are both challenged with regards to the quality of food, the number of grocery stores, as well as fast food restaurants. There still are choices that individuals make that are based on culture. This, in turn, affects the intrapersonal and interpersonal behaviors that influence the choice of food.

The government-run Supplemental Nutrition Assistance Program (SNAP) assists the poor to obtain food, including nutritious produce and fresh dairy, as well as processed foods (Rosenbaum, 2013). SNAP has 47 million participants, including single mothers with children (Rosenbaum, 2013). Those who are in poverty have greater abilities to purchase less fatty, sugary, and processed grains through the SNAP program, yet often do not do so.

Education, including both formal and informal types, has a greater influence on food choices than income. Formal education comprises the schooling a person receives from grade school to college, as well as specialized curriculum programs such as automobile mechanics or ultrasound technician training. Alongside formal education is informal education. It is the vehicle for the acquisition of attitudes, values, skills, and knowledge from experiences that includes those experiences from formal education, family, neighbors, work, and leisure (Smith, 2002, 2014). Nonformal education that is received in the form of structured curricula involves fewer formal measures and accreditation such as a theater club or extracurricular sports league.

Culture is the shared understanding of a group shaped by experiences. Individuals in a culture can change their beliefs and ideas as they experience new aspects of life

(exposure). Culture also exerts an influence on food intake. A person may not continue with the same cultural behavior that he or she has been taught (Caprio et al., 2008).

Education influences culture over time due to formal, informal, and nonformal experiences. There is an association between education and how to spend money through the lens of a person's education (formal, informal, and nonformal) and how habits are formed through this process. The person with an income makes decisions based on all his/her experiences acquired through formal, informal, and nonformal education, all of which shape attitudes, values, and culture. There is less association between income and choices when compared to education and choice. Education is the process of acquiring knowledge and experiences. This acquisition of knowledge is facilitated through a culture that includes shared experiences with individuals from different backgrounds.

Shaping Eating Habits

Caloric intake, eating frequency, and eating context contribute to childhood/teenage obesity and being overweight. How much food to eat, how often, and where to eat all affect weight. Whether a person eats nutritious food from the supermarket or junk food from a fast food restaurant, he or she still decides on the caloric intake, how often he or she will eat that type of food, and from which establishment (Augustine & Kimbro, 2013). These choices are usually based on culture, habits, and experiences, all of which are changed, gained, and maintained through education.

Those with authoritative parenting styles appear to be less likely to have children who are overweight/obese (Kakinami et al., 2015; Salamon, 2016). In contrast, children whose parents are of the authoritarian style—both regarding parenting and feeding—have

a higher risk of being overweight/obese (Kakinami et al., 2015; Stasenko, 2012). Authoritarian parents are who are strict with rules but may not be affectionate or give a rationale for their rules. They expect their children to follow what they say without explanation or hesitation. Likewise, the authoritarian feeding style is rigid. Parents who exhibit an authoritarian feeding style tell their children what to eat and give them a few choices.

Permissive parental feeding styles allow children to eat whatever and whenever they want. In permissive parental feeding, the parent may not be aware of what the child eats, let alone where, how often, or how much he or she eats. Parents who follow the permissive feeding style love their children and may associate love with food. This style has similar results to, albeit underlain by different motivations, the uninvolved parental feeding style, which is adopted by those parents who lack interest in and do not get involved with their children. They allow their children to eat whatever they want and give their children complete responsibility to decide what they eat, when, and how often.

Parental feeding styles impact caloric intake, eating frequency, and contextual eating (Reicks et al., 2015). Factors associated with parental feeding style include the type of food consumed (caloric intake); eating frequency (the number of times a person eats, including breakfast, lunch, dinner, and snacking frequency); and eating context that includes not only where the individual eats and with whom but also what he/she is doing, feeling, and/or thinking while eating (Reicks et al., 2015). Between 1977–1978 and 2005–2010, eating frequency increased by 1.2 times per day from an average of about three daily meals to 5.1 times a day (Reicks et al., 2015). Similarly, snacking frequency,

which is measured separately from meal frequency, increased by 1.11 times a day between 1977–1978 and 2003–2006 (Reicks et al., 2015). From 2003–2005, snacks caused an additional caloric intake of 500 kilocalories per day among 7–to 12-year-olds (Reicks et al., 2015).

Eating at restaurants has also increased for children and adolescents between 2– to 18-year-olds, contributing to 13% of their total caloric intake (Reicks et al., 2015). Restaurant eating is one of many types of contextual eating associated with parental feeding styles that may affect being overweight or obese. Contextual eating might entail eating from vending machines or school cafeterias while eating independently or dependently and engaging only in eating (primary) or also in another activity while eating (secondary eating).

Monitoring, food preparation, modeling, allowing snacks, or providing encouragement are parental feeding styles (Reicks et al., 2015). These feeding styles are influenced by education and not income. However, education shapes attitudes, habits, and beliefs, all of which embody culture. Parental weight is another factor that may impact monitoring, food preparation, modeling, and encouragement. Children are more likely to be overweight/ obese when they have an overweight/obese parent (Lee, Duffey, & Popkin, 2013). Overweight parents make choices based on what they have learned through education. Through that education, they develop habits, beliefs, and values. Parental weight may also influence parental feeding style because a parent's eating behavior is at the intrapersonal level, and it affects the parent's interpersonal interactions with his or her children (Lee et al., 2013).

Single parents are more likely to have parental feeding styles that align with being overweight or obese. Single parents tend to allow their children to eat alone, to eat from fast food restaurants, or to consume larger portions of food, all of which are more likely to increase body fat (Huffman et al., 2010; National Center for Health Statistics, 2016).

Race/Income

Although societies develop definitions for racial and ethnic groups, people may choose to identify themselves differently, changing their identification at will (Caprio et al., 2008). Tracking the behaviors according to race/ethnicity is difficult, but the social construct is important because the classification of racial groups and ethnicities is based on presumed genetic attributes that contributes to disparities. Therefore, this study included race as a possible mitigating factor for overweight/obesity, although it is a complex construct involving not only genetics, but also physiology, culture, and socioeconomics. There are differences in the degrees of overweight and obese individuals across racial groups (Caprio et al., 2008; Ogden et al., 2016).

Dabrowska (2014) found less disparity across races when stratified for income. The effect of income on various racial groups is not the same, and it is not always significant. Among high-income European Americans, 10.2% are obese or overweight, while 20.7% of low-income European Americans are overweight or obese (Dabrowska, 2014). There is not a significant difference across other racial groups when income is considered (Dabrowska, 2014), although African American girls from high-income homes are more likely to be overweight or obese than those from low-income homes

(Wang & Zhang, 2006). Without stratifying races for income, 22.4% of Hispanic American children, 20.2% of African Americans, 14.1% of European Americans, and 8.6% of Asian American children are obese (CDC, 2017); yet, the prevalence of obesity across these racial groups changes when the other mediating variable of income is considered. Income, including components of income (ie., home and car ownership and race) were two of the mediating variables for this dissertation, as well as education and parental characteristics in the single-parent household.

Disparities in weight are higher among European Americans than other ethnic groups when income is considered (10.2% of high-income individuals are overweight or obese and 20.7% of low-income individuals fall into this category; Dabrowska, 2014). Constantly changing definitions of race and how a person identifies his/her race could be the reason for this variation (Dabrowska, 2014; Wang & Zhang, 2006). Scholars have not proven an association between income and being overweight or obese (FRAC, 2017). People with more income can be overweight/obese because they have the money to eat in excess (Schmeiser, 2009).

Interventions

Interventions at the public policy level of social ecological theory have been ineffective, as seen in the continuing rise in the number of overweight/obese people (Wang et al., 2013). The increasing rates of being overweight and obese are a reflection of the ineffectiveness of policies (Abdukadirov & Marlow, 2012). Some of the policies that have been implemented include

- Requiring restaurants to post nutrition information (Abdukadirov & Marlow, 2012)
- Taxation of sugary drinks (Abdukadirov & Marlow, 2012)
- Promotion of breastfeeding (DeMattia & Denney, 2008)
- The National School Lunch Act (United States Department of Agriculture, 2015);
- Policies to encourage reduced fat consumption (Abdukadirov & Marlow, 2012)

The intervention of requiring restaurants to post nutrition information has not been effective. For example, after New York implemented this policy, researchers did not identify any change in the number of calories consumed at restaurants; a similar study in Seattle reported little change in the number of calories purchased (Abdukadirov & Marlow, 2012). On the other hand, the policy of taxing sugary drinks was found to affect a population that was not the intended target. Those without weight problems cut back on the drinks, but those who were overweight/obese switched to cheaper brands of soda bought in bulk with discounts and drank sweetened teas (Abdukadirov & Marlow, 2012). People in the United States have also been urged to eat low-fat diets. In response, people in the United States began eating food with less fat content but also consumed greater quantities of such foods. Therefore, even as the fat share in the U.S. diet decreased, the total fat calories increased (Abdukadirov & Marlow, 2012). Not only are government policies ineffective, but they have also allowed for more lobbying from agricultural and other food producing groups to pressure the government concerning food regulations.

Reduced caloric intake and exercise are effective in maintaining a healthy weight, and this lifestyle intervention has proven successful for overweight children. After these interventions have been implemented, significant decreases have been observed in body fat measured by skinfold thickness, waist circumference, and blood pressure; this decrease was maintained during follow-up periods (Schaefer et al., 2011). Modifiable factors of intake and exercise should be targeted for weight loss at the intrapersonal and interpersonal level of the socio ecological theory.

Effective Intervention Parallels to the Theoretical Framework

The five-tier Health Impact Pyramid intervention parallels the social ecological model. The five tiers are determinants of health, as the foundation of the pyramid is the composition, organization, and operation of society (Frieden, 2010). The determinants of health as related to race, income, and education have already been discussed as possible modifiers. Each tier is aimed to develop effective interventions to reduce epidemiology. The five tiers are socioeconomic determinants, public health intervention that changes the context of health, protective interventions with long-term benefits, direct clinical care, and counseling and education (Frieden, 2010).

The five tiers of the Health Impact Pyramid interact similar to how each level of the social ecological model. Interventions from the bottom tier to the top tier are aimed at minimizing the impact of the socioeconomic determinants like race, sex, education, and income that broaden their scope as it reaches the top tier (Frieden, 2010). Each tier parallels from the bottom to the top of the social ecological model. The reasons for how these social determinants affect health are not known, nor is it known how they impact

parental feeding style. However, low income and low education adversely affect health, and these factors may be common across racial groups, income status, and gender.

Intrapersonal characteristics include an individual's knowledge, behavior, self-concept, attitude, and skills. In the Health Impact Pyramid, the first tier recognizes that the social determinants shape an individual's development and choices. Intervention at this tier would include improving education and income, as well as societal norms about certain racial groups and genders. The intervention also shows the individual his/her knowledge of self so that he/she behaves accordingly. The second tier is aimed to benefit the individual healthily. Intervention at this level parallels that at the interpersonal level of the social ecological model.

