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Impact of a School-Based Obesity Intervention for Minority Female High School Students

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Impact of a School-Based Obesity Intervention for Minority Female High School Students

by

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Approval Page

This applied dissertation was submitted by Eric Hughes under the direction of the persons listed below. It was submitted to the Abraham S. Fischler College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

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Eric D. Hughes
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Abstract

The Impact of a School-Based Obesity Intervention on Female Minority High School Students. Eric Hughes, 2018 Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education. Keywords: body mass index, USDA food pyramid guide, school-based interventions, and female minority student

This applied dissertation was developed to determine if seven motivational group sessions would improve minority female high school students' perceptions toward and knowledge of healthy lifestyle behaviors. The target population for this study was 15 female minority students ages 15-18 who attended a large urban high school and had a body mass index greater than 30.

Participants completed the Healthy Lifestyle Beliefs Scale for Teens and maintained a personal food journal. Within their personal food journals, participants listed the types and amounts of both foods they ate and beverages they consumed over two three-day periods. Participants also were supposed to answer six open-ended questions during week 1 and week 7 of this study; however, they completed the wrong set of open-ended questions, and the researcher was unable to collect this information.

This researcher compared participants' week 1 and week 7 composite scores on the Healthy Lifestyle Beliefs Scale and determined if their eating habits and food choices improved from the week 3motivational session to the week 7 motivational session. There was a statistically significant improvement in participants' perceptions of healthy eating behaviors from the preintervention phase to the postintervention phase: $t(9) = 5.28$, $p = 0.001$ (two-tailed value); however, they did not demonstrate a statistically significant improvement in their eating habits from week 3 to week 7: $t(14) = 0.61$, $p = 0.55$ (two-tailed value).

By participating in the intervention, participants increased their knowledge of healthy eating habits but not their ability to apply their knowledge. Future researchers should conduct a similar study and compare participants' postintervention and preintervention bodymass indexes. Future research should also expand the scope of this study by having participants participate in a moderately rigorous physical activity.

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Chapter 1: Introduction

Statement of the Problem

In the United States, the prevalence of adult obesity increased from 56% in 1990 to almost 67% in 2010 (Caprio et al., 2008; Foster, 2013; Gray, 2010; Groth & Morrison-Beedy, 2011; Guirguis, 2012). The Centers for Disease Control and Prevention (2009) found that obesity contributed to several health-related issues, such as diabetes, hypertension, stroke, heart disease, sleep apnea, and osteoarthritis. Obesity also contributes to psychological and social problems (Center for Disease Control and Prevention, 2009; Kuebler, Yom-Tov, Pelleg, Puhl, & Muennig, 2013). The psychological problems associated with obesity are "depression, anxiety, and eating disorders" (Collins & Bentz, 2009, p. 124). The social problems associated with obesity are isolation, guilt, and stigmatization (Martyn-Nemeth & Penckofer, 2012; Puhl & Heuer, 2010).

From 1980-2010, the increase in obesity rates among adults coincided with an increase in the number of adults diagnosed with diabetes (Center for Disease Control and Prevention, 2010b). The American Society for Metabolic and Bariatric Surgery (AMSMBS, 2013) concluded that individuals who were obese increased their risk of developing diabetes. The AMSMBS also found that "more than 90% of type 2 diabetics are overweight or obese2" (p. 1). The disproportionately high obesity rates among minorities was staggering, with African-Americans and non-Hispanic Blacks at 52% and Hispanics at 47%.

Of particular significance was all minorities ranging in age from 40-49 years old, as this population had the highest obesity rates (Center for Disease Control and

Prevention, 2010a; Simpson, 2011). Researchers believed that culture, genetics, poor dietary habits, sedentary lifestyles, and a lack of physical activity contributed to the high obesity rates among adult minorities (Center for Disease Control and Prevention, 2010b; Guirguis, 2012; Martyn-Nemeth & Penckofer, 2012). To reduce the prevalence of obesity among adults, researchers recommended that teachers educate school-aged children about the health risks associated with obesity and the related benefits of practicing healthy lifestyle behaviors as these behaviors reduce their risk of becoming overweight or obese and developing obesity-related diseases (Center for Disease Control and Prevention, 2015; Foster, 2013; Young, 2013).

Unfortunately, the obesity rate among America's adolescents also increased during the same time span, with minority adolescents having disproportionately higher rates than other adolescents (Arcan, 2009; Caprio et al., 2008; Kim, 2011; Reich, 2013). More specifically, female minority adolescents have a higher obesity rate than male minority adolescents (Caprio et al., 2009; Groth & Morrison-Beedy, 2011; Williams, 2012). When comparing the prevalence of obesity and overweight status among ethnic and racial groups, Williams (2012) found that African American females had the highest rate.

Body Mass Index (BMI) is measured by determining the ratio between weight and height squared. The BMI measures the amount of fat in an individual's body and determines if the individual is in the underweight, normal weight, overweight, or obese range (Gandhe, Lenin, & Srinivasan, 2013; Wertz, 2009). A person is identified as overweight if his or her BMI is from 25.0 to 25.9 and obese if his or her BMI is 30 or greater (Centers for Disease Control & Prevention, 2010a; Centers for Disease Control &

Prevention, 2014; Wertz, 2009).

The problem addressed in this study was the increased obesity rates among minority female high school students who attended the target high school in the southern part of the United States (target school nurse, personal communication, May 15, 2014). Groth and Morrison-Beedy (2011) found that the prevalence of obesity among minority female adolescents had reached epidemic levels. Rodriguez, Weffer, Romo, Aleman, and Ortiz (2011) concluded that low levels of physical activity contributed to the prevalence of obesity among minority female adolescents.

This trend is disturbing because obesity has both short- and long-term health implications for adolescents (Jator, 2014; Schwarz & Peterson, 2010; Young, 2013). The short-term implications of adolescent obesity are low self-esteem, depression, and behavioral issues. Long-term implications include Type II Diabetes, heart disease, metabolic disorders, asthma, sleep apnea, and cancer (Currence, 2013; Groth & Morrison-Beedy, 2011; Jator, 2014;; Young, 2013). Schwarz and Peterson (2010) found that the medical costs associated with adolescent obesity are $14 billion per year.

In addition to health implications, obesity has psychological and social implications for adolescents (Hu, 2014). The psychological implications of obesity include depression, anxiety, and eating disorders (Hu, 2014; Kalra, De Sousa, Sonavane, & Shah, 2012). Unable to control their overeating and its impact on their body weight, obese adolescents feel ashamed, which can lead to them feeling depressed (Kalra et al., 2013). The likelihood of experiencing depressive symptoms due to obese status is higher for female adolescents than it is for male adolescents (Hu, 2014). Hispanic adolescents also have an increased likelihood of experiencing depressive symptoms. The social

implications of obesity are discrimination, poor interpersonal skills, isolation, and low self-esteem (Hu, 2014; Kalra et al., 2012).

Several factors have contributed to the high obesity rates among female minority adolescents in America, including lifestyle, behaviors, physical activity levels, race, culture, and socioeconomic status (Coulter, 2012; Groth & Morrison-Beedy, 2011; Holl, Jaser, Womack, Jefferson, & Grey, 2011; Thompson, 2011; Young, 2013). Jator (2014) believed that socioeconomic factors like income and education levels also influenced the propensity for obesity among minority adolescents. In fact, Jator found that adolescents from low-income backgrounds had a greater chance of being obese than adolescents from high-income backgrounds.

Phenomenon of interest. The focus of this study was to determine if seven carefully crafted motivational group sessions helped to improve minority female high school students' perceptions regarding healthy eating and physical activity. Target participants became aware of the kinds and quantities of food they ingested daily by creating and maintaining a Personal Food Journal during this study. The target participants attended a large urban high school in the southern part of the United States.

Since the early 1980s, the obesity rate among minority female adolescents has increased at a disproportionately higher rate than that of both Caucasian female adolescents and all minority male adolescents combined (Groth & Morrison-Beedy, 2011; Kim, 2011; Kraus, Powell, & Wada, 2012; Rodriguez et al., 2011). Prior studies identified the factors that contributed to obesity among minority female adolescents (Groth & Morrison-Beedy, 2011; Kim, 2011). Kim (2011) investigated the influence that peer interactions within segregated communities had on promoting obesity-related

behaviors and norms among minority female adolescents. Kim concluded that the exact impact of peer interactions on obesity-related behaviors was unclear and that researchers should conduct further studies that considered peer interactions in conjunction with social media.

Background and justification. Benjamin (2010) found that one-third of American children and adolescents were obese or overweight, which compelled health care professionals, school personnel, parents, and community members to implement appropriate educational and intervention strategies. These strategies included establishing nutritional guidelines, providing food choices that are both healthy and appealing to adolescents, limiting the availability of vending machines that sell unhealthy snacks, and mandating physical education classes for all students. This researcher proposed that school leaders should also develop comprehensive health programs that promote and empower students to make healthy food choices and to participate in daily physical activity.

This study was conducted at a large urban high school located in the southern part of the United States. The target school's total student population was 2,385 students (males = 1,270 and females = 1,115). The racial demographics for the target high school were as follows: Hispanic = 45.8%, Black = 35.1%, Caucasian = 9.5%, Asian = 7.0%, Caribbean = 2.2%, and Indian = 0.3% (Broward County Public Schools, 2015-16 enrollment report). This researcher requested a list of potential participants for the study from the school nurse and used the established BMI index as a general criterion for selecting participants. This researcher did not request the specific BMI for any one student nor did he have any interest in obtaining such information.

The academic background and physical training of this researcher add to the credibility of his findings and conclusions. This researcher has a Master of Science degree in exercise physiology and has taught a health and wellness course and a weight-training course at a public four-year college since 2009. The health and wellness course is a prerequisite for those entering one of the Health Science programs, including nursing, dental hygiene, health information technology, and radiography.

In addition, this researcher has been a certified personal trainer through the American College of Sports Medicine since 1995. As a certified personal trainer, this researcher provides small-group and one-on-one instruction to individuals who seek to improve their eating habits, decrease their body fat, and increase their strength, agility, range of motion, and muscle mass. Finally, this researcher has been the head varsity wresting coach at the target high school since 2006.

Additionally, this researcher is the head assistant football coach and a substitute physical education teacher at the target high school. While working in these various capacities, this researcher found that high school and college students lacked a comprehensive understanding of healthy eating habits, the importance of participating in physical activity, and the short- and long-term risks associated with obesity. This researcher purported that a lack of understanding contributed to the increase in the prevalence of obesity among minority female students who attended the target high school.

Deficiencies in the evidence. Kumanyika and Grier (2009) stated, "The research on childhood obesity that is specifically focused on ethnic minority and low-income populations is limited" (p. 206). A review of the related research revealed that prior

studies investigated the impact that obesity intervention programs had on adolescents' and children's healthy eating habits, BMI, levels of physical activity, as well as their understanding of the health issues associated with obesity (Coordinated Approach to Child Health, 2013; Daly, 2013; Foster, 2013; National Dairy Council, 2012; Ofili, 2013; Setlow, 2013; Young, 2013).

Young (2013) believed that school leaders were only able to provide a limited amount of obesity intervention training through health and physical education courses because instructors had neither the time nor the knowledge to implement comprehensive interventions. Relatedly, Young utilized a qualitative research approach to determine male and female adolescents' perceptions of a specific adolescent obesity intervention: "Wellness Incentive to Health (WITH) Program" (p. 6). Young found that the adolescents perceived the intervention increased their knowledge of healthy eating habits and promoted an awareness of the impact that their peers could have on their eating habits.

Daly (2013) sought to determine if an intervention curriculum promoted healthier eating in obese adolescent females who attended a high school located in a Hispanic community, as measured by their BMI percentage. Daly noted that the intervention curriculum was unique because participants received weekly opportunities to practice healthy lifestyle behaviors. Daly concluded that the females who received the intervention curriculum lowered their average BMI more than those who only received instruction regarding nutrition and exercise. Daly attributed the lower BMI of the females to the fact the intervention curriculum provided them with hands-on learning experiences, opportunities to discuss their struggles with food, a support system, and strategies for overcoming the challenges associated with overeating.

Audience. The primary audience for this study was minority female adolescents who attended a large urban high school located in the southern part of the United States and who participated in seven motivational group sessions aimed at improving their knowledge of healthy lifestyle behaviors. By participating in the seven motivational sessions, minority female adolescents developed the requisite knowledge to practice healthy lifestyle behaviors and to improve their overall health. As stated earlier, adolescents with a high BMI, one that is at or above the 85th percentile, are at increased risk of experiencing negative health outcomes, including diabetes, high blood pressure, depression, stroke, and heart disease (Groth & Morrison, 2011; Kulik, 2011).

The findings of this study also were intended to increase the level of knowledge of school district officials and administrators concerning the impact that both healthy eating and physical activity could have on obesity among minority female high school students. Although this researcher only investigated obesity among minority female high school students who attended the target high school, other high school and school district leaders could benefit from the results by developing a clear understanding of the epidemic of obesity among minority female high school students and implementing intervention strategies that address this issue.

Definition of Terms

Acculturation. Schwartz, Unger, Zamboanga, and Szapocznik (2010) defined acculturation as the process whereby individuals adopt the traditions, habits, values, and language of their nonnative country. Interaction between the influential culture and the migrant culture followed by change and integration are the central elements of the acculturation process (Hernandez, Cohen, & Garcia, 2011; Lopez & Miller, 2011).

Body Mass Index (BMI). This is a measurement used to determine obesity ranges in adults and adolescents that considers their height and weight (Shah & Braverman, 2012). The index provides an indirect measure of an individual's body fat percentage. Fouch (2013) stated, "The BMI is calculated as weight in kilograms divided by height in meters squared. In children and adolescents, the BMI is compared to sex and age-specific reference values" (p. 1). The Center for Disease Control and Prevention (2012) concluded that children and adolescents 2-19 years of age are overweight with a BMI at or above the 85th percentile and obese with a BMI at or above the 95th percentile. Sun and Empie (2012) identified two types of obesity: exogenous and endogenous. Exogenous obesity occurs because of excessive calorie intake, while endogenous happens as a result of metabolic factors.

Cardiovascular disease. The American Heart Association (2015) defined cardiovascular disease as a series of related conditions that affects the heart and blood vessels. These conditions cause plaque to build up in the arteries and can lead to a heart attack or a stroke. Adolescents who are obese are at risk of developing cardiovascular disease as adults (Center for Disease Control and Prevention, 2012).

Diabetes. A condition in which the body produces either too little or too much glucose, resulting in an individual's blood sugar being either too high or too low (Center for Disease Control and Prevention, 2010b).

Hypertension. An individual has hypertension if his or her blood pressure is at or above 140/90, with the first number representing the systolic measurement and the second number representing the diastolic measurement (American Heart Association,

2013). Adolescents with obesity have an increased risk of developing hypertension (Soraoka, 2013).

Metabolic syndrome. A combination of medical conditions associated with obesity that includes high blood pressure, elevated blood sugar, low high density lipoprotein (HDL) levels, high triglyceride levels, and abdominal obesity (Miller, Kaylor, Johannsson, Bay, & Churilla, 2014; Weiss, Bremer, & Lustig, 2013). If an individual has three or more of the above-stated conditions, then he or she has metabolic syndrome (Efstathiou, Skeva, Zorbala, Georgiou, & Mountokalakis, 2012). Individuals with metabolic syndrome are at an increased risk of developing cardiovascular disease and diabetes (Efstathiou et al., 2012; Weiss et al., 2013).

Minority female student. For purposes of the study, this researcher defined minority female students as those who were African-American, non-Hispanic Blacks, or Hispanics (Passel, Livingston, & Cohn, 2012). The three primary minority groups in the United States are African-American, Hispanic, and Asian (Passel et al., 2012).

Obesity. Ofili (2013) concluded, "A person is defined as obese with a BMI equivalent to a body weight of 120% or more of his or her ideal weight" (p. 7). Obesity occurs when an individual takes in more calories than he or she burns, resulting in weight gain.

Overweight. Overweight is defined as an individual's total body weight that is above the recommended range for good health as determined by large-scale population surveys (Fahey, Insel, & Roth, 2013).

Physical activity. The Center for Disease Control and Prevention (2010b) recommended that individuals get between 2 and 3 hours of aerobic activity each week.

The aerobic activity should be in intervals of at least 10 minutes and with varying degrees of intensity. The Center for Disease Control and Prevention stated that adolescents should participate in at least 60 minutes of aerobic activity each day, geared towards increasing bone density.

Purpose of the Study

The purpose of this qualitative case study was to determine if seven carefully crafted motivational group sessions that focused on obesity intervention helped to improve minority female high school students' perceptions toward and knowledge of healthy eating habits and physical exercise. This researcher also sought to increase students' knowledge of the health-related risks associated with obesity. Three forms of data collection were to be used to assess the impact that the seven motivational sessions had on minority female high school students' perceptions toward and knowledge of healthy lifestyle behaviors. The three forms were the HLBS, open-ended questions, and Personal Food Journals. Since the participants answered the wrong set of questions, only the HLBS and Personal Food Journal data were used.

Chapter 2: Literature Review

Introduction

Obesity rates among adolescents in the United States increased since the 1970s (Chang, 2012). Ogden, Carroll, and Surveys (2010) found that close to 20% of adolescent males and over 17% of adolescent females were obese. Young (2013) found that these percentages represented an increase of 300% in the prevalence of obesity among adolescents over a 30-year period. This chapter provides the related literature for the following topics pertaining to obesity among female minority adolescents: (a) the definition of obesity, (b) the influence of culture and acculturation, (b) lifestyle factors and behaviors, (c) the health-related risks of obesity, and (d) school-based interventions; the theoretical framework for this study is also described.

Theoretical Framework

Bronfenbrenner's Ecological Systems Theory provides a framework for understanding how the larger contexts influence obesity among adolescents and a theoretical basis for this researcher's study. Bronfenbrenner (1979) believed there were interconnected relationships within these larger contexts. Bronfenbrenner (1984) identified five structures that comprised an adolescents' environment: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Although they have direct and indirect interactions within each of these systems, female minority adolescents' direct interactions with those who are closest to them, which includes their immediate family members and those within their communities, are the most impactful. The microsystem, referred to as the immediate environment, includes the direct interactions that female

minority adolescents have with family, peers, and those within the community (Bronfenbrenner, 1979, 1984).