Children will benefit from normal interpersonal interactions whether these are food-related or based on other parental guidance. Social determinants such as race, income, and sex broaden from the individual's self-concept to incorporate wider categories of status. Interactions with family, institutions, community, or policies influence that self-concept. The intrapersonal behavior of a parent occurs within the context of the home environment (Frieden, 2010), and so parental feeding style impacts the intrapersonal level that influences interaction (interpersonal) with the parent's child.

At the organizational or institutional level, social protection interventions with long-term benefits can include infrequent or a one-time intervention for a long-lasting benefit, such as immunization programs. These protection interventions increase health in other public health areas and usually occur through organizations or institutions such as schools, hospitals, and nonprofits. One-time or infrequent interventions to decrease the

number of overweight and obese individuals include patches to lose weight or dispersing weight loss pills. To be effective, however, these one-time or infrequent interventions must consider the reason for prevalence in demographics such as race, income, education, and gender. This type of intervention is usually less successful because it only impacts one individual at a time (Frieden, 2010). Individuals may also use these types of interventions on a short-term basis, failing to change any long-term habits.

The fourth tier represents an ongoing intervention at the community level. The ongoing intervention would entail various organizations and institutions in the community (parallel to the social ecological model). These institutions work together for a common cause targeting the social determinants at a community level. Such interventions would include schools working together with physicians to create nutritious meals for children in certain race, gender, education, and income demographics (Rudeman, 2013; Wang et al., 2013).

The fifth tier, which entails education, should be investigated further. There have been many interventions throughout communities and organizations based on healthy food initiatives and public policies aimed at rewarding and imposing better food choices; yet, their results have been mixed, and the prevalence of obesity remains high among both children and adults (Wang et al., 2013). Public policy at the social ecological level should focus on education to develop habits, attitudes, and behavior changes as well as positive self-concept, regardless of a person's income, race, or gender.

Summary and Conclusions

Initiatives to address obesity as a social problem should focus on the intrapersonal and interpersonal levels of the socioecological model. Weight loss efforts will be most successful at the level of the individual that includes who he or she is as an individual and how he or she interacts with his or her family (DeMattia & Denney, 2008). Eating behavior is shaped by an individual's behavior and the parent's impact on that behavior. Therefore, it is critical to launch initiatives/interventions that incorporate the influence of individuals and their families at the organizational, community, and government levels and not to exclude those two levels of the socioecological model. The individuals in the family should be empowered to make the final decisions on food content, feeding frequency, and eating context based on interpersonal and intrapersonal values and habits.

The Institute of Medicine (as cited in U.S. Department of Health and Human Services, 2012) elucidated five strategies that can facilitate the identification of the best initiatives/interventions to fight childhood obesity and being overweight:

- Government investment does not match the problem; more investment is needed.
- Researchers need to develop evidence-based approaches to guide national actions.
- The evidence is insufficient for an assessment of the country's progress; a larger evidence base is needed to develop initiatives for various settings.

- This evaluation must take place at various levels—including the intrapersonal, interpersonal, community, and government levels—to guide improvements in child behavior.
- There need to be short-term, intermediate-term, and long-term evaluations.

Interventions at the individual and family levels are a required (DeMattia & Denney, 2008). In this study, I examined the influence of intrapersonal and interpersonal factors associated with childhood obesity and being overweight. I aimed to demonstrate the importance of implementing policies that allow organizations and communities to teach parents healthier intrapersonal and interpersonal eating habits despite their prior knowledge that is frequently based on socioeconomic factors associated with being overweight and obese.

In Chapter 3, I present the methodology for the study.

Chapter 3: Research Method

Introduction

The purpose of this quantitative research was to evaluate if the parental feeding styles of low-income, single women are associated with obese or overweight children and to what degree, if any, minority status affects that association. In Chapter 3, I review the research design and rationale, the population, the sample of the population, instrumentation, and operationalization of constructs.

Research Design and Rationale

A cross-sectional design was used for this study, pairing data for children up to age 7 with their single mother over a period as the NLSY was structured. The income of these single-parent homes with children was stratified to analyze relationships between income, single parent feeding styles, caloric intake, eating frequency, eating contexts, and child weight. After the incomes were stratified, the parental feeding style of each parent was examined using his or her paired child's caloric intake, frequency of eating, context of eating, and the association of any weight problems for that child.

A cross-sectional design was more appropriate for this research than a qualitative design, which would rely on observation and interview data, thus excluding empirical information on obesity rates. A cross-sectional study involves the collection of data on the entire study population over a period to examine the relationship between a health condition with other variables of interest (Anderson et al., 2017). Although cross-sectional studies may be descriptive by assessing the frequency and distribution of a health condition across the population, I employed an analytical cross-sectional approach

by investigating the association between risk factors, namely parental feeding style, among single-mother-headed households and obesity. I facilitated the collection of data on parental feeding style and their association with the child's caloric intake, eating frequency, and eating context; I also explored these factors' association with obesity. Scholars may focus not only on the causal nature of parental feeding but also on the perceptions that guide the parents' feeding styles and the perceptions of the child(ren), which may or may not motivate them to continue with their eating behaviors (Qualitative Research Consultants Association, 2017).

The purpose of quantitative research is to quantify data that generalizes the population from a sample (Babbie, 2010). Quantitative analysis is data-driven to demonstrate an association and cause. Studies on parental feeding patterns remain limited (Kakinami et al., 2010), and I wished to examine the association between parental feeding and children's weight problems on a population (single mothers with or without a paramour in the home) based on the nationally based NLSY.

Researchers (Faith et al., 2003; Hubbs-Tait et al., 2008) have shown statistical significance between parental behaviors and parental feeding styles. Feeding practices encompass 21% of the authoritative parenting, 15% of authoritarian parenting, and 8% of the permissive parenting (Hubbs-Tait et al., 2008). There is an association between those parental feeding styles and weight. With an *SD* of 3.0 +0.75, 81% of the mothers in the cohort stated that they give their children a great deal of food choice (Faith et al., 2003). Of the 5% mothers who give their children restricted food choices (authoritative parental feeding style), those parents' parental feeding style have a marginal association to low

BMI in their children (Faith et al., 2003). The questions account for the possibility of mediating variables such as income, race, education, and parental weight.

There were three research questions that were examined in this study. The three research questions and their associated hypotheses are listed below. The research questions below are the parental feeding style questions used in the NLSY.

RQ1: Is there an association between a single mother's food choice for her child and overweight/obesity, when moderated by minority ethnic status?

$H_0$1: There is no association between a single mother's food choice for her child and overweight/obesity when moderated by minority ethnic status.

H_a1: There is an association between a single mother's food choice for her child and overweight/obesity when moderated by minority ethnic status.

RQ2: Is there a relationship between how often a child complies with the mother's food choice decisions and overweight/obesity when moderated by minority ethnic status?

$H_0$2: There is no relationship between how often a child complies with the mother's food choice decisions and overweight/obesity when moderated by minority ethnic status.

H_a2: There is a relationship between how often a child complies with the mother's food choice decisions and overweight/obesity when moderated by minority ethnic status.

RQ3: Is there a relationship between how obedient a child is when told to eat food they do not want to eat and overweight/obesity when moderated by minority ethnic status?

$H_0$3: There is no relationship between how obedient a child is when told to eat food they do not want to eat and overweight/obesity when moderated by minority ethnic status

H_a3: There is a relationship between how obedient a child is when told to eat food they do not want to eat and overweight/obesity when moderated by minority ethnic status

The independent variable in this study was parental feeding styles, and the dependent variable was the dichotomous categorical variable overweight/obese as measured by BMI. Children with a BMI in the 85th percentile or higher were coded as 1, and those with a BMI of less than the 85th percentile were coded as 0. Minority ethnicity status was the dichotomous moderator variable where 0 was nonminority, and 1 was minority ethnic status. The cross-sectional design allowed for pairing between single mothers and their children to observe the association between their eating behaviors and the resulting parental feeding style. There is a dual restriction and responsiveness in the interaction of feeding styles. The responsiveness was the parents' response to the child's reaction to the parental feeding style. The cross-sectional design allowed for the stratification of parents' income, education, weight, and race, as well as the effects of those factors on feeding style and children's weight/obesity status.

Methodology

Population

The NLSY represents cross sections of youth starting in 1979. The population came from 101 primary sampling units (PSU) between the ages of 14 to 21 years of age starting in December 31, 1978. There were 77,000 households who were asked to

participate in the 1979 survey. These 77,000 households came from 101 PSUs in the United States, one PSU in Alaska, and 100 supplementary PSU in the United States. The sample began with 12,686 young men and women but was reduced to 9,600 after the removal of oversamples of poor European Americans and the military. The population had aged as 80% of the original participate remained in the study who were born in the 1950s and 1960s (the original youths were born between 1957 to 1964). The samples from 1978 had been followed to collect data on life stages, life choices, life desires, and resulting consequences. From this sample, I studied approximately 2,490.

Sampling and Sampling Procedures

The sampling population of the NLSY originally began in 1979 with 77, 0000 households with young adults14-21 in PSUs. The original sample continued to be interviewed to chronicle their life events as representative of the lives of people in the United States. This cohort of 1979 had been interviewed every year up to 1994 concerning various subject manners, but now they are interviewed every 2 years. This sampling from the NLSY targeted single mothers from varying demographics. Faith et al. (2003) demonstrated the association between parental behavior and parental feeding style using the NLSY. All of the data from the single mothers, including women of varying educational levels, income, weight, and race, was recorded in the Statistical Package for the Social Sciences (SPSS).

A power analysis was conducted using GPower (Erdfelder & Buchner, 1996) to determine the minimum sample size needed to conduct a moderation analysis by way of regression using two independent variables and one dependent variable. The number of

participants or sample size is important for the effectiveness of its representation of the general population. The accepted standard in quantitative research for power is .80, .05 for the error probability, with a medium effect size of .15 (Pallant, 2016). A power of .80 is statistically acceptable, indicating that the difference between the sample and the actual population may not be identified only 20% of the time. The confidence interval of 95% is the standard, stating that 95% of the time, a statistical analysis of a sample of the population will have the same results with a 5% chance of error (confidence level). The confidence level of .05 minimizes the probability of Type I and Type II errors. Based on the .80 power level, .05 error probability and .15 effect size for multiple logistic regression, the minimum sample size needed for this study was 68. However, the sample size analyses exceeded this value as all respondents in the archival data file who met the research criteria and had complete data were included in the analysis.

Procedures for Recruitment, Participation, and Data Collection

The NLSY recruits from the PSU asking those with the demographics in the PSU to participate. After recruiting, the participate is followed over the years collecting data on various subject matters. I used data from the NLSY. This study is a national representative survey of both men and women who were between the ages of 14-22 when they were first surveyed in 1979 with a sample size of approximately 10,242. They were interviewed annually up to 1994 and are currently interviewed every 2 years.