When considering how each environment within the microsystem influences obesity among adolescents, Jakubowski et al. (2012) found that family had the greatest influence. Bronfenbrenner's second structure, the mesosystem, refers to the interconnectedness that exists between the environments within the microsystem (Bronfenbrenner, 1984). For example, adolescents' home environments influence their behaviors in the school setting (Cluss et al., 2013; Pallan, Parry, & Adab, 2012). Although it does not have a direct effect, the exosystem encompasses the environments that indirectly affect the adolescents' development (Bronfenbrenner, 1977).

Within the exosystem, which is the outer circle of adolescents' lives, the media--including television--indirectly influence adolescents' behaviors (Bronfenbrenner, 1979, 1984). The macrosystem refers to the culture in which adolescents live. The predominant norms of the culture influence the values, beliefs, and traditions of the home (Jakubowski et al., 2012). The chronosystem, which is the final environment, includes both internal and external events that influence obesity among adolescents (Bronfenbrenner, 1977). Randell-Arell and Utley (2014) found that external and internal events influence eating habits, levels of physical activity, and perceptions of obesity among adolescents.

Maley (2012) discussed the appropriateness of utilizing Brofenbrenner's ecological systems theory when considering the factors that impact adolescents' eating habits and their levels of physical activity. Maley believed that a comprehensive approach that recognized the direct and indirect influence of and the interconnected relationship between the environments provided the means through which sustainable

change could occur. Maley noted that this "approach would include youth in exploring this question, interpreting the answers, and making decisions about needed changes" (p. 2). Critical to the success of this approach is the ability of vested entities to work together to bring about change (Maley, 2012). Maley affirmed this researcher's selection of Brofenbrennar's theory as the framework to primarily undergird this qualitative case study.

Obesity: Definition

The International Obesity Task Force (IOTF) and The World Health Organization (WHO) provided the criteria for defining obesity among adolescents (Bibiloni, Pons, & Tor, 2012). Based on a sample that included 97,876 boys and 94,851 girls (ages: birth to 25) from seven countries, the IOTF concluded that a BMI of 30 or greater was the criterion for determining obesity in both male and female adolescents (Bibiloni et al., 2012). The IOTF also determined that a BMI in the range of 25.0 to 29.9 was the criterion for determining overweight status in both male and female adolescents (Bibiloni et al., 2012).

The WHO uses the BMI to classify a person's weight. As stated earlier, Fahey et al. (2013) noted that a person is placed into one of the following four categories: underweight, normal, overweight, or obese. A person with a BMI less than 18.5 is underweight; a person with a BMI from 18.5 to 24.9 is within the normal range; a person with BMI from 25.0 to 29.9 is in the overweight range; a person with a BMI equal to or greater than 30 is in the obese range (Fahey et al., 2013).

Within the obese category, there are three classifications: (a) obese 1 = 30.0-34.9, (b) obese 2 = 35.0-39.9, and (c) obese 3 = equal to or greater than 40 (Fahey et al., 2013;

Kitahara et al., 2013; Twells, Gregory, Reddigan, & Midodzi, 2014). From 2008-2014, Levy (2015) found the number of American adults classified as obese 1, obese 2, or obese 3 increased by almost three quarters of a percent. Levy also concluded that the overall obesity rate among adults increased by over 2% during that time period. Levy believed these increases were disturbing and that treatment measures should focus on addressing the behavioral factors that contribute to obesity. Kitahara et al. (2013) estimated that "6% of the US adult population" was obese 3 and that this segment of the population accounted for approximately one-fifth of the overall per-person health care spending (p. 1). Kitahara et al. also found that individuals classified as obese 3, those with a BMI from 40.0 or more, had higher rates of death from heart disease, vascular disease, diabetes, cancer, kidney-related diseases, and pulmonary disease when compared to nonobese individuals, those with a BMI from 18.5 to 24.9.

The Influence of Culture and Acculturation

Culture is an integrated and unified set of beliefs, practices, traditions, values, and norms that characterize a group of people (Paris, 2015; Sharma, 2012). Acculturation provides a construct for understanding how the beliefs, behaviors, and practices of the dominant culture influence those of another culture (Russell, 2011; Schwartz et al., 2010). Within the construct of acculturation, researchers identified several strategies: assimilation, integration, marginalization, and separation (Allen et al., 2014; Lopez-Class, Castro, & Ramirez, 2011; Shi, 2012).

Researchers utilized different assimilation models to investigate immigrant outcomes in the United States (Allen et al., 2014; Baker, 2013; Lopez et al., 2011). Baker (2013) identified and described two distinct types of assimilation: classical and

segmented. The classical assimilation model asserts that each generation improves educational, societal, and professional opportunities for the subsequent one (Waters, Tran, Kasinitz, & Mollenkopf, 2010). Wang, Quan, Kanaya, and Fernandez (2011) indicated classical assimilation, also called traditional assimilation, is a linear and concurrent process that involves individuals "relinquishing the values and behaviors of their heritage culture while adopting the values and behaviors of their host culture in a unidimensional continuum of acculturation" (p. 277).

The process of assimilating into the main culture occurs in varying degrees, but complete assimilation occurs when an individual's cultural identity is indiscernible (Allen et al., 2014; Ramirez, 2011; Schwartz et al., 2010). Classical assimilation occurred during the first half of the 20th Century when mostly first- and second-generation Europeans migrated to the United States (Baker, 2013; Lopez & Miller, 2011; Waters et al., 2010). Critics of classical assimilation assert that the model does not consider how individuals respond to the predominant culture influencing and defining the direction of their lives (Baker, 2013; Lopez & Miller, 2011).

While classical assimilation is a linear process (Lopez & Miller, 2011; Wang et al., 2011), segmented assimilation is a fragmented, multidimensional process that has several different outcomes (Tiedje et al., 2014; Waters et al., 2010). Tiedje et al. (2014) found that a confluence of factors contributed to a multidimensional, nonlinear assimilation process, including "the family, transitional events, socioeconomic context, food components, food production methods, physical outcomes, psychosocial outcomes and personal goals" (p. 13). The multidimensional characteristic is especially prevalent when investigating the dietary and healthy lifestyle patterns of ethnic groups who

assimilate into American culture (Tiedje et al., 2014).

Integration, an aspect of segmented assimilation, refers to the minority group initially keeping its cultural characteristics, taking incremental steps to incorporate and adapt the characteristics of the dominant culture, and eventually becoming fully immersed members of the dominant culture (Allen et al., 2014; Schwartz et al., 2010). When they integrate into the dominant culture, they experience varying degrees of acceptance (Allen et al., 2014). Prior studies investigated the factors that impacted the integration process of minority groups (Allen et al., 2014; Creighton, Goldman, Pebley, & Chung, 2012; Schwartz et al., 2010)

Culture influences perception of body image, dietary habits, physical activity levels, risks factors, and obesity-related prevention and intervention (Caprio et al., 2008). Yam (2013) stated, "Ideal standards of body sizes are culturally specific" (p. 12). From a historical perspective, these ideal standards have evolved and are varied across cultures (Coulter, 2012; Yam, 2013). With respect to the perception of body image, Caprio et al. (2008) found discrepancies between cultural groups. For example, when compared to African American females, Caucasian females expressed a positive perception at a lower BMI. The authors also found these differing perceptions of body image occurred within a culture, "with Latinas from the Caribbean preferring a thinner body size than Latinas from Mexico and Central America" (p. 16). Harrington (2008) concluded that cultural perceptions are tied to ideal body weight. He stated that a basic cultural attitude contributing to high obesity rates in Hispanic children is the notion that chubby children are healthy. Harrington also theorized that "the level of acculturation may play a role in obesity among Hispanics" (p. 2).

Lifestyle Factors and Behaviors

Prior studies investigated the impact that lifestyle factors and behaviors, such as physical activity levels, dietary factors, and sleep patterns, had on obesity among female adolescents (Groth & Morrison-Beedy, 2011; Kulik, 2011). Groth and Morrison-Beedy (2011) examined the health behaviors and dietary intentions of adolescent females (N = 748) who represented various racial and ethnic groups, with African-American females (n = 511) having the largest representation. With regard to health behaviors, the authors determined the percentage of adolescent females who slept 7-9 hours each night and who met the daily physical activity requirements set forth by the American Heart Association (AHA). For dietary intentions, they measured the extent to which adolescent females intended to ingest dairy products, fruits and vegetables, fiber, and fried foods into their diets. Groth and Morrison-Beedy cited the predictive relationship between individuals' intentions and their behaviors regarding food.

Groth and Morrison-Beedy (2011) found that 54% of the female adolescents participated in either 30 minutes of physical activity two to three times per week or no physical activity each week, which was well below the 30 minutes of daily activity recommended by the AHA. Adolescents who live sedentary lives have a high risk of contracting cardiovascular disease during their adolescent years (Kulik, 2011). With regard to sleeping patterns, Groth and Morrison-Beedy concluded that less than 25% of the females slept 7-9 hours every night in the week preceding the study and that "46% of the girls reported 7-9 hours of sleep for at least 5 days per week, while less than 12% reported fewer than 7 hours of sleep for all nights in the previous week" (p. 18).

In their subsequent analysis of the female adolescents' dietary intentions, Groth

and Morrison-Beedy (2011) determined that more than a third of the females intended to ingest dairy products. Conversely, 13% of the female adolescents believed they would not ingest any dairy products. As to whether or not they intended to ingest fruits, vegetables, and fiber, 20% of the females believed they would consume fruits and vegetables while slightly more than 20% would consume fiber.

Al-Hazzaa, Abahussain, Al-Sobayel, Qahwaji, and Musaiger (2011) conducted a school-based cross-sectional study that investigated the predictive relationship between lifestyle factors and obesity/overweight status among adolescents who attended three private and public high schools in Saudi Arabia. Their sample included both obese and nonobese adolescents. The anthropometric indicators were adolescents' weight, height, and waist circumference. They determined BMI by dividing adolescents' body weight (kilograms) by their height squared (meters).

To determine obesity/overweight status in male and female adolescents, Al-Hazzaa et al. (2011) used the age- and gender-related BMI classifications set forth by the International Obesity Task Force. The lifestyle variables were adolescents' levels of physical activity; weekly intake of fruits, vegetables, and dairy products; extent of television viewing; and time spent on computer-related activities. Hazzaa et al. wanted to determine if there was an association between the lifestyle factors and obesity.

In their subsequent analysis, Al-Hazzaa et al. (2011) found that low levels (less than three days per week) of physical activity, breakfast intake, and vegetable consumption were predictive factors for overweight/obesity status among adolescents. A high consumption of sugar-sweetened drinks (more than three days per week) was also a predictive factor for overweight/obesity among adolescents. While low levels of physical

activity were a predictive factor for obesity, high levels of physical activity (more than three to four times per week) were a preventative measure against adolescent obesity. To reduce the prevalence of overweight and obesity among adolescents, Al-Hazzaa recommended a comprehensive approach that focused on making healthier food choices, reducing the consumption of sugar-sweetened beverages, and increasing physical activity levels.

Similar to Al-Hazzaa et al. (2011), Rodriguez et al. (2011) investigated the relationship between levels of physical activity and the prevalence of obesity among adolescents. Rodriguez et al.'s study included adolescents who attended five different high schools within one California high school district. The racial demographics of the school district's student population were as follows: "Hispanic/Latino (54%), non-Hispanic white (24%), Asian/Hmong (15%), African-American (5%), and other (2%)" (p. 195). The study's sample population included Caucasian and Hispanic males and females aged 13-17, with Hispanic males and females accounting for more than 67% of the sample population (1,281 Hispanic students from a total sample of 1,894).

Rodriguez et al. (2011) used the following BMI index cutoff points to classify participants: "BMI < 5th percentile = 'underweight,' BMI ≥ 5th percentile < 85th percentile = 'normal weight,' BMI ≥ 85th and ≤ 94.9th percentile = 'overweight,' and BMI ≥ 95th percentile = 'obese'" (p. 195). Participants completed a survey aimed at determining their levels of weekly physical activity (both in and out of school) and their time spent engaging in sedentary behaviors. The statistical analysis consisted of comparing groups' levels of physical activity, based on ethnicity (Hispanic adolescents vs. Caucasian adolescents) and gender (male vs. female), and comparing groups'

sedentary behaviors, also based on ethnicity and gender. Finally, the authors conducted regression analysis to determine the probability that adolescents would become obese, based on their BMI (dependent variable) and their levels of physical activity.

Rodriguez et al. (2011) found that both the in-school and out-of-school activity levels of Hispanic males and females were lower than those of the Caucasian males and females. The authors suggested that racial/ethnic factors and the accessibility of resources could have contributed to the discrepancy in the physical activity levels between the Hispanic and Caucasian adolescents. Rodriguez et al. further asserted that cultural norms or the lack of both space and equipment could have impacted the ability of Hispanic adolescents to engage in physical activity. The authors noted that a lack of available space and equipment was prevalent within low socioeconomic communities, which was where the majority of the Hispanic adolescents lived.

Rodriguez et al. (2011) also compared the physical activity levels of obese and nonobese adolescents, based on gender, and concluded that females had lower physical activity levels than their male counterparts, "but the effect is more pronounced among Hispanics. This suggests that the gender roles in Hispanics may be an important contributor to discourage PA in females" (p. 202). To counter this trend among female Hispanic adolescents, the authors recommended enlisting the services of outside agencies to implement school-based interventions aimed at motivating Hispanic females to increase their physical activity levels.

With regard to the regression analysis, Rodriguez et al. (2011) used the adolescents' BMI as the dependent variable and the following two independent variables: levels of activity in school and levels of activity outside of school. They determined that

adolescent females who participated in less than one hour of physical activity in school were "over 2.25 times ($p < 0.01$) more likely to be obese" (p. 200), when compared to their nonobese peers. Rodriguez et al. also used waist circumference as the dependent variable and the levels of activity in school and levels of activity outside of school as the independent variables. He found that males and females who participated in less than one hour of physical activity more than doubled their risk of becoming obese.

Another study conducted by Anwar (2014) investigated the predictive relationship that obesity-related behaviors, such as physical activity levels, sedentary behaviors, and food consumption during childhood, had on adolescent obesity. Anwar utilized a longitudinal design and collected survey data from two groups composed of fourth through sixth grade students at three distinct phases: "baseline, one-year follow-up, and five-year follow-up" (p. 56). Both groups of students participated in the "Fun 5 Study...an evidence-based PA and nutrition promotion program, which has been implemented in over 160 Hawai‘i state-legislated elementary A+ afterschool programs for ten years" (p. 57). The overall goals of the Fun 5 Study program were to increase physical activity levels and the consumption of fruits and vegetables and to reduce sedentary behavior among elementary-aged children who attended afterschool programs. School personnel taught students the health-related benefits of eating fruits and vegetables, limiting caloric intake, and reducing sugar consumption. School personnel promoted physical activity by providing children with an array of structured, engaging, and gender-neutral activities.

Anwar (2014) predicted that children, those 9-12 years old, who had high levels of both physical activity and consumption of healthy foods (fruits and vegetables) and exhibited low levels of sedentary behavior at the baseline would have similar levels as

adolescents, whereas children who had low levels of both physical activity and consumption of healthy foods and high levels of sedentary behavior would have similar levels as adolescents, those 13-17 years old. Anwar also determined the predictability of the three behaviors (physical activity, fruit and vegetable consumption, and sedentary behaviors) at three distinct time phases: (a) from baseline to one-year follow-up, (b) from one-year follow-up to five-year follow-up, and (c) from baseline to five-year follow-up.

For the one-year follow-up, participants would have been in either fifth, sixth, or seventh grade. For the five-year follow-up, participants would have been in either ninth, tenth, or eleventh grade (Anwar, 2014). At each phase of the data collection process, Anwar (2014) determined the children's BMI based on the age- and gender-specific percentiles of the Center for Disease Control and Prevention (CDC), their physical activity levels using "the Godin Leisure-Time Exercise Questionnaire" (p. 59), their fruit and vegetable consumption, and the degree to which they participated in sedentary activities on a daily basis.

Anwar (2014) found that high levels of both physical activity and consumption of healthy foods (fruits and vegetables) and low levels of sedentary behavior (playing videogames, watching television) as children (baseline phase) were predictive factors of high levels of both physical activity and consumption of healthy foods and low levels of sedentary behavior as adolescents at each of the three time phases. Based on this finding, Anwar deduced that the behaviors associated with obesity "developed in early childhood and continue to adolescence" (p. 69). When determining the predictability of the individual behaviors across the three distinct time phases, Anwar concluded that the baseline consumption of fruits and vegetables and the five-year physical activity levels

had a predictive relationship. Anwar recommended that obesity-related interventions focus on increasing both physical activity levels and consumption of fruits and vegetables and decreasing the practice of sedentary behaviors during children's preadolescent years.

Health-Related Risks of Obesity

Prior studies identified primary and secondary health-related risks of obesity for adolescent minority females (Caprio et al., 2008; Groth & Morrison-Beedy, 2011; Kim, 2011; Kulik, 2011; Wertz, 2009). Kulik (2011) concluded that obese adolescents have a greater chance of contracting Type 2 Diabetes, metabolic syndrome, high blood pressure, and high cholesterol when compared to their nonobese peers. Importantly for this researcher's study, Groth and Morrison (2011) stressed the need for providing programs that teach adolescents the interconnected relationship between the healthy lifestyle behaviors and the importance of integrating them into their lives.

In a study that investigated the effects of consuming excessive amounts of sugar-sweetened beverages and sodium-dense foods, Banerjee and Dankiewicz (2013) concluded that children and adolescents whose daily consumption of sugar-sweetened beverages exceeded "36 ounces" had "a mean systolic blood pressure increase of 0.17 mmHg" (p. 2). Because school leaders neglected children and adolescents in terms of diet and physical activity, they contributed to them becoming obese (Stallings, Suitor, & Taylor, 2010). The decrease of required physical education courses and the lack of required health education contributed to the creation of a generation that is prone to obesity.