This sample allows researchers to study a large sample of the population born in the 1950s and the 1960s, which gives data on their transition such as from school to work and from living in parent's home to living in their own home as well as many aspects of

family living in 1979. The NLSY stores information in a history of events format. Important events are chronicled at its inception and end. Not only are important data collected concerning labor, but data are also collected also on marital status, participation in government assistance, sexual activity, fertility, family life, and health. The 1979 survey includes a school survey, aptitude indicator, and information from high school transcripts. In 1980, 94% of the individuals in the NYSL participated in the aptitude indicator and the Armed Services Vocational Aptitude Batter. The 1986 survey conducted interviews on family dynamics including eating habits and nutrition.

The Bureau of Labor Statistics conducts the surveys. The Bureau of Labor Statistics is a division of the United States Department of Labor. This unit in the Department of Labor not only collects and processes data, but also analyzes and disseminates data concerning labor economics/statistics to improve working conditions, promote profitable employment, and advocate for benefits/rights in the workplace. The Bureau of Labor Statistics also collects, processes, analyzes, and disseminates data concerning the health and family demographics of participates. The Bureau of Labor Statistics uses the NLSY gathers data on the lives of people in the United States.

The history of events format allows the study of lives that includes past actions and aspirations. These varieties of topics allow for the study of how one topic affects another. For example, the topic of parental control in feeding (parental feeding style) in the household and its effect on a child's weight can be analyzed for the employment of these children.

Archival Data

I relied on the collection of data on parental feeding styles and their influence on caloric intake, eating frequency, and eating context, as well as the association of these factors with obesity. A quasi-experimental design was inappropriate for this study because such a design is typically used for studies other than secondary studies. I did not apply any treatments to participants, and because I did not analyze causation, a causal-comparative approach was also not appropriate. Because studies on the association between parental feeding style and weight are in their infancy, a quantitative study helps to confirm any observed associations. There was no need for a pilot study as I used variables from a secondary study.

Instrumentation and Operationalization of Constructs

The NLSY, the data source, designed their survey for accuracy, convenience, and privacy to ensure validity and reliability. Given these measures, the design of the NLSY ensures construct and internal validity so that there is external validity in the secondary study. I obtained predictive validity by analyzing the construct of each parental feeding behavior and the paired children's weight with the proper statistical operation. Cronbach's alpha value indicates the reliability of the statistical analysis. Cronbach's alpha also includes the number of participants that are needed for effect size.

Faith et al. (2003) ensured reliability and validity in the NLSY as the first study to make the association between parental feeding styles and parental feeding strategies population based. The partial eta squared statistic shows the percentage of BMI *z* score that controls for other modifiers. Faith et al. (2003) gave validation for further study in

the parental feeding styles and the association with obese/overweight children. Hubbs-Tait et al. (2008) applied univariate ANOVA for statistical analysis of association with the BMI *z* score and independent variables such as maternal BMI, family income, child race, child sex, and maternal education.

The NLSY used data from three questions from the 1986 survey:

1. How much choice is your child allowed in deciding which foods he/she eats at breakfast/lunch?
2. When it is mealtime, how often how often does your child eat what you want him to eat?
3. When your child doesn't eat what you want him to eat, and you tell him to do so, how often does he obey you?

These three questions show parental feeding styles with the choices from the NLSY of 1=*no choice*, 2=*little choice*. 3=*some choice*, and 4=*a great deal of choice* (Faith et al., 2003). The choices for the second and third questions were 1=*almost never,* 2=*less than half the time*, 3=*half the time*, 4=*more than half the time*, and 5=*almost always*. Parental feeding style is control/demandingness with warmth/responsiveness (Hubbs -Tait et al., 2008). Faith et al. (2003) gathered data on the four parental feeding styles.

Authoritative parenting style balances the parent's awareness of healthy intake and the child's preferences. Authoritarian is the parents' restriction of the child's food choices with little consideration of the child's preferences. Permissive parental feeding style is the parent allowing the child to make more of his/her choices, and neglectful

feeding style gives total control of the child to make his/her food choices. Table 1 shows the responses to the three parental feeding style questions and the four feeding styles. Factor analysis was used to confirm the groups.

Table 1

Parenting Feeding Style

Parenting Style	Answer to Q1	Answer to Q2	Answer to Q3
Authoritarian (parent dictates)	1 or 2	4 or 5	4 or 5
Authoritative (parent-child balance)	3	3	3
Permissive (child focused)	4	1 or 2	2
Neglectful (child dictates)	4	1 or 2	1 or 2

Faith et al. (2003) examined single mothers and parental feeding styles. Faith et al. correlated child BMI with parental styles. Faith et al. suggested further study of extreme restrictions of child's food choices (parental feeding styles) and reduced child BMI.

The operationalization constructs are defined as follows:

Authoritative: Directing the child's feeding (Stasenko, 2012).

Authoritarian: The parent guides the child to eat appropriately (Stasenko, 2012).

Permissive: The child is allowed to eat whatever and whenever he/she wants (Stasenko, 2012).

Neglectful: The parent shows neither interest nor awareness of what his/her child eats; there is no structure (Stasenko, 2012).

Overweight: BMI is between the 85th to less than 95th percentile (CDC, 2017).

Obesity: BMI is at the 95th percentile or higher (CDC, 2017).

Children: Aged 0 years to 12-years-old (CDC, 2017).

Adolescents: Aged 12- to 19-years-old.

Cross-sectional analysis: Analysis from a population at a specific point in time.

Control/demandingness: The parent's instructions on the child's eating as it relates to parental feeding style (Hubbs-Tait et al., 2088).

Eating frequency: The number of times a person eats (Reicks et al., 2016).

Caloric intake: The number of calories a person eats (Reicks et al., 2016).

Eating context: The circumstances around which a person eats (Reicks et al., 2016).

Initiative: New programs to solve a problem (DeMattia & Denney, 2008).

Interpersonal: The interaction between two people due to intrapersonal factors (CDC, 2015b).

Intrapersonal: The components that cause an individual to think and behave as he/she does (CDC, 2015b).

Modifiable factors: Factors that influence the degree of association, if any.

Responsiveness: The parent's parental style in response to their child's reaction to their parent's control (Hubs-Tait, 2008)

Data Analysis Plan

The purpose of this study was to examine if there is a relationship between the parental feeding styles of low-income, single mothers and overweight/obesity when moderated by ethnic minority status.

The continuous independent variable in this study was parental feeding styles, and the dependent variable was the dichotomous categorical variable overweight/obese, as measured by BMI. Children with a BMI in the 85th percentile or higher were coded as 1(obesity), and those with a BMI of less than the 85th percentile were coded as 0 (overweight). Minority ethnicity status was the dichotomous moderator variable; 0 was non-African American, and 1 was African American.

There were three phases in the data analysis process: the data preparation phase, the preliminary analysis phase, and the primary analysis phase. The activities are as follows:

Phase 1: In the data preparation phase, the data were imported into SPSS. Frequencies were performed on the data to check for data errors and missing values. If errors were missing, values were found, and if possible, data were corrected. If the data cannot be corrected, those respondents with the data error were not in the data analysis.

After the data were checked and corrected for errors and missing values, the ethnic group membership variable is computed for African American and non-African American. All single women who are classified as European American were coded as 0, and African American and other ethnic groups were coded as 1. The scores for the independent variable questions and the overweight/obesity status variable were in the data file. Interaction terms were added in the data analyses to answer Research Questions 1 through 3. The three independent variable questions and the ethnicity status variable were mean centered in the process of adding interaction terms. Once all of the variables were mean centered, the parental feeding style mean-centered value for Research Question 1 was multiplied by the mean-centered ethnicity status score to obtain an interaction term for the logistic regression analysis. The mean-centered parental feeding style for Research Question 2 was multiplied by the mean-centered ethnicity status score to create the second interaction term. The interaction term added for Research Question 3 was calculated with multiple logistic regression analysis by multiplying the mean-centered parental feeding style, and the mean-centered ethnicity status score.

The second phase of the data analysis process was the preliminary analysis phase. In this phase, descriptive statistics were performed on the demographic variables and the independent, dependent, and moderator variable. Means and standard deviations were computed for the continuous independent and dependent variables. Frequencies were computed for the dichotomous moderator variable.

The primary analysis phase was the final phase. In this phase, data analyses were calculated to answer the three research questions. Because the research question evaluates

the relationship between a categorical dependent variable, a continuous independent variable, and the interaction term moderator variable, multiple logistic regression was the appropriate statistical analysis. If the interaction term were significant, ethnicity status of African American/non-African American would moderate the relationship between parental feeding style and overweight/obesity. If the interaction term were not significant, ethnicity status would not have moderated the relationship between parental feeding status and overweight/obesity. In this instance, the null hypothesis was not rejected.

Threats to Validity

External Validity

External validity is the extent to which the study results can be generalized. The NLSY interview, the sample population, documents the time frame of participates' lives from a specific population targeted. The original study came from 202 sampling units throughout the country including Alaska. This process ensures external validity in that the 202 sampling units were random and that 84% of the original cohort still participates. (Babbie, 2010; Kadir & Qureshi, 1994; Trochim, 2006).

This research applied statistical analysis for a specific demographic of the population. The NLSY samples are a good representation of a specific population; I purposely focused on single mothers. Therefore, to ensure validity, the results were not generalized to all demographics that are not represented by the appropriate effect size. The focus was the parental feeding styles of single mothers and possible associations with their children's weight or obesity. The sample included single mothers from all areas of the United States. To improve the external validity (Trochim, 2006), there would need

to be random selection and replication, though not for proximal similarity. Because I studied single mothers over a period from the original cohort, I did not allow for random selection, but the statistical analysis of stratification ensures validity.

Validity can be extrapolated from the NLSY samples and the statistical analysis in SPSS. A sample size calculation was conducted to ensure sufficient participants for effect size. The number of participants in a sample is important to ensure that any sample from the population is representative of that population (confidence interval), with only slight errors (confidence level).

Internal Validity

Internal validity was established by Faith et al. (2003) with the establishment of statistical significance of a parental feeding style and BMI and by Hubbs-Tait et al. (2008) with the demonstration of statistical significance in parental styles and parental feeding behaviors. Both types of research controlled for all possible confounders. In this study, the methodology and instrument were the same as in Faith et al. (2003) to study the association between parental feeding style and the weight and obesity of the children. I aimed only to determine an association between single mothers' feeding styles and their children's weight or obesity. Association is a prerequisite to causality (Trochim, 2006). Along with association, there must be a cause and an effect relationship in which there is no possibility of anything else causing the effect.

I used data from the NLSY that published a detailed codebook with descriptions of the variables and computers for immediate coding. The results of the hypothesis were examined for their alignment with the independent and dependent variables of this

dissertation (Kadir & Qureshi, 1994) and revealed no association. Although it is often difficult to determine whether an outcome followed exposure in time in cross-sectional studies (Anderson et al., 2017), chronic conditions such as obesity can be more convincingly linked to particular risk behaviors. Nonetheless, this topic will require further studies to establish cause and effect.