Saluhuddin (2013) compared overweight children and adolescents, those with a BMI percentile that was at least 85 but less than 99, and severely obese children and

adolescents, those with a BMI percentile that was 99 or higher, on several health-related measurements, including systolic and diastolic blood pressure levels, overall cholesterol levels, and blood sugar levels. After adjusting for demographic variables, Saluhuddin found that children and adolescents identified as severely obese had higher systolic and diastolic levels when compared to the levels of children and adolescents identified as overweight based on significance value of $p < .05$: "$p = 0.000$, $p = 0.041$" (p. 16). Further analysis of the four age groups' (2-8 year olds, 9-11 year olds, 12-13 year olds, and 14-18 year olds) blood pressure scores revealed that the older age groups (12-13 year olds and 14-18 year olds) had the higher overall mean measurements.

The health-related risks of obesity and overweight status are especially deleterious for minority adolescents (Groth & Morrison-Beedy, 2011; Kim, 2011; National Council of La Raza, 2010). A 2010 study conducted by the National Council of La Raza (NCLR) investigated the short- and long-term health implications of obesity and overweight status for Hispanic youth. The NCLR found that more than 75% of Hispanic youth who were either obese or overweight (BMI at the 95th percentile or greater) had one risk factor associated with cardiovascular disease, while more than 33% had more than one risk factor associated with cardiovascular disease. The NCLR determined that the corresponding percentage of Hispanic youth with at least one or more risk factors associated with cardiovascular disease increased when their BMI was at the 99th percentile or higher. The NCLR also concluded that Hispanic youth with BMIs in the obese range (95^{th} percentile or higher) had lower physical and emotional well-being outcomes than youth with BMIs in the normal range.

The first long-term health implication for Hispanic youth who were either obese

or overweight that NCLR (2010) identified was an increased risk of obese and overweight status in their adulthood when compared to that of youth from other ethnic groups. The next long-term implication of obesity and overweight status was that of the students having the risk factors that contributed to heart disease, stroke, diabetes, and cancer when they become adults. These risk factors included elevated levels of both low-density lipoprotein (LDL) cholesterol and triglycerides, low levels of high-density lipoprotein (HDL), and elevated insulin levels.

High LDL levels, also referred to as the bad cholesterol, can contribute to the development of plaque in the walls of the arteries (American Heart Association, 2015). The buildup of plaque in the walls of the arteries restricts blood flow to the heart and other parts of the body and can lead to a heart attack or stroke (American Heart Association, 2015). Low HDL levels, also referred to as good cholesterol because it lowers LDL cholesterol, are a predictive factor for heart disease (American Heart Association, 2015; Caprio et al., 2008). Individuals with HDL levels ranging from 35 to 60 or greater are less likely to develop cardiovascular disease than those with levels below 35 (McGrowder, Riley, Morrison, & Gordon, 2011). In addition, elevated insulin levels during one's adolescence increases one's risk of developing diabetes in adulthood (Rizzo et al., 2013).

While obese adolescents with any one of these factors--high LDL levels, low HDL levels, or elevated insulin levels--have an increased risk of developing cardiovascular disease or diabetes during their adult years, those with all three factors could be at risk for developing metabolic syndrome (Efstathiou et al., 2012). The criteria for diagnosing metabolic syndrome vary within the medical community (Efstathiou et al.,

2012; Weiss et al., 2013). Metabolic syndrome is the combination of health-related risk factors that increases an individual's chance of having a stroke or developing coronary artery disease and diabetes (Rizzo et al., 2013; Weiss et al., 2013). A person with at least three of the following health-related risk factors could indicate the presence of metabolic syndrome: (a) high blood pressure (systolic blood pressure = 130 or higher and diastolic blood pressure = 85 or higher), (b) abdominal obesity (waist circumference of 40 inches or more in men and 35 inches or more in females), (c) fasting blood sugars of 110 or higher, (d) cholesterol profiles that include HDL levels less than 40, and (e) triglyceride levels of 150 or higher (Rizzo et al., 2013; Weiss et al., 2013).

Approximately one-fourth of adults in the United States have metabolic syndrome (Falkner & Cossrow, 2014). The prevalence of metabolic syndrome is especially high among adult minority groups and for adults who come from poor socioeconomic backgrounds (Abraham, Kazman, Zeno, & Deuster; 2013; Falkner & Cossrow, 2014). Prior studies identified several factors that contributed to the disproportionately high rates of metabolic syndrome among minority adults (Abraham et al., 2013; Falkner & Cossrow, 2014; Weiss et al., 2013). Abraham et al. (2013) cited the relatively high number of adult minorities "affected by obesity, diabetes, hypertension, and cardiovascular disease" (p. 1). The prevalence of obesity among minority groups is especially high in African American and Hispanic females (Abraham et al., 2013; Falkner & Cossrow, 2014).

In addition to adult minorities, the prevalence of metabolic syndrome has increased among adolescents (Falkner & Cossrow, 2014; Texas Biomed Research, 2013; Weiss et al., 2013). Texas Biomed Research (2013) found that "an estimated 2.5 million

adolescents in the United States have metabolic syndrome" (p. 1). Miller et al. (2014) concluded that "10.1% of the U.S. adolescent population" had metabolic syndrome (p. 530). They noted that the 10.1% was indicative of an increase over a 25-year period in the prevalence of metabolic syndrome among adolescents. Prior studies found discrepancies in the prevalence of metabolic syndrome based on adolescents' race, gender, and socioeconomic status (Johnson et al., 2009; Miller et al., 2014; Texas Biomed Research, 2013).

Miller et al. (2014) compared the prevalence of metabolic syndrome among Caucasian, Hispanic, and African American adolescent males and females. The authors "included 2456 adolescents in the study sample" (p. 373), ages 12-19, who had three or more of the following five risk factors: (a) triglyceride levels less of 100 mg/dl or higher, (b) HDL levels of 40 or less, (c) blood sugar levels of 100 mg/dl or higher, (d) waist circumference at the 90th percentile or higher based on participants' age and gender, and (e) at least one of two blood pressure measurements (systolic or diastolic) at the 90th percentile as determined by age-, gender, and height-specific guidelines.

Miller et al. (2014) concluded that Hispanic males had the highest prevalence of metabolic disorder. The authors also conducted comparisons for the three racial groups and found that the prevalence of the disease was higher in males than in females by almost 5%. Contributing to the discrepancy in the prevalence of the disease between the male and female populations were the lower HDL levels, higher blood sugar levels, and the higher triglyceride levels of the male population. The differences in the prevalence of low HDL levels and blood sugar levels were noteworthy, with the percentage of males with HDL levels at or below 40 being almost 11% higher than that of the females and the

percentage of males with blood sugar levels at or above 100 being almost 12% higher than that of the females. Miller et al. believed that reducing the prevalence of metabolic disorder and its associated risks, which included cardiovascular disease and diabetes, would require a comprehensive treatment model for adolescents with multiple risk factors.

While Miller et al. (2014) stressed the importance of treating adolescents, Texas Biomed (2013) recommended that parents and medical personnel focus on prevention strategies during the preadolescent years for children whose genetic predisposition places them at risk for developing metabolic diabetes and cardiovascular disease. Texas Biomed proposed that screening procedures should begin in the early childhood years, perhaps as early as five or six years old for Mexican-American children from low socioeconomic backgrounds. The Texas Biomed study included "670 nondiabetic boys and girls, between the ages of 6 and 17 years," who had immediate family members who were at risk for developing diabetes (p. 1).

Texas Biomed (2013) concluded that more than half of the children were either obese or overweight and close to one-fifth had the risk factors associated with metabolic syndrome. In addition, Texas Biomed found a positive association between the obesity levels of the participants and the number of participants identified with metabolic syndrome. Importantly for this researcher's study, Texas Biomed believed that identifying children during the early childhood years based on their genetic factors allows parents and medical personnel to implement an intervention plan that would mitigate the potential for having significant health issues during adulthood.

Messiah et al. (2009) found there was limited research investigating the

prevalence of the risk factors associated with metabolic syndrome among minority youth whose parents immigrated to the United States from Mexico as well as from the central part of South America. Minority children comprised approximately 92% of Messiah et al.'s sample population, ages 3-18; they attended a pediatric clinic located in southern Florida. Hispanic children were the largest ethnic group, accounting for close to two-thirds of the sample population. Black children had the second highest representation in the study followed by White children and then multiethnic children. All of the study's participants were overweight based on a criterion of BMI at or above the 85th percentile. Unlike their parents, the majority of the sample population was born in the United States.

Based on a criterion of three or more risk factors, Messiah et al. (2009) found that the prevalence rate for metabolic syndrome among the children was almost 30%; a slightly less amount had two of the risk factors associated with metabolic syndrome, meaning that close to 60% of the children had two or more risk factors. Comparisons based on gender revealed that females had a higher rate of metabolic syndrome than males, and comparisons based on ethnicity revealed that members of the Hispanic population had a higher rate of metabolic syndrome than those of the Black population. Although the scope of the study was limited, Messiah et al. identified a distinct setting where the prevalence rates of metabolic syndrome and the risk factors associated with the syndrome were disproportionately high among minority populations.

School-Based Interventions

The prevalence of obesity in children ages 2-19 doubled between 1983 and 2013 (CDC, 2014; Daly, 2013; Falkner & Cossrow, 2014). Comparisons of obesity rates across age subgroups revealed that children ages 12-17 had the highest increase (Daly, 2013).

Further comparisons of obesity rates across racial/ethnic subgroups revealed that obesity rates among minority adolescents were disproportionately high when compared to those of nonminority adolescents (Dixon, Peña, & Taveras, 2012; Schwarz & Peterson, 2010). Schwarz and Peterson (2010) asserted that inadequate amounts of daily physical activity, diets high in sugar and saturated fat, a lack of or limited access to healthy foods, and the accessibility and convenience of fast-food restaurants contributed to the prevalence of obesity among adolescents. Schwarz and Peterson also concluded that the above-stated factors are "experienced to a greater degree by, and have a greater impact on adolescents of color than their white peers" (p. 3).

To decrease the prevalence of obesity among adolescents, school leaders have provided nutritional education and mandated physical activity requirements (Foster, 2013; Setlow, 2013; Young, 2013). Nutritional education efforts have focused on identifying healthy food choices and providing dietary guidelines for adolescents (CDC, 2012; CDC, 2014). With respect to physical activity, Foster (2013) recommended that adolescents participate in a comprehensive exercise program that incorporated an hour of daily aerobic exercise at varying degrees of intensity and at least three weekly sessions of anaerobic exercise aimed at increasing muscle mass and strengthening bones.

Fouch (2013) provided more conservative physical activity guidelines for obese adolescents. He stated, "An aerobic exercise prescription of 155–180 min/weeks at moderate-to-high intensity is recommended for both male and female overweight and obese adolescents, as this amount was shown to be effective in reducing body fat" (p. 20). Fouch also recommended early identification of and intervention for individuals who are overweight or obese, particularly during their adolescence.

Kraak, Story, and Wartella (2012) found that school leaders had limited success in promoting healthy lifestyle behaviors in adolescents. Their inability to reduce obesity among adolescents was particularly troubling for school leaders in schools with a disproportionately high number of minority students, as these students were at a higher risk of developing obesity-related diseases and conditions during their adult years. In addition to race and ethnicity, the socioeconomic factor of parents' educational attainment influenced obesity rates (Hughes, 2011; Ofili, 2013). Researchers found that parents with low levels of educational attainment lacked the academic, self-efficacy, and pragmatic skills to make informed decisions regarding healthy food choices and healthy lifestyle choices (Zimmerman, Woolf, & Haley, 2015). Determining adolescents' BMI enables school leaders to determine the success of and to make the necessary adjustments to intervention programs (Setlow, 2013; Soraoka, 2013; Wall, 2013).

The CDC (2010c) concluded that school leaders can play a prominent role in reducing the prevalence of obesity. The CDC found that the following strategies have facilitated their ability to address obesity among children and adolescents:

1. Aligning the goals of school-related health programs aimed at improving physical activity levels and dietary habits with those of the state, while encouraging collaboration between the schools and the state.
2. Utilizing student data to determine how to use resources and develop student-specific programs.
3. Implementing comprehensive training programs, and encouraging collaboration among school district administrators and district- and

school-level health coordinators.

4. Establishing and promoting statewide policies that provide concise nutritional and physical education guidelines for students.
5. Expanding the scope of practice and responsibilities of school-level staff, including physical education and health teachers, with regard to developing health-related behaviors by requiring them to participate in professional development.
6. Establishing and adhering to guidelines that define what schools can and cannot sell in their vending machines.
7. Developing rigorous standards and curriculum guidelines for the areas of health and physical education, and implementing standardized assessments that assess student mastery in these areas.
8. Giving a free and healthy breakfast to all students, and training cafeteria personal on the preparation of healthy meals.
9. Facilitating students' ability to participate in physical activity, and providing students with healthy snacks during the school day. (pp. 1-4)

Implementing policies that limit access to unhealthy food items during school hours is another way school leaders can decrease obesity among adolescents (Schwarz & Peterson, 2010). Welsh, Sharma, Cunningham, and Vos (2011) concluded that calories from sugar should account for less than 10% of the daily caloric intake for adolescents; however, they concluded that sugar and other ingredients that had no nutritional value accounted for almost 20% of the daily caloric intake for many adolescents. The excessive consumption of sugar-sweetened drinks--including soda and fruit, energy, and sports

drinks--among adolescents is particularly problematic because these drinks contain "sweeteners such as sucrose, high-fructose corn syrup, or fruit juice concentrates, all of which have essentially similar metabolic effects" (Vasanti et al., 2010, p. 2477).

The metabolic effects of consuming sugar-sweetened drinks include weight gain, high blood pressure, adrenal fatigue, and higher blood sugar levels (Isaacs, 2011; Vasanti et al., 2010; Welsh et al., 2011). In addition to adverse metabolic effects, sugar-sweetened beverages rob children and adolescents of important nutrients that promote healthy growth and development (Banerjee & Dankiewicz, 2013). To reduce the consumption of sugar-sweetened beverages and sports drinks among children and adolescents, Wordell, Daratha, Mandal, Bindler, and Butkus (2012) suggested that only bottled water be sold in school vending machines.

Hughes (2011) found that schools in which foods and drinks containing high amounts of sugar and having little or no nutritional value were sold had high obesity rates among their student populations. Benjamin (2010) underscored the integral role of school leaders in promoting healthy lifestyle behaviors among their students. Benjamin asserted that school leaders promote students' ability to practice these behaviors by restricting the availability of unhealthy food and beverages, educating students regarding the physiological and emotional benefits of eating balanced meals, and providing a variety of food options, "including fresh fruits and vegetables, whole grains, and lean proteins" (p. 8).

Along with encouraging students and facilitating their ability to eat healthy meals, Benjamin (2010) believed that school leaders should require all students to participate in 30-45 minutes of physical education each day. The physical education curriculum should

be grade-level specific, provide a scope and sequence for each grade level, include measurable objectives, and closely align with national standards. Benjamin also recommended that school leaders provide structured and nonstructured physical activities for students during nonschool hours.

Wall (2013) sought to determine the effect of a school-based obesity intervention program for low-income students who attended an urban elementary school. The setting of the study and the socioeconomic status of the target school's student population were pertinent because safety issues in many urban areas limit opportunities for outdoor physical activity and healthy food choices often are too expensive for most families. The goals of the obesity intervention program were to promote healthy eating habits and increase physical activity levels among adolescents. To enhance the overall effectiveness of the program, school leaders established connections among vested entities, which included administrators, teachers, family members, and students.

Wall (2013) stressed the importance of cultivating a connection between the family and the school by stating the following: "Family involvement in the program may also influence a change in health behavior in the students" (p. 10). The author utilized a case study design and conducted one-on-one interviews with school administrators, teachers, and family members of students who participated in the intervention. Wall noted that the school had a high minority population (98% African-American and Hispanic) and that 99% of the school's students qualified for free lunch.

Wall (2013) found that school administrators and teachers had either mixed or uncertain perceptions of the school's obesity intervention program. With regard to school attendance, one school administrator believed the breakfast program increased the

students' desire to attend school and their "attendance on gym days" (p. 81) while the other administrator found no correlation between student attendance and program implementation. Two support personnel believed that serving students breakfast at school improved attendance. One teacher asserted that providing breakfast in a classroom setting motivated students to attend school. The two physical education teachers noted that the breakfast component of the nutrition program impacted school attendance, with one citing a positive impact and the other choosing not to elaborate. Three of the 20 parents/guardians believed the program encouraged students to attend school.

The impact of the obesity intervention program on students' classroom participation was another aspect that Wall (2013) investigated. The majority of the teachers and none of the parents found no association between the extent of classroom participation among students and program implementation. Participants' beliefs regarding the program's impact on students' interpersonal skills, which was the next component Wall examined, were both diverse and limited in scope. One administrator believed students exhibited positive interpersonal interactions while the other administrator observed no change in the students' behavior. One of the physical education teachers noted that students' interactions were negative and that school-related personnel needed to diffuse possible conflicts. Although parents had positive perceptions of students' interpersonal interactions, they did not believe students' interactions improved as a result of the program.

The final component that Wall (2013) investigated was the program's influence on students' health-related behaviors, including smoking, food choices, and caloric intake. Neither the principal nor the assistant principal of the target school believed the

program influenced students' behaviors. The main concerns that the teachers discussed were the students' desire to eat unhealthy foods and the parents' willingness to endorse their children's eating habits. Teachers also cited the cost prohibitive nature of "healthier foods as well as cultural influences for food" (p. 84). While teachers discussed the influence of culture, a member of the school's support personnel team perceived that ethnicity impacted the types of foods students consumed and that many of these foods lacked nutritional value. Parents expressed concern regarding excessive caloric consumption during the school day and its implications on their children's health. Although the program did not yield a discernible effect across any of the categories, Wall endorsed comprehensive education efforts within schools aimed at increasing students' knowledge of healthy foods, cultivating their desire to exercise, and exposing them to the physiological benefits of exercise.

Some school-based interventions aimed at addressing obesity among adolescents directly focused on decreasing BMI levels (Gellar et al., 2012; Safron, Cislak, Gaspar, & Luszczynska, 2011). Safron et al. (2011) conducted a comprehensive review of prior studies that determined the effect school-based obesity intervention programs had on either BMI levels or the prevalence of obesity among students. Importantly for this researcher's study, they found that one-third of school-based interventions decreased students' BMI levels.