Construct Validity

There were minimal threats to construct validity. The operationalization constructs of parental feeding styles were defined and only those defined constructs from specific questions in the survey which have already been measured were used. The same questions from a previous study were used but applied to a particular demographic who were already included in the prior study. Face validity and content validity (Trochim, 2006) are imperative for construct validity. Constructs are to have the intended meaning that needs to be measured. The codebook ensures that every aspect of the description of the construct is considered as a variable for the analysis based on its construct.

There were minimum threats to construct validity in this study. All of the possible threats were minimized. By using the questions reflecting behavior as defined by either of the four parental feeding styles, the questions chosen for the study aligned with the defined behavior of the parental feeding styles as well as the predicted outcome. There were minimal threats in this secondary study because I measured the defined operational constructs of parental feeding styles. Confounders were stratified to statistically analyze each confounder's effect on the data. Although all studies have some degree of threat to construct validity, the threats should be minimized as much as possible (Trochim, 2006).

Research must be valid to be reliable. Because the constructs were defined so that the best variables for analysis are chosen, there was criteria-related validity. Scholars have demonstrated an association between parental feeding styles and children's weight or obesity for the general population; therefore, it was hypothesized that there will be an association between the feeding styles of single mothers and their children's weight (predictive validity). Construct validity can demonstrate the differences in feeding styles and the association of varying degrees of obesity.

Ethical Procedures

Confidential information should be protected. In this secondary study, there was no identification of participates from the original study. The Geocode Data provides data for a variety of counties and is confidential. A researcher obtains the geocode only after completing the Bureau of Labor Statistics geocode agreement procedure (Bureau of Labor Statistics, 2002).

This dissertation was reviewed by Walden University's Institutional Review Board (IRB) for approval to ensure that it has adhered to Walden University's ethical standards and those of the U.S. government. An application to Walden's IRB must be submitted before any research is conducted. Walden's IRB reviews recruitment materials, data collection, participants, conflict of interests, confidentiality, and informed consent. Walden's IRB enforces standards that protect participants while researchers conduct studies for the betterment of society. The dissertation raised no ethnical concerns because I used secondary data from surveys that have already followed the IRB guidelines.

Summary

Excess weight and obesity must become less prevalent in the United States to decrease mortality and morbidity rates and their associated economic and social costs. To accomplish this goal, there must be more research on the risk factors that affect childhood overweight/obesity, which are rooted in social, economic and cultural conditions, so that intervention can start by addressing those risks. I investigated interactions in the household, specifically the intrapersonal and intrapersonal aspects of the socioecological model, to identify the effects of parental feeding styles on obesity. I hypothesized that parental feeding styles are associated with children's weight.

In Chapter 4, I present the results of the study.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to evaluate any association between parental feeding styles of low-income, single women with obese or overweight children and to what degree ethnicity affect that association. The independent variable in this study was parental feeding styles, and the dependent variable was the dichotomous categorical variable overweight/obese, as measured by BMI. Children with a BMI in the 85th percentile or higher were coded as 1, and those with a BMI of less than the 85th percentile (BMI less than 16.9) were coded as 0. Minority ethnicity status was the dichotomous moderator variable, where 0 was nonminority, and 1 was minority ethnic status.

In this chapter, I report the data that includes a description of the sample and a detailed reporting of the results. This results section is a description of the three phases of the data analysis process, including the data preparation phase, the preliminary analysis phase, and the primary analysis phase.

Data Collection

I used archival data from the NLSY 1986. The sample was downloaded from the Bureau of Labor Statistics at www.bls.gov/nls/. The data file was downloaded into SPSS v22 where various analyses and procedures were performed on the data. There was a total of 1,630 children who participated in the study. There was a total of 834 (51.2%) males and 796 (48.8%) females. There was a total of 842 (51.7%) minorities (African Americans and Hispanic Americans) in the study and 788 (48.3%) nonminorities

(European Americans) in the study. The average age of the children in the study was 4.4 years, and the average BMI scores were 15.9 (*SD* = 5.31).

The first independent variable was "the amount of choice a child has with food" where 1 was *a great deal of choice* and 4 was *no choice*. The mean scores were 1.97 (*SD* = .77)-Table 2. The second independent variable was "how often does the child eat what Mom wants" with 1 is *almost never*, and 5 is *almost always*. The overall mean score was 3.99 (*SD* = 1.03). See Table 2. The final independent variable question was "how often the child obeys when told to eat food"; 1 was *almost never* and 5 was *almost always* (Table 2). The mean score across all respondents was 3.70 (*SD* = 1.10). The mean scores for the three independent variables by ethnicity and by obesity status are contained in Tables 3 and 4, respectively.

Table 2

Mean Scores for Amount of Choice Child Has with Food, How Often Child Eats What Mom Wants, and How Often Does Child Obey When Told to Eat Food

	N	*M*	*SD*
Amount of choice a child has with food	1630	1.97	.77
How often does the child eat what Mom wants	1630	3.99	1.03
How often does the child obey when told to eat food	1630	3.70	1.10

Table 3

Mean Scores by Minority Status for Age, Amount of Choice Child Has With Food, How Often Child Eats What Mom Wants, and How Often Does Child Obey When Told to Eat Food

	Minority (*n*=842)		Nonminority (*n*=788)	
	M	*SD*	*M*	*SD*
Age	4.4	.85	4.4	.86
BMI	15.92	4.09	15.93	6.37
Amount of choice a child has with food	2.10	.81	1.83	.70
How often does the child eat what Mom wants	3.99	1.04	3.99	1.02
How often does the child obey when told to eat food	3.73	1.08	3.66	1.12

Table 4

Mean Scores by Obesity Status for Age, Amount of Choice Child Has with Food, How Often Child Eats What Mom Wants, and How Often Does Child Obey When Told to Eat Food

	Obese (*n*=1,287)		Not obese (*n*=313)	
	M	*SD*	*M*	*SD*
Age	4.33	.88	4.40	.84
BMI	20.29	10.65	14.86	1.36
Amount of choice a child has with food	1.95	.77	1.98	.77
How often does the child eat what Mom wants	4.06	1.04	3.98	1.03
How often does the child obey when told to eat food	3.74	1.08	3.69	1.11

Results

There are three phases in the data analysis process: the data preparation phase, the preliminary analysis phase, and the primary analysis phrase (Green & Salkind, 2013; Pallant, 2016). The first phase is the data preparation phase. The data are first checked for errors and missing values using the descriptive statistics procedure. The cases that have missing data will be removed from the analysis. After the data are checked and cleaned, new variables are computed or recoded (Pallant, 2016). The new variables are created either by recoding or through new computations. During the preliminary analysis,

descriptive statistics are performed on the demographic variables to provide frequencies (if the data are categorical). Alternatively, the data are measured with means and standard deviations if the data are continuous. During this phase, the test of the assumptions of the multiple logistic regression is conducted. These tests include linearity and multicollinearity (Field, 2013). The final phase is the primary analysis phase. The multiple logistic regressions were conducted to answer the three research questions.

Data Preparation Phase

The data were entered into SPSS, and frequencies were performed on the data. I found that there were no missing values or data errors in the archival data file. All 1,630 respondents were used in the file. BMI was calculated from the height and weight data for each child in the sample. The calculation for BMI was weight (lbs.)/ (height^2 (inches)) x703 (CDC, 2018). Next, ethnicity was recoded from 1-HispanicAmerican, 2-African American, 3- Non-Hispanic, non-African American to 0=nonminority (Non-African American, Non-Hispanic American), and 1=minority (African American and Hispanic Aemrican). Obesity was computed using BMI. A BMI of more than 16.9 was coded as 1 (obese), and BMI less than 16.9 was coded as 0 (not obese).

Preliminary Analysis Phase

During the preliminary phase, assumptions of the logistic regression were conducted. The logistic regression only has two assumptions, linearity and multicollinearity (Field, 2013). Linearity was assessed by adding an interaction term to the regression model for the independent variables. The interaction terms consisted of the log of the independent variable multiplied by the independent variable. If the *p*-value of

the interaction term is .05 or greater, then there is no violation of linearity (Field, 2013; Pallant, 2016). Multicollinearity was assessed by calculating the variable and control variable inflation factor (VIF) in SPSS. If the VIF value is less than 10, there is no multicollinearity (Field, 2013; Pallant, 2016). Results of the checks of assumptions indicated that there was no violation of the assumptions of the logistic regression.

Table 5

Logistic Regression Check for Multivariate Linearity Using the Log Variable Interaction Terms

	B	S.E.	Wald	*df*	*p*	Exp(B)	VIF
Choice	-.244	.592	.170	1	.680	.783	1.00
Mom wants	-1.018	.831	1.498	1	.221	.361	1.40
Obey	.948	.715	1.757	1	.185	2.582	1.40
Choice by LnChoice	.118	.339	.122	1	.727	1.126	
Mom wants by Ln Mom wants	.491	.369	1.768	1	.184	1.634	
Obey by LnObey	-.433	.325	1.777	1	.182	.649	
Constant	-1.178	1.458	.653	1	.419	.308	

Primary Analysis

In the first research question, I wished to determine if there was an association between the amounts of food choice a single mother gives her child and obesity when moderated by minority ethnic status. The null hypothesis stated that there is no association between the amount of food choice a single mother gives her child and obesity when moderated by minority ethnic status. I found that ethnicity status did not moderate the relationship between the amount of food choice a single mother gives her child and obesity as the interaction term was not significant ($B = .116$, $p = .067$). Additionally, the amount of food choice a single mother gives her child was not a significant predictor of child obesity, $\chi^2(2, 1{,}630) = 3.70$, $p = .157$. Based on these results, the null hypothesis was not rejected. See Table 6.

Table 6

Logistic Regression Predicting Obesity Using Amount of Food Choice a Single Mother Gives Her Child

							95% C.I. for EXP(B)	
	B	S. E.	Wald	*df*	*p*	Exp(B)	Lower	Upper
Choice	-.143	.099	2.072	1	.150	.867	.713	1.053
Choice by Ethnicity Status	.116	.063	3.349	1	.067	1.123	.992	1.271
Constant	-1.263	.177	51.033	1	.000	.283		

In the second research question, I wished to determine if there was a relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status. The null hypothesis stated that there is no relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status. When the moderator variable was forced into the model, I found that ethnicity ($B = .04$, $p = .174$) did not moderate the relationship between how often a child complies with mother's food choice decision and

obesity as the *p*-value was greater than .05. Additionally, the model was not statistically significant, χ^2 (2, 1,630) = 3.34, p = .19 indicating that the model was not able to distinguish between children who were and were not obese. Based on the results of the logistic regression, the null hypothesis was not rejected. See Table 7.