Safron et al. (2013) concluded that school-based interventions were effective when they involved parents, addressed dietary behaviors, and integrated a physical activity component. Setlow (2013) sought to increase obese adolescents' knowledge of the importance of proper nutrition and physical exercise and to help decrease their BMI

by providing health education and opportunities for physical exercise. Setlow also promoted a school environment that cultivated healthy living among all adolescents. The 69 ninth-grade target students attended a small private school located in a large metropolitan area.

Prior to and after the intervention, participants completed the Healthy Lifestyle Belief Scale, Healthy Lifestyle Choice Scale, Nutritional Knowledge, and Youth Adolescent Questionnaire, and had height, weight, and hip measurements. Setlow (2013) provided participants with 15 sessions that included both nutrition education and physical exercise. The nutrition education aspect of the sessions focused on the various forms of physical activity, the major food groups, the influence of media and advertising on eating behaviors, and the importance of reading food labels. Setlow determined that the majority of participants decreased their BMI and had "a statistically significant increase in healthy belief and behaviors scales" (p. 23).

Summary

Prior studies found that the prevalence of obesity among adolescents had increased since 1983 (Chang, 2012; Ogden et al., 2010; Young, 2013). The most noteworthy increase in the prevalence of obesity was among minority adolescents from low socioeconomic backgrounds (Groth & Morrison-Beedy, 2011; Kim, 2011; Miller et al., 2014). Several behaviors contributed to the increased prevalence of obesity among adolescents, especially minority adolescents (Al-Hazzaa et al., 2011; Caprio et al., 2008; Groth & Morrison-Beedy, 2011; Harrington, 2008). These behaviors include low levels of physical activity and unhealthy eating habits (Al-Hazzaa et al., 2011; Rodriguez et al., 2011). Al-Hazzaa et al. (2011) found that not getting the requisite amount of daily

physical activity was a predictive factor for obesity in minority adolescents. Rodriguez et al. (2011) concluded that Hispanic male and female adolescents had disproportionately low physical activity levels when compared to their Caucasian peers. Al-Hazzaa et al. determined that low consumption of fruits and vegetables and excessive consumption of sugary beverages were predictive factors for obesity among adolescents.

In addition to physical activity levels and dietary habits, cultural perceptions contributed to obesity among adolescents (Caprio et al., 2008; Coulter, 2012; Yam, 2013). Caprio et al. (2008) found that perception of body image varied among cultures, with African American females preferring a fuller body type (based on BMI) and Caucasian females a thinner body type. Harrington (2008) asserted that cultural perceptions influenced individuals' perceptions of ideal body weight, and these perceptions contributed to high obesity rates among Hispanic children and adolescents.

Obesity in adolescence has both short- and long-term health implications (Kim, 2011; Kulik, 2011; Wertz, 2009). Kulik (2011) found that obese adolescents had a greater risk of high blood pressure, high lipid levels, and blood glucose levels. Adolescents who exhibited three risk factors, which included elevated systolic or diastolic blood pressure, abdominal obesity, HDL levels below 40, triglyceride levels at 150 and above, and blood glucose levels over 110, had an increased risk of developing metabolic syndrome (Efstathiou et al., 2012; Falkner & Cossrow, 2014; Weiss et al., 2013). Adolescents with metabolic syndrome have an increased risk of developing cardiovascular disease and diabetes (Rizzo et al., 2013; Weiss et al., 2013). Researchers found that the prevalence of metabolic syndrome has increased among adolescents in the United States (Falkner & Cossrow, 2014; Weiss et al., 2013). Researchers also concluded that the prevalence of

metabolic syndrome was disproportionately higher among minority adolescents (Messiah et al., 2009; Miller et al., 2014; Texas Biomed, 2013).

To decrease the obesity epidemic among adolescents, school leaders have developed curricula and implemented programs aimed at increasing students' physical activity levels and their knowledge of healthy food choices (Foster, 2013; Setlow, 2013; Young, 2013). Educators increase their ability to promote the practice of healthy lifestyle behaviors and decrease the prevalence of obesity among school-aged children by mandating that all students participate daily in physical education activities, developing rigorous and measurable curriculum standards for their physical education and health programs, ensuring that their curriculum standards align with national standards, and providing additional opportunities for students to engage in physical activity both during and after school hours (Benjamin, 2010; CDC, 2010c; Safron et al., 2011; Wall, 2013). Researchers recommended a combination of both aerobic and anaerobic exercise and varying amounts of daily physical activity for adolescents, ranging from 30 to 60 minutes each day (Foster, 2013; Fouch, 2013).

Researchers also believed that school leaders should limit student access to food and drinks containing high amounts of sugar as they temporarily spike blood sugar levels, increase blood pressure, deplete energy levels, and deprive children's bodies of essential nutrients (Schwarz & Peterson, 2010; Vasanti et al., 2010; Welsh et al., 2011). Educating students about the physiological benefits of practicing healthy lifestyle behaviors and providing them with nutritional food options and snacks were effective ways to decrease the prevalence of obesity among adolescents. Finally, identifying adolescents who were overweight or obese and providing a comprehensive intervention program improved

short- and long-term outcomes for them (Center for Disease Control, 2010c; Fouch, 2013).

Research Questions

The research questions that guided this qualitative case study at a public high school in a southern state are as follows:

Central Question: How will participating in motivational support sessions improve the perceptions of minority female high school students regarding healthy eating behaviors?

Subquestion 1: How will participating in motivational support sessions perceivably mitigate cultural and societal factors that influence unhealthy eating behaviors for female minority high school students?

Subquestion 2: How will the awareness and knowledge of physical activities through reading informational resources and participating in motivational support sessions change the perceptions of minority female high school students toward obesity?

Chapter 3: Methodology

Aim of Study and Use of Qualitative Approach

This researcher used a qualitative case study approach and determined the impact of seven support motivational sessions on minority female adolescents' knowledge of healthy lifestyle behaviors. The qualitative approach is appropriate when researchers seek to understand and interpret a phenomenon through the perspectives of those who experience it (Gall, Gall, & Borg, 2010). Qualitative studies are inductive in nature because researchers are the primary instrument in the data collection and analysis procedures (Merriam, 2009). Unlike quantitative studies, qualitative studies often include smaller sample sizes (Anderson, 2010). The inclusion of a smaller sample size facilitates a detailed and in-depth description of the phenomenon under investigation (Anderson, 2010; Gall et al., 2010). The qualitative approach utilizes various data collection methods to elucidate a clear understanding of the topic. These data collection methods can include interviews, questionnaires, surveys, observations, historical records, journals, and field notes (Anderson, 2010).

Researchers identified five types of qualitative designs: (a) ethnography, (b) phenomenology, (c) grounded theory, (d) basic qualitative, (e) and case study (Creswell, 2012; Merriam, 2009). Dharamsi and Charles (2011) stated that ethnographic studies ". . .provide a deeper insight into a culture. In this sense, culture is defined as the collective assumptions and beliefs that influence the practices of a particular group of people who share a social space" (p. 378). Phenomenology aims to describe the essence of individuals' lived experiences (Gall et al., 2010). Grounded theory is an emerging

research design that seeks to develop a general theory based on participants' subjective experiences (Creswell, 2012).

The basic qualitative design is inductive and descriptive in nature, allowing the researcher to provide rich descriptions based on recurrent themes across various forms of data (Merriam, 2009). A case study design is appropriate when researchers seek to investigate a particular phenomenon within a single context and include multiple forms of data (Creswell, 2012). For the purpose of this study, this researcher used a qualitative case study design. This researcher selected this design because the study occurred within a single context, an urban high school in the southern part of the United States, and he intended to collect multiple forms of data. The plan was for multiple forms of data to be collected to provide a comprehensive understanding of the phenomenon under investigation.

Participants

The target population for this study was minority female students, ages 15-18, who attended a large urban high school in the southern part of the United States and had a BMI > 90. Utilizing a purposeful sampling procedure, this researcher sought to determine the impact that a motivational support program had on the perceptions of minority female students regarding healthy lifestyle behaviors. The purposeful sampling procedure was appropriate for a study of this nature because this researcher had predetermined criteria for selecting participants (Creswell, 2012). The minority female students must have been members of one of the following racial/ethnic groups: (a) African-American, (b) Hispanic, or (c) African-Caribbean. This researcher included minority female students from one of the above-stated racial/ethnic groups because researchers found that minority

female adolescents had disproportionately higher obesity rates and lower physical activity levels than Caucasian female adolescents (Dixon, Peña, & Taveras, 2012; Groth & Morrison-Beedy, 2011; Rodriguez et al., 2011; Schwarz & Peterson, 2010).

Instruments

The purpose of this qualitative case study was to determine if carefully crafted motivational support sessions (a) promoted healthy eating habits among minority female high school students whose BMI > 90, (b) provided minority female high school students with a clear understanding of the health-related risks of obesity, and (c) increased minority female adolescents' knowledge of healthy behaviors. To determine the impact of the motivational sessions, this researcher planned to use three instruments. The first instrument was the Healthy Lifestyle Beliefs Scale for Teens. Participants completed the HLBS during Week 1 and Week 7 of the motivational sessions. Dr. Bernadette Melnyk developed the instrument and gave this researcher permission (Appendix A) to utilize it in this study. The HLBS provided a pre- and postintervention measurement of adolescent females' behaviors. The HLBS is a 16-item, five-point Likert scale instrument that measures adolescents' perceptions regarding their ability to practice healthy lifestyle behaviors (Melnyk & Small, 2003). Each participant had to rate each item on a 1-to-5 scale, with 1 representing strongly disagree and 5 representing strongly agree (Melnyk et al., 2006). Scores could range in value from 16 to 80, with higher scores indicating healthy lifestyle behaviors (Melnyk & Small, 2003). The internal consistency of the HLBS is .78 (Melnyk et al., 2006).