Table 7

Logistic Regression Predicting Obesity Using How Often a Child Complies with Mother's Food Choice Decision

						95% C.I.for EXP(B)	
	B	S. E.	Wald	*df*	*p*	Exp (B)	Lower	Upper
Mom wants	.053	.065	.676	1	.411	1.055	.929	1.198
Mom wants by ethnicity status	.042	.031	1.846	1	.174	1.042	.982	1.107
Constant	-1.725	.261	43.723	1	.000	.178		

In the third research question, I analyze a possible relationship between obedience of a child when told to eat food he or she does not want to eat and obesity when moderated by minority ethnic status. The null hypothesis stated that there is no relationship between how obedient a child is when told to eat food he or she does not want to eat and obesity. The logistic regression revealed that ethnicity status (B = .054, p

= .104) did not moderate the relationship between how obedient a child is when told to eat food he or she does not want to eat and obesity because the *p*-value was not less than .05. Additionally, the model as a whole was not a significant predictor of obesity, χ^2 (2, 1630) = 3.17, *p* = .20. Therefore, the null hypothesis was not rejected (Table 8).

Table 8

Logistic Regression Predicting Obesity Using How Obedient Child is When Told to Eat Food They Do Not Want to Eat as the Predictor

	B	S.E.	Wald	df	p	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Obedient	.0111	.0611	.029	1	.864	1.011	.896	1.140
Obedient by ethnicity status	.054	.033	2.647	1	.104	1.055	.989	1.125
Constant	-1565	.226	48.107	1	.000	.209		

Summary

The purpose of this quantitative research study was to evaluate the parental feeding styles of low-income, single women's association with obese or overweight children when moderated by ethnicity status. I used archival data from the NLSY 1986. The sample was downloaded from the Bureau of Labor Statistics at www.bls.gov/nls/.

The data file was downloaded into SPSS v22 for analyses. There was a total of 1,630 children who participated in the study.

The first research question was based on determining an association between the amounts of food choice a single mother gives her child and obesity when moderated by minority ethnic status. The results of the logistic regression indicated that ethnicity status was not a significant moderator, and the amount of food choice a single mother gives her child was not a significant predictor of child obesity status. The second research question was based on determining a possible relationship between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status. The results indicated that minority status was not a significant moderator, and the model as a whole was not the statistically significant predictor of obesity status. The third research question asked whether a relationship between how an obedient child is when told to eat food he or she does not want to eat and obesity when moderated by minority ethnic status. The logistic regression revealed that ethnicity status was not a significant moderator. Also, a child's obedience when told to eat food he or she does not want to eat was not a significant predictor of obesity status.

In Chapter 5, I present the conclusion of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative research was to evaluate the degree of association between the parental feeding styles of low-income, single women with obese or overweight children and the degree minority status (African American and Hispanic American) affects that association. Interventions at the organizational, community, and policy levels have been ineffective based on the high percentage of childhood obesity, especially among low-income, single-parent households (National Center for Health Statistics, 2014). Effective interventions can lower the prevalence of overweight and obesity in low-income, single mothers' households.

Amount of food choice did not significantly predict obesity, and minority status was not a significant moderator (Question 1). The frequency of a child's obedience to a mother's food choice also was not a predictor of the child's overweight or obesity. Minority status as a moderator did not impact the association (Question 2). The obedience of a child complying with his or her mother's food choice even when he/she would rather eat something else was not a predictor of that child's overweight/obesity. Minority status as a moderator for Research Question 3 also did not significantly impact the association. Therefore, the null hypothesis was not rejected for Research Question 1, 2, nor 3.

There are five sections in this chapter: interpretations of the findings, limitations of the study, recommendations, and implications of the research. In the interpretations of the findings, I interpret the context of the theoretical framework and the peer-reviewed

literature. In the limitations section, the conditions that cause restrictions due to the methodology affecting outcome is discussed. I discuss recommendation for future studies. In the implications section, there is a discussion on the possible application of the results based on the methodology and the theory in the present study. I also summarize and discuss suggestions of applications in this the area of concern and its impact on future studies.

Interpretation of Findings

The Context of the Theoretical Framework

The theoretical framework for this dissertation was the social ecological theory (Bookchin, 1964; Winch, 2012). Social ecological theorists examine how individual behaviors are shaped by the social environment. I emphasized the McLeroy et al. (1998) approach to the social ecological model, including its multiple levels of behavior and reciprocal frameworks of influence. These intrapersonal, interpersonal, organizational, community, and public policy levels are in continual interaction, changing behaviors and causing new behaviors to interact within the five levels (CDC, 2015b; McElroy et al., 1988; Winch, 2012).

At the individual level, intrapersonal characteristics influence behavior, knowledge, skills, and self-efficacy while the interpersonal level includes the relational processes among family, friends, and peers who help establish norms and provide emotional support along with a sense of group identity. The organizational level comprises churches, stores, and community organizations that set rules, regulations, and policies to promote or restrain certain types of behavior. The community either promotes

or restrains behavior according to its norms. The public policy level (represented by local, state, national/global laws, and policies) is where official interventions are formulated for behavioral improvement (National Center for Health Statistics, 2014; Winch, 2012). The social ecological model has been applied to a variety of behavioral fields in public health.

There was an expected result for each of the research questions based on the theoretical framework. For Research Question 1, I expected that a single mother's degree of food choice for her children would result in those children being less likely to be overweight or obese even when moderated by the ethnicity of African American or Hispanic American. The results did not show the single mothers' degree of food choice as a significant predictor of the child's overweight or obesity. Minority of African American or Hispanic American was also not a significant moderator. Therefore, based on the theoretical framework, I did not confirm what was expected in the hypothesis.

It was expected in Research Question 2 that there was an association between how often (frequency) a child complies with the mother's decision of food choice and obesity when moderated by minority ethnic status of African American or Hispanic American. Based on the theoretical framework, I expected that the more the child complies with his/her mother's food choices, the less likely the child would be overweight/obese. When moderated by the ethnicity of African American or Hispanic American, it was expected that there would be a greater likelihood that their children would be overweight/obese. However, I found that the frequency of the child's compliance to the mother's decision of food choices was not a predictor of the child's

overweight/obesity status nor was there an association with minority of African American or Hispanic American when applied to moderate. Therefore, I did not confirm the expectation based on the theoretical framework.

It was expected there was an association between the child's obedience when told to eat food he or she does not want to eat and overweight/obesity when moderated by ethnicity of Black or Hispanic in Research Question 3. I expected, based on the theoretical framework, that the more obedient the child when told to eat food he or she does not want to eat, the less likely the child would be overweight/obese. When moderated by ethnicity of African American or Hispanic American, there would be an association. I found that the child's obedience, even when the child did not want to eat, was not a significant predictor nor was the minority of African American/Hispanic American a significant moderator.

Childhood Overweight/Obesity and Poverty in Single Mother Households

Significant associations were reported between single-mother-headed-households and child /adolescent obesity. Chen and Escarce (2010) found that by fifth grade, 26% of obese children were from single mother families, compared to 22% from two-parent families. Augustine and Kimbro (2013) found that only 17% of overweight/obese children and teenagers live in two-parent households compared to 23% overweight/obese children and teenagers led by single mother households. There was a 31% rate of overweight/obese children and teenagers among cohabitating parents (Augustine &Kimbro, 2013). Single-headed father households were raising children with the lowest overweight/obesity rate at 15% (Augustine &Kimbro, 2013).

Single parents are more likely to allow children to eat alone, eat from fast food restaurants, and eat larger portions of food. All of these factors are more likely to increase body fat (Huffman et al., 2010; National Center for Health Statistics, 2016). Children of female-headed households have been reported to consume total fat, saturated fat, and sweetened beverages than those living in two-parent households (Anderson & Whitaker, 2010; Bowman & Harris, 2003). Single mothers are also more likely to live in neighborhoods with fewer food choices as well be less likely to have the transportation to get to grocery stores that offer nutritional meals (Ver Ploeg et al., 2010)

Based on the previous research on childhood overweight/obesity and poverty in single mothers, there was an expected association for each of the three research questions and overweight/obesity for their children. Question 1 asked whether there was an association between food choices a single mother gives her child and obesity of that child when moderated by the minority ethnic status of African American/Hispanic American. It was expected that the food choice a single mother gives her child when moderated by ethnicity of African American or Hispanic American would have an association with the child's overweight/obesity status. I found that a single mother's food choice allowed to her child was not a significant predictor for the child's overweight/obesity, and ethnicity status of African American or Hispanic American was not a significant moderator. I confirmed previous research literature on childhood overweight/obesity and poverty of single mothers that there is an association of the single mother household and overweight/obesity.

The inquiry in Research Question 2 was whether there is an association between how often a child complies (frequency) with mother's food choice decisions and overweight/obesity including when moderated by minority ethnic status of African American/Hispanic American. It was expected that child compliance with the mother's food choices would have an association with overweight/obesity. When moderated by ethnicity of African American/Hispanic American, I expected that there would be an association. The results indicated that mother's food choices did not show a significant association with overweight/obesity of her children nor when moderated by ethnicity of African American/Hispanic American. Children of single mothers are more likely to be obese regardless of the mother's food choice, the child's frequency of compliance, or when the child would rather eat something else. Therefore, the results of the study confirmed the literature in childhood overweight/obesity and poverty in single mothers. I found a higher association to other possible aspects of the parental feeding style that are culture (education), stress, and exposure.

For Research Question 3, I inquired about the relationship between obedience of a child when told to eat food he or she does not want to eat and overweight/obesity including when moderated by minority ethnic status of African American/Hispanic American. It was expected that whether a child is obedient or not when told to eat food that her or she does not want to eat when moderated by ethnicity of African American/Hispanic American would not show a relationship with overweight/obesity or nonoverweight/nonobesity. The results indicated that a child's obedience to eat food that he or she does not want to eat is not a significant predictor of obesity. The results also

demonstrated that the minority status of African American/Hispanic American was not a significant moderator. Therefore, the results confirmed what was expected in the literature. In the single mother household, other aspects of parental feeding style such as the education(culture) about food choices affect childhood overweight/obesity. Stress and exposure are inherently a part of the part of the parental feeding style. The food choice that a parent offers in her parental feeding style must be nutritional, and nutritional food must be an option despite her circumstance and how it is impacting her (stress).

Race and Obesity

Dabrowska (2014) demonstrated less disparity across races when stratified for income. Among high-income European Americans, 10.2% are obese or overweight, while 20.7% of low-income European Americans are overweight or obese. There is not a significant difference across other racial groups when income is considered (Dabrowska, 2014). However, without stratifying races for income, there are ethnic group differences in obesity. In addition, 22.4% of Hispanic American children, 20.2% of African American children, 14.1% of European American children, and 8.6% of Asian American children are obese (CDC, 2017). Because African American children have one of the highest concentrations of obesity, it is expected that ethnicity will significantly moderate the association between the independent variables of food choice, compliance, and obedience as they relate to the dependent variable, overweight/obesity.

The association between the amounts of food choice a single mother gives her child and obesity when moderated by minority ethnic status of African American/Hispanic American was studied in Research Question 1. Based on research

related to ethnicity and obesity, it was expected that minority status of African American/Hispanic American would moderate the association between the amount of food choice a single mother allows her child and the overweight/obesity status of the child; however, I found that minority status of African American/Hispanic American was not a significant moderator. The amount of food choice a single mother gives her child was not a significant predictor of child obesity status either. Therefore, the results of the study did not confirm what was expected based on previous research on ethnicity and obesity.

The association between how often a child complies with the mother's food choice decision and obesity when moderated by minority ethnic status of African American/Hispanic American was studied in Research Question 2. Based on research related to ethnicity and obesity, it was expected that ethnicity status of African American/Hispanic American would moderate the association between child compliance to the mother's food choices and obesity status. The results indicated that minority status of African American/Hispanic American was not a significant moderator. A child's compliance with mother's food choice was not significantly associated with overweight/obesity status. Therefore, the results of the study did not confirm what was expected based on previous research on ethnicity and obesity.

In Research Question 3, I determined whether there is an association between how obedient a child is when told to eat food he or she does not want to eat and obesity including when moderated by minority ethnic status of African American/Hispanic American. Based on research of the association of ethnicity and obesity, it was expected

that ethnicity of African American/Hispanic American would moderate the association between how obedient the child is when told to eat food he or she does not want to eat and obesity status; however, I found that minority of African American/Hispanic American was not a significant moderator. A child's obedience, when told to eat food he or she does not want to eat, was not a significant predictor of overweight/obesity. Therefore, the results of the study did not confirm what was expected based on previous research on ethnicity and obesity.

Limitations of the Study

There were three limitations associated with this study. Quantitative studies describe "what is" from a numeral standpoint. Quantitative studies do not give in-depth explanations about the existence or nonexistence of the association between variables (Creswell, 2018; Leedy & Omrod, 2018). To obtain detailed information on the association between variables, a qualitative methodology is needed because the researcher can employ in-depth interviews with respondents to investigate deeper reasons for associations or possible reasons between associations.

Secondly, the use of secondary data is inherently a limitation because secondary data are collected to answer different research questions based on other hypotheses other than those of the current study. Important variables may be missing from the archival data file (Cheng & Phillips, 2014). Hence, the reliability and quality of the current study depend on the quality and reliability of effect size and conclusions of the primary data study.

The other limitation of this study was that it was based mainly on self-reported data. These self-reported data are limited because they were not independently verified (Creswell, 2018; Leedy & Omrod, 2018). Additionally, self-reported data can contain bias from sources that can cause limitations. These biases can include selective memory and exaggeration, which is the misrepresenting outcomes or embellishing events to be more significant than the data suggests (Creswell, 2018; Leedy & Omrod, 2018).

Recommendations

Based on the limitations stated above, it is recommended that there be a qualitative analysis to determine the reasons why there was not a significant association between the three feeding style variables and overweight/obesity status. There may be other types of social interactions (social ecological theory) or variables that are more predictive of obesity status than feeding styles.

The other components of parental feeding style (education-culture, stress, exposure) may be qualitatively explored. It is also recommended that there be a qualitative study with a naturalistic observer who may be trained to study the interaction between the mother and child during meal time. Although the act of the observation may change the subjects' behavior, it still can provide more insights as long as validity has been established. The qualitative approach could address the limitations associated with secondary data (this would be a primary study) with self-reported data because the trained observer would be scoring the parental feeding style and its dynamics between the mother and child.

Implications for Positive Social Change

I found that regardless of the parental feeding style of the single mother, there was not an association with overweight/obesity status. Previous research on single mothers and child obesity has indicated that children of single mothers tend to be more obese than their two-parent family counterparts. Chen and Escarce (2010) found that by fifth grade, 26% of obese children were from single-mother families, compared to 22% from two-parent families. Augustine and Kimbro (2013) found that only 17% of overweight/obese children and teenagers live in two-parent households, compared to 23% from households led by single mothers.

I found that educating single mothers on the nutritional food choices and behavior around food even in times of stress may allow more insight to better food choices for the single mother in her parental feeding style. Education, including both formal and informal types, has a more significant influence on food choices than income. Formal education is the knowledge a person receives from grade school to college, as well as specialized trade programs. Informal education is the obtaining of attitudes, values, skills, and knowledge from experiences from formal education as well as from family, neighbors, work, and leisure (Smith, 2002, 2014). Education impacts the cultural environment and food; education impacts how a single mother interacts with food whether stressed or not (Wang et al., 2013). Educating the parent on the appropriate foods for healthy living could have a positive impact on the choices allowed by that single mother in her parental feeding style, which may then reflect an association to child/adolescent overweight/ obesity. This positive impact would benefit society with

healthier children and lower health care costs. Educating single mothers about proper nutrition and eating habits/ practices would give these children/adolescents the opportunity to share their knowledge with their children through the interpersonal interactions stated in the social ecological theory.

Conclusions

I found that there was no relationship between the parental feeding styles of single mothers and childhood/ adolescent overweight/ obesity status when moderated by minority status of African American/Hispanic American. However, previous research has noted a relationship between single motherhood status and childhood obesity. The food the single mother gives, and the children/adolescent's context of eating, is more important than the act of giving a choice because the mother's food choices may not be the best food choice anyway. Therefore, targeting the three other aspects of parental feeding style by educating the mother on appropriate food choices is the best way to decrease the obesity rates of children/adolescents.

References

Abdukadirov, S., & Marlow, M. (2012, June 5). Government intervention will not solve our obesity problem. *US News & World Report*. Retrieved from http://www.usnews.com/opinion/blogs/economic-intelligence/2012/06/05/government-intervention-will-not-solve-our-obesity-problem

ACS, G., & Nelson, S (2003). *Changes in family structure and child well-being: Evidence from the 2002 National Survey of American Families*. Washington, D.C.: The Urban Institute.

Anderson, S., Barratt, H., Bindra, R., Blackwood, R., Brambleby, P, Brice A., & Wilknison, P. (2017). *Health knowledge: Public health textbook*. Bucks, UK: Public Health Action Support Team.

Archer, E. (2015). The family trends behind the rise of child obesity. Institute of Family Studies. Retrieved from ifstudies.org

Arredondo, E., Elder, J., Ayala, G., Campbell, N., Baquero, B., & Duerksen, S. (2006). Is parenting style related to children's healthy eating and physical activity in Latino families? *Health Education Research*, *21*(6), 862–871. doi:10.1093/her/cyl110

Augustine, J. A., & Kimbro, R. (2013). Family structure and obesity among U.S. children. *Journal of Applied Research on Children: Informing Policy for Children at Risk*, *4*(1). Retrieved from https://digitalcommons.library.tmc.edu/childrenatrisk/

Augustine, J. A., & Kimbro, R. (2015). Associations and intervening mechanisms

between family structure and young children's obesity. *Journal of Family Issues*. doi:10.1177/0192513X15621344

Babbie, E. R. (2010). *The practice of social research* (12th ed.). Belmont, CA: Wadsworth Cengage.

Bacchini, D., Licenziati, M. R., Garrasi, A., Corciulo, N., Driul, D., Tanas,...Valerio, G. (2015). Bullying and victimization in overweight and obese outpatient children and adolescents: An Italian multicentric study. *PLoS ONE, 10*(11), e0142715. https://doi.org/10.1371/journal.pone.0142715

Baumrind, D. (1966). Effects of authoritative parental control on child behavior. *Child Development*, *37*(4), 887-907. https://doi.org/10.2307/1126611

Bell, J., Mora, G., Hagan, E, Rubin, V., & Karpyn, A. (2013). *Access to healthy foods and why it matters: A review of the research*. Oakland CA: Policy Link and The Food Trust.

Belsky, J. (1980). Child mistreatment: An ecological integration. *American Psychologist*, *34*(4), 320-335. https://doi.org/10.1037//0003-066x.35.4.320

Bookchin, M. (1964). Ecology and revolutionary thought. *Comment, September 1965*. https://doi.org/10.1111/j.1467-8330.1978.tb00113.x

Boone-Heinonen, J., Gordon-Larsen P., Kiefe, C. I., Shikany, J. M., Lewis, & C. E., Popkin, B. M. (2011). Fast food restaurants and food stores longitudinal associations with diet in young to middle-aged adults: The CARDIA study. *Arch Intern Med.*, *171*(13),1162-1170. doi:10.1001/archinternmed.2011.283

Bowman, S. A., & Harris, E.W. (2003). Agricultural research service, US Department of

Agriculture. Research brief: Food security, dietary choices, and television-viewing status of preschool-aged children living in single-parent or two-parent households. *Family Economic Nutrition Review*, *15*, 29-34. Retrieved from https://www.cnpp.usda.gov/family-economics-and-nutrition-review

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, *32*, 513-531. https://doi.org/10.1037//0003-066x.32.7.513

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Byrne, L. K., Cook, K. E. Skouteris, H., & Do, M. (2011). Parental status and childhood obesity in Australia. *Pediatric Obesity, 6*(5-6), 415-418. https://doi.org/10.3109/17477166.2011.598938

Bzostek, S. H., & Beck, A. (2011). Familial instability and young children's physical health. *Social Science & Medicine*, *73*, 282-292. https://doi.org/10.1016/j.socscimed.2011.04.014

Caprio, S., Daniels, S. R., Drewnowski, A., Kaufman, F. R., Palinkas, L. A., Rosenbloom, A. L., & Schwimmer, J. B. (2008). Influence of race, ethnicity, and culture on childhood obesity: Implications for prevention and treatment. *Obesity*, *16*(12), 2566-2577. https://doi.org/10.1038/oby.2008.398

Cardel, M., Willig, A., Duli-Keita, A., Casazza, K., Beasley, M. T., & Fernandez, (2012). Parental feeding practices and socioeconomic status are associated with child adiposity in a multi-ethnic sample of children. *Appetite*, *58*(1), 347-353. doi:10.1016/j.appet.2011.11.005

Cawley, J., & Meyerhoefer, C. (2012). The medical care costs of obesity: An instrumental variables approach. *Journal of Health Economics*, *31*(1), 219-230. doi:10.3386/w16467

Cawley, J., Rizzo, J. A., & Haas, K. (2007). Occupation-specific absenteeism costs associated with obesity and morbid obesity. *Journal of Occupational and Environmental Medicine, 49*(12), 1317-1323. https://doi.org/10.1097/jom.0b013e31815b56a0

Centers for Disease Control and Prevention. (2007) *National Center for Health Statistics, National Health, and Nutrition Examination Survey. Flexible Consumer Behavior Module.* Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2013). *National Center for Health Statistics, National Health, and Nutrition Examination Survey. Flexible Consumer Behavior Module.* Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2015a). *National Center for Health Statistics, National Health, and Nutrition Examination Survey. Flexible Consumer Behavior Module.* Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2015b) *The social-ecological model: A framework for prevention.* Atlanta, GA: National Center for Injury Prevention and Control, Division of Violence Prevention.

Centers for Disease Control and Prevention. (2017). *Childhood obesity facts.* Atlanta, GA: U.S. Department of Health and Human Services.

Chen, A. Y., & Escarce, J. J. (2010). Family structure and childhood obesity: Early childhood longitudinal study -Kindergarten cohort. *Preventing Chronic Disease*, *7*(3), 2800-2810. Retrieved from at http://www.cdc.gov/pcd/issues/2010/may/089156.htm

Cheng, H., & Phillips, M. (2014). Secondary analysis of existing data: Opportunities and implementation. *Shanghai Archives of Psychiatry, 26*, 371-5. doi: 10.11919/j.issn.1002-0829.214171

Crawley, J., Mayrhofer, C. (2012). The Medical Costs of Obesity: an instrumental variables approach. J. Health Econ,31(1), 219 30.doi: 10.1016/j.jhealeco.2011.10.003.

Creative Research Systems. (2012). Sample size calculator. Retrieved from https://www.surveysystem.com/sscalc.htm

Creswell, J, W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches*. Los Angeles, CA: Sage Publications.

Creswell, J. W. (2018). *Research design: Quantitative, qualitative and mixed methods approach* (5th ed.). Thousand Oaks: CA: Sage.

Deckelbaum, R. J., & Williams, C. L. (2001). Childhood obesity: The health issue. *Obesity*, *9*(S11), 239S–243S. https://doi.org/10.1038/oby.2001.125

Dehghan, M., Akhtar-Danesh, N., & Merchant, A. (2005). Childhood obesity, prevalence, and prevention. *Nutrition Journal*, *4*(1), 24-32. doi:10.1186/1475-

2891-4-24

Dabrowska,A.,(2014), Childhood Overweight and Obesity: Data Brief, Congressional Research Service, November 13,2014, p. 1-22.

Demattia, L., & Denney, S. L. (2008). Childhood obesity prevention: Successful community-based efforts. *Annals of the American Academy of Political and Social Science*, *615*, 83-99. doi:10.1177/0002716207309940

Elbel, B., Moran, A., Dixon, L., Kiszko, K., Cantor, J., Abrams, C., & Mijanovich, T. (2015). Assessment of a government-subsidized supermarket in a high-need area on household food availability and children's dietary intakes. *Public Health Nutrition*, *18*(15), 2881-2890. doi:10.1017/S1368980015000282

Erdfelder, E & Buchner, A.(1996). GPower: A general power analysis program. *Behavior Research Methods ,Instruments & Computers* 28(1),p.1-11

Essays, U. K. (2015). Family environment socio economic status and parenting styles in psychology essay. Retrieved from https://www.ukessays.com/essays/psychology/family-environment-socio-economic-status-and-parenting-styles-psychology-essay.php?cref=1

European Food Information Council. (2012). Parental influence on children's food preferences and energy intake. Retrieved from http://eufic.org

Faith, M. S., Heshka, S., Keller, K., Sherry, B., Matz, P, Pietrobelli, A., Allison, D. B. (2003). Maternal-child feeding patterns and child body weight. *Archives of Pediatric Adolescence Medicine, 157*(9), 926. https://doi.org/10.1001/archpedi.157.9.926

Finkelstein, E. A., Fiebelkorn, I. C., & Wang, G. (2003). National medical spending attributable to overweight and obesity: How much, and who's paying? *Health Affairs,* W3-219-26. doi:10.1377/HealthAff.w3.219

Fritzgerald, K.(2013). Obesity Is Now A Disease, American Medical Association Decides. Medical News Today. Retrieved from www.medicalnewstoday.com/articles/262226.php

Food Research and Action Center. (2017). Why low income and food insecure people are vulnerable to poor nutrition and obesity. Retrieved from http://frac.org/obesity-health/low-income-food-insecure-people-vulnerable-poor-nutrition-obesity

Frieden, T. (2010). A framework for public health action: The health impact pyramid. *American Journal of Public Health*, *100*(4), 590-595. Retrieved from http://eufic.org

Fritzgerald, K. (2013). Obesity is now a disease, American Medical Association decides. Medical News Today. Retrieved from www.medicalnewstoday.com/articles/262226.php

Gascon, F., Valle, M., Martos, R., Zafra, M., Morales, R., & Castano, M. A. (2004). Childhood obesity and hormonal abnormalities associated with cancer risk. *European Journal of Cancer Prevention, 13*(3), 193-197. https://doi.org/10.1097/01.cej.0000130021.16182.c3

Geier, A. B., Foster, G. D., Womble, L. G., McLaughlin J., Borradaile, K. E., Nachmani, J. Sherman, S., Kumaniyika, S., & Shultz, J. (2007). The relationship between

relative weight and school attendance among elementary schoolchildren. *Obesity*, *15*(8), 2157-2161. https://doi.org/10.1038/oby.2007.256

Golombok, S., Zadeh, S., Imrie, S., Smith, V., & Freeman, T. (2016). Single mothers by choice: Mother-child relationships and children's psychological adjustment. *Journal of Family Psychology, 30*(4), 409-418. https://doi.org/10.1037/fam0000188

Green, S. B., & Salkind, N. J. (2013). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (7th ed). Upper Saddle River, NJ: Pearson/Prentice Hall.

Grundy, S. M. (1998). Multifactorial causation of obesity: Implications for prevention. *American Journal of Clinical Nutrition*, *67*(3), 563s-572s. https://doi.org/10.1093/ajcn/67.3.563s

Haines, J., Rifas-Shiman, S. L., Horton, N. J., Kleinman, K., Bauer, K. W., Davison, …Gillman, M. W. (2016). Family functioning and quality of parent-adolescent relationship: cross-sectional associations with adolescent weight-related behaviors and weight status. *International Journal of Behavioral Nutrition and Physical Activity*, *13*, 68-80. https://doi.org/10.1186/s12966-016-0393-7

Hill, J. O., & Peters, J. C. (1998). Environmental contributions to the obesity epidemic. *Science*, *280*, 1371–1374. doi:10.1126/science.280.5368.1371

Hoerr, S. L., Hughes, S. O., Fisher, J. O., Nicklas, T. A., Liu, Y., & Shewchuk, R. M. (2009). Associations among parental feeding styles and children's food intake in families with limited income. *International Journal of Behavioral Nutrition and*

Physical Activity, *6*(55), 1-7. https://doi.org/10.1201/b13130-9

Hubbs-Tait, L., Kennedy, T. S., Page, M., Topham, G., & Harrist, A. W. (2008). Parental feeding practices predict authoritative, authoritarian and permissive parenting styles. *Journal of American Diet Association, 108*, 1154-1161. https://doi.org/10.1016/j.jada.2008.04.008

Huffman, F. G., Kanikireddy, S., & Patel, M. (2010). Parenthood: A contributing factor to childhood obesity. *International Journal of Environmental Research and Public Health*, *7*(7), 2800-2810. doi:10.3390/jerph7072800

Johnson, C. L., Dohrmann, S. M., Burt, V. L., & Mohadjer, L. K. (2014). National Health and Nutrition Examination Survey: Sample design, 2011-2014. National Center for Health Statistics. *Vital Health Statistics 2*, 162, 1-33. https://doi.org/10.3886/icpsr02231

Joint Center for Housing Studies, Harvard University. (2011). The state of the nation's housing, 2011. Cambridge, MA. Retrieved from http://www.jchs.harvard.edu/research/publications/state-nation%E2%80%99s-housing-2011

Kadir, M. M., & Qureshi, A. F. (1994). Validity and reliability. *Journal of Pakistan Medical Association*, *44*(6), 155-157.

Kakinami, L., Barnett, T.A., Seguin, L., & Giles, P. (2015). Parenting style and obesity risk in children. *Preventive Medicine*, *75*(18). doi:10.1016/j.ypmed.2015.03.005

Karnik, S., & Karnekar, A. (2012). Childhood obesity: A global public health crisis. *International Journal of Preventative Medicine*, *3*(1), 1-7.

https://doi.org/10.1201/b18227-3

Koplan, J. P. (2005). Extent and consequences of childhood obesity. In J. P. Koplan, C. T. Liverman, & V. I. Kraak (Eds.), *Preventing childhood obesity: Health in the balance*. Washington, DC: National Academies Press.

Lee, H. S., Duffey, K. J., & Popkin, B. M. (2013). The relationship between family and child weight status by household structure in South Korea: 2007–2010. *Nutritional Diabetes*, *3*(6), 1-7. https://doi.org/10.1038/nutd.2013.16

Leedy, P. D., & Ormand, J. E. (2018). *Practical research: Planning and design* (12th ed.). Upper Saddle River, NJ: Pearson Edition.

Lino, M. (2014). Expenditures on children by families, 2013. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. Miscellaneous Publication No. 1528-2013.

Livingston, G. (2014, December 22). Fewer than half of U.S. kids today live in a traditional family. *Fact Tank*. Pew Research Center. Retrieved from http//www.pewresearch.org/fact-tank/2014/12/22/less-than-half-of-u-s-kids-today-live-in-a-traditional-family

Lo, K., Cheung, C., Lee, A., Tam, W. W. S., & Keung V (2015) Associations between parental feeding styles and childhood eating habits: A survey of Hong Kong pre-school children. *PLoS ONE*, *10*(4), e0124753. doi:10.1371/journal.pone.0124753

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In P. H. Mussen (Ed.) and E. M. Hetherington (vol. Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality, and social*

development (4th ed., pp. 1-101). New York, NY: Wiley.

Mather, M. (2010). *U.S. children in single-mother families*. Data Brief. Population Reference Bureau. Retrieved from http://www.prb.org/pdf10/single-motherfamilies.pdf

Mayo Clinic. (2016). Childhood obesity: Complications. Available at http://www.mayoclinic.org/diseases-conditions/childhood-obesity/basics/complications/CON-20027428

McLeroy, K. R., Bibeau D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, *15*, 4, 351-377. https://doi.org/10.1177/109019818801500401

Miura, K., Ballard, E., Clemens, S. L., Harper, C. M., Begum, N., O'Rourke, P. J., & Green, A. (2017). Sex-specific associations with youth obesity in Queensland, Australia. *Public Health*, *145*, 146-148. https://doi.org/10.1016/j.puhe.2016.12.029

Moens, E., Braet, C., Bosmans, G., & Rosseel Y. (2009). Unfavorable family characteristics and their associations with childhood obesity: A cross-sectional study. *European Eating Disorders Review,17*, 315–323. https://doi.org/10.1002/erv.940

National Center for Health Statistics. (2014). Health, United States, 2013. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/nchs/data/hus/hus13.pdf

National Center for Health Statistics. (2015). Health, United States, 2014. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/nchs/data/hus/hus15.pdf

National Center for Health Statistics. (2016). Health, United States, 2015. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/nchs/data/hus/hus15.pdf

National Institutes of Health. (2012). What causes obesity & overweight? U.S. Department of Health and Human Services. Retrieved from https://www.nichd.nih.gov/health/topics/obesity/conditioninfo/pages/cause.aspx

National League of Cities. (2016). Retrieved from nlc.org

Dunleavy, S. (2014, June 11). Single parents are more likely to have obese kids, Australian Institute of Health and Welfare finds. *News.com.au*. Retrieved from http://www.news.com.au/lifestyle/health/single-parents-are-more-likely-to-have-obese-kids-australian-institute-of-health-and-welfare-finds/story-fneuzlbd-1226951040863

Obesity Society. (2015). Cancer and obesity. Retrieved from www.obesity.org

Obesity Society. (2017). Cancer and obesity. Retrieved from www.obesity.org

Ogden, C., & Carroll, M. (2010). Prevalence of obesity among children and adolescents: United States, Trends 1963-1965. https://doi.org/10.1037/e582042012-001

Ogden, C. L., Carroll, M. D., Lawman, H. G., Fryar, C. D., Kruszon- Moran, K., Kit, B.

K., & States, trends 1963-1965 through 2007-2008. (2016). National Center for Health Statistics, Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm

Pallant, J. (2016). *SPSS survival manual: A step by step guide to data analysis using SPSS* (6th ed.). Maidenhead: Open University Press/McGraw-Hill.

Pew Research Center. (2015). Parenting in America: Outlook, worries, aspirations are strongly linked to a financial situation. Retrieved from http://www.pewsocialtrends.org/2015/12/17/1-the-american-family-today

Powell, L. M., Slater, S. J., Mirtcheva, D., Bao, Y., & Chaloupka, F (2006). Food store availability and neighborhood characteristics in the United States. *Preventive Medicine*, *44*(3), 189-195. https://doi.org/10.1016/j.ypmed.2006.08.008

Qualitative Research Consultants Association. (2017). What is qualitative research? Retrieved from http://www.qrca.org/?page=whatisqualresearch

Raj, M., & Kumar, K. (2010). Obesity in children & adolescents. *The Indian Journal of Medical Research,132*(5), 598-607. Retrieved from http://www.ijmr.org.in/

Reicks, M., Banna, J., Cluskey, M., Gunther, C., Hongu, N., Richards, R., & Wong, S. S. (2015). Influence of parenting practices on eating behaviors of early adolescents during independent eating occasions: Implications for obesity prevention. *Nutrients, 7*(10). doi:10.3390/nu7105431

Rhee, K. (2008). Childhood overweight and the relationship between parent behaviors, parenting style, and family functioning. *The ANNALS of the American Academy*

of Political and Social Science, *615*(1)11-37. https://doi.org/10.1177/0002716207308400

Rhee, K. E., Lumeng, J. C., Appugliese, D. P., Kaciroti, N., & Bradley, R. H. (2006). Parenting styles and overweight status in first grade. *Pediatrics*, *117*(6), 2047-2054. doi:10.1542/peds.2005-2259

Robles, B., Frost, S., Moore, L., Harris, C. V., Bradlyn, A .S., & Kuo, T. (2014). Overweight and obesity among low-income women in rural West Virginia and urban Los Angeles County. *Preventive Medicine, 67*(1), S34-S39. https://doi.org/10.1016/j.ypmed.2014.02.016

Rosenbaum,D. (2013). The relationship between SNAP and work among low-income households. *Center on Budget and Policy Priorities.* Retrieved from https://www.cbpp.org/sites/default/files/atoms/files/1-29-13fa-exec1.pdf

Rudeman, M. (2013). *An introduction to the ecological model in public health.* Baltimore, MD: John Hopkins Bloomberg School of Public Health.

Sahoo, K., Sahoo, B., Choudhury, A., Sofi, N., & Bhadoria, A. S. (2015). Childhood obesity: Causes and consequences. *Journal of Family Medicine and Primary Care*, *4*(2), 187-192. Retrieved from http://www.jfmpc.com/

Salamon, M. (2014). Rigid parenting style linked to obese kids. *CBS News*, March 20. Available at http://www.cbsnews.com/news/rigid-parenting-style-linked-to-obese-kids/

Sanger-Katz. (2015, May 8). Giving the poor easy access to healthy food doesn't mean they will buy it. *New York Times*. Retrieved from

https://www.nytimes.com/2015/05/09/upshot/giving-the-poor-easy-access-to-healthy-food-doesnt-mean-theyll-buy-it.html

Scaglioni, S., Salvioni, M., & Galimberti, C. (2008). Influence of parental attitudes in the development of children eating behavior. *British Journal of Nutrition, 99*, s22-S25. https://doi.org/10.1017/s0007114508892471

Schaefer, A., Winkel, K., Finne, E., Kolip, P., & Reiner, T. (2011). An effective lifestyle intervention in overweight children: One-year follow-up after the randomized controlled trial on "Obeldicks light". *Clinical Nutrition*, *30*(5), 629–633. https://doi.org/10.1016/j.clnu.2011.03.012

Schmeer, K. (2012). Family structure and obesity in early childhood. *Social Science Research*, *41*, 820-832. https://doi.org/10.1016/j.ssresearch.2012.01.007

Schmeiser, M. D. (2009). Expanding wallets and waistlines: The impact of family income on the BMI of women and men eligible for the earned income tax credit. *Health Economics*, *18*(11), 1277- 1294. https://doi.org/10.2139/ssrn.1373924

Schwimmer, J. B., Burwinkle, T. M., & Varni, J. W. (2003). Health-related quality of life of severely obese children and adolescents. *Journal of the American Medical Association*, *289*(14), 1813-1819. https://doi.org/10.1001/jama.289.14.1813

Single Mother Guide (2015). Retrieved from https://singlemotherguide.com/about/

Smith, M. K. (2002). Informal, non-formal and formal education: A brief overview of different approaches. *The Encyclopedia of Informal Education*. Retrieved from http://infed.org/mobi/informal-non-formal-and-formal-education-a-brief-overview-of-some-different-approaches

Smith, M. K. (2014). Informal, non-formal and formal education. Retrieved from http://www.infed.org/foundations/informal_nonformal.htm

Stasenko, N. (2012, June 28). Your food parenting style matters. *Feeding Bytes.* Retrieved from http://feedingbytes.com/2012/06/your-food-parenting-style-matters/

Segal, L. M., Rayburn, J., & Martin, A. (2016). *The state of obesity, better policies for a healthier America*. Trust for America's Health and Robert Wood Johnson Foundation. Retrieved from http://stateofobesity.org/healthcare-costs-obesity/

Strauss, R. S., & Pollack, H.A. (2003). Social marginalization of overweight children. *Archives of Pediatric and Adolescent Medicine*, *157*(8), 746-752. https://doi.org/10.1001/archpedi.157.8.746

Sukamolson, S. (2007). *Fundamentals of quantitative research*. Bangkok, Thailand: EJTR.

Treuhaft, S., & Karpyn, A. (2010). *The grocery gap: Who has access to healthy food and why it matters.* Oakland, CA and Philadelphia, PA: PolicyLink and The Food Trust.

Trochim, M. K. (2006). *External validity*. Retrieved from http://www.socialresearchmethods.net/kb/external.php

U.S. Census Bureau. (2006). Table FG6: One-parent family groups with own children under 18, by marital status, and race and Hispanic origin of the reference person: 2005. In *Current Population Survey, 2005: Annual social and economic supplement* (Released May 25, 2006). Washington, DC: Author

U.S. Census Bureau. (2013). Table C8; Poverty Status Food Stamp Receipt and Public Assistance for Children under 18 years old by Selected Characteristics, 2013. Retrieved from https://www.census.gov/data/tables/2013/demo/families/cps-2013.html

U.S. Census Bureau. (2016a). Table C8. Poverty status, food stamp receipt, and public assistance for children under 18 years by selected characteristics: 2016. *America's Families and Living Arrangements*. Washington, DC: Author.

U.S. Census Bureau. (2016b). Table FG6: One-parent family groups with own children under 18, by marital status, and race and Hispanic origin of the reference person: 2016. *America's Families and Living Arrangements*. Washington, DC: Author.

U.S. Department of Agriculture. (2016). Retrieved from http://usda.gov www.ars.usda.gov/research/publications/publication/?seqNo115=215141&pf=1

U.S. Department of Agriculture, Economic Research Service (2013). Household food security in the United States, 2013. Retrieved from https://www.ers.usda.gov/publications/pub-details/?pubid=45268

U.S. Department of Health and Human Services. (2001). *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: Public Health Service, Office of the Surgeon General.

U.S. Department of Health and Human Services. (2007). Identifying and selecting evidence-based interventions. Retrieved from http://casdfsc.org/docs/resources/SDFSC_IOM_Policy.pdf

U.S. Department of Health and Human Services. (2012). Identifying and selecting

evidence-based interventions. Retrieved from http://casdfsc.org/docs/resources/SDFSC_IOM_Policy.pdf

Van der Horst, K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., Van Lente, F., & Brug, J. A. (2007). A systematic review of environmental correlates of obesity-related dietary behaviors in youth. *Health Education Research*, *22*, 203–226. doi:10.1093/her/cyl069

Ventura, A. K., & Birch, L. L. (2008). Does parenting affect children's eating and weight status? *International Journal of Behavioral Nutrition and Physical Activity, 15*(5), 1-12. https://doi.org/10.1016/s1471-0153(01)00024-1

Ver Ploeg, M., Breneman, V., Farrigan, T., Hamrick, K., Hopkins, D., Kaufman, P, & Kim, S. (2010). Access to affordable and nutritious food: measuring and understanding food deserts and their consequences: Report to Congress. Vol. AP-036:160. Washington, D.C.: U.S. Department of Agriculture, Economic Research Service.

Ver Ploeg, M., Mancino, L., Todd, J. E., Clay, D. M., & Scharadin, B. (2015). Where do Americans usually shop for food and how do they travel to get there? Initial findings from the national household food acquisition and purchase survey. Economic Information Bulletin No. (EIB-138), Washington, D.C.: United States Department of Agriculture, Economic Research Service.

Vollmer, R. L., & Mobley, A. R. (2013). Parenting styles, feeding styles, and their influence on child obesogenic behaviors and body weight. *Appetite*, *71*, 232–241. doi:10.1016/j.appet.2013.08.0154

Wang, Y., Wu, Y., Wilson, R.F., Bleich, S., Cheskin, L., Weston, C., …Segal J. (2013). Childhood obesity prevention programs: Comparative effectiveness review and meta-analysis. Comparative Effectiveness Review No. 115. (Prepared by the Johns Hopkins University Evidence-based Practice Center under Contract No. 290-2007-10061-I.) AHRQ Publication No. 13-EHC081-EF. Rockville, MD: Agency for Healthcare Research and Quality.

Wardle, J., Sanderson, S., Guthrie, C. A., Rapoport, L., & Plomin, R. (2002). Parental feeding style and the inter-generational transmission of obesity risk. *Obesity Research*, *10*, 453–462. doi:10.1038/oby.2002.63

Wang, Y.& Zhang, Q. (2006) Are American children and adolescents of low socioeconomic status at increased risk of obesity? Change in the association between overweight and family income between 1971 and 2002. *The American Journal of Clinical Nutrition*, 84(4), 707-716

Winch, P.(2012). Ecological models and multilevel interventions. Baltimore MD): Johns Hopkins Bloomberg School of Public Health. Retrieved from http://ocw.jhsph.edu/courses/healthbehavior change/PDFs/C14_2011

World Cancer Research Fund(n.d.). Retrieved from https://www.wcrf.org/int/about-us