Researcher-created open-ended journal questions (Appendix B) were intended to be the second means of data collection. The six open-ended questions were to first be

administered prior to distributing food journals to students and giving them the related procedures for completing their food journals. This researcher conducted an exhaustive review of the related literature and considered this study's central research question before developing the six open-ended questions. The questions were grouped by function, with open-ended questions one through four addressing participants' eating habits and open-ended questions five and six addressing participants' physical activity habits. With regard to the above-stated pre- and postintervention open-ended questions, information from a pilot study is provided in the next subsection of this chapter. This researcher was unable to collect the responses to the open-ended questions as participants completed and submitted the wrong worksheet each time. Unfortunately, this was not discovered until after the implementation was completed.

The participants' food journals were the final means of data collection. Participants maintained a food journal during two distinct phases of this study: (a) between the conclusion of the week 2 motivational session and the beginning of the week 3 motivational session and (b) between the conclusion of the week 6 motivational session and the beginning of the week 7 motivational session. Participants recorded the types and the amounts of both food and beverages they consumed in each distinct phase. Each phase was three days in length. This researcher compared participants' responses during the first three-day phase and their responses during the second three-day phase to determine if participants eating habits improved during the intervention.

As stated, this study included two types of data collection--HLBS and personal food journals--to increase the validity of this researcher's findings. The use of more than one data source, referred to as triangulation, increases the validity of a study's findings

(Gall et al., 2010). Each participant's Personal Food Journal was reviewed to ensure that each participant provided the requisite information. Multiple reviews of participants' Personal Food Journals were conducted to ensure the data were accurate.

Pilot study. To establish face and content validity and to determine if the open-ended journal questions would provide a true representation of minority female high school adolescents' perceptions toward and knowledge of healthy lifestyle behaviors, this researcher conducted a pilot study that consisted of two phases. Burton and Mazeerolle (2011) stated, "Face and content validity are important first steps with establishing construct validity because they establish the accuracy and connection among the questions asked and variables measured" (p. 28). For the first phase of the pilot study, this researcher sought input from six minority female adults who attended the community college where this researcher was employed. Conducting a pilot study with this population helped determine if the journal questions were appropriate and allowed this researcher to refine or reword the open-ended questions if necessary. This researcher met with all six participants in a classroom at the community college, distributed a sheet containing the open-ended questions to them, and asked them to provide written feedback within the body of the document regarding the clarity and comprehensibility of the open-ended questions.

The second phase of the pilot study involved the convening of a group of seven colleagues with whom this researcher worked with at the community college. These individuals were chosen because they possessed a distinct level of expertise regarding the subject matter, had advanced degrees in exercise physiology, and taught courses in both health and wellness and physical fitness at two- and four-year colleges. This researcher

met with all seven participants in a classroom at the community college, distributed the sheet containing the open-ended questions to participants, and asked them to conduct a content analysis of the research questions. Input from this panel of experts was sought to augment the content validity of the open-ended questions.

The seven individuals (four males and three females) who were part of the pilot study had varying amounts of professional experience and varying educational backgrounds. To ensure participant confidentiality, each sheet containing the open-ended questions was numbered and the participants were instructed not to place their names on the sheet. Participant one had a Master of Education degree with a concentration in physical education and worked at the community college for eight years. Participant two had a Doctor of Chiropractic degree and worked at the community college for eight years. Participant three had a Master of Science degree with a specialization in exercise physiology and worked at the community college for four years. Participant four had a Master of Science degree with a specialization in exercise science and health promotion and worked at the community college for three years. Participant five had a Master of Science degree with a specialization in exercise science and health promotion and worked at the community college for three years. Participant six had a Doctor of Philosophy degree in biological sciences and worked at the community college for three years. Participant seven had a Doctor of Philosophy in physical education and worked at the community college for three years.

Participants made one wording-related recommendation and one content-related recommendation. For open-ended question 2, two of the six participants recommended using the word barriers rather than factors. Three of the six participants recommended

participants explain why they believed or did not believe that eating healthy was important. This researcher agreed with their recommendations and made the necessary changes. The participants believed that the other items were comprehensible and appropriate for the study.

Procedures

Prior to implementing the motivational support sessions, a list of potential participants was obtained by the researcher from the target school's nurse. The list included twice the number of participants sought for this study because this researcher believed that some students might not want to participate in such a study and or their parents might have some objections to participating as well.

After receiving the list, a meeting was arranged with the entire group of potential participants during a school period that did not interfere with their academic subjects. This researcher began the meeting by asking participants the following question: "Do I want a better image of myself?" This type of question was asked to cultivate participants' excitement and interest in a study that would give them the opportunity to improve their overall well-being.

After attracting the interest of the selected students who attended the initial meeting, each potential student participant was given a sealed envelope that included a cover letter (Appendix C) and a Parent/Guardian Consent Form (see Appendix D); the letters explained the purpose of the study and the required time and task commitment for the students selected to participate in the study. Since twice the number of potential participants received the cover letter and the Parent/Guardian Consent Form for parents'

signatures, it was announced that the first 15-20 persons to return the signed forms would be the “lucky” student participants in the research project.

At the same time, a duplicate set of papers were mailed to parents or guardians of all the students who received envelopes with the cover letter and the Parent/Guardian Consent Form to bring to their parents. A self-addressed, stamped envelope was provided for parents to mail their forms back to the researcher’s attention at the target high school. However, several students returned the signed forms directly to this researcher, rather than mailing them.

The Parent/Guardian Consent Form included wording to inform parents that, for confidentiality reasons, a random number was assigned to each HLBS. Students and parents also received a sheet containing the open-ended questions and a Personal Food Journal; students were instructed not to place their names on any of these documents. Parents or guardians were made aware that their children’s participation in this study was voluntary and that they could withdraw from this study at any time.

The motivational and interactive sessions served as an awareness of and education about obesity for the target minority female high school students (n = 15). Each motivational session was 60 minutes in length. Participants attended seven sessions over a seven-week period, one session per week.

The first session was an orientation in which this researcher provided an overview of the study. Participants introduced themselves to each other. Participants also completed the HLBS for the preintervention phase of the study and established individual goals to achieve by the end of the sessions. At the conclusion of the first session, participants received the six open-ended questions and another worksheet pertaining to

healthy lifestyle behaviors. This researcher told students to complete the six open-ended questions and submit them at the end of the week 7 session. Students were not required to submit a worksheet pertaining to healthy lifestyle behaviors.

During the second session, participants learned the related procedures for completing the daily Personal Food Journal. Students were given basic information about calories and carbohydrates in the foods enjoyed by most teens. For the third session, interactive focus groups were conducted to facilitate group interaction and to explore participants' distinct perspectives regarding healthy lifestyle behaviors.

The fourth session consisted of this researcher explaining the U.S. Department of Agriculture (USDA) Food Pyramid Guide and its various components. The guide was a resource for participants as they were able to gain a clear understanding of the connection between making healthy food choices and healthy living. Participants also were made aware of the importance of eating the right types of foods and getting the requisite amount of daily servings.

The fifth session focused on the recommendations of the CDC regarding the amount of daily physical activity adolescents should have as well as the overall benefits of physical activity. Using PowerPoint slides, this researcher defined and provided examples of both aerobic exercise and anaerobic exercise. PowerPoint slides included visual representations of the various types of exercise.

The sixth session focused on obesity-related illnesses and the long-term implications of obesity. Such conditions as high blood glucose levels, high cholesterol, and hypertension were described and discussed and research was cited that identified and described the relationship between these conditions and the development of

cardiovascular disease and diabetes. Handouts also were distributed that provided a thorough explanation of the individual and collective role of these conditions in relation to heart disease, stroke, and diabetes.

For the seventh session, which was the postintervention phase of the study, each participant completed the HLBS. To determine the impact of the seven support sessions in changing minority female high school students' attitudes and habits regarding healthy lifestyles, this researcher compared participants' preintervention composite scores and postintervention composite scores. Participants also submitted their Personal Food Journals and were assigned the task of completing and submitting the open-ended questions.

Participants who attended all sessions and completed the HLBS, the Personal Food Journals, and the open-ended questions during the preintervention and postintervention phases of the study were to earn 10 community service credit hours toward their required service hours for graduation. All students are required to earn 25 community service credit hours to graduate, and they complete this requirement in both school- and community-based settings. Although the students answered the wrong open-ended questions, they still earned 10 credits toward their required service hours for graduation if they attended the sessions, completed the HLBS, and submitted their Personal Food Journals.

Week 1-session one: introduction. During the first week of the study, this researcher conducted an orientation session and introduced himself, provided a detailed overview of the study, discussed the requisite time commitments for participating in this study, described the procedures for maintaining participant confidentiality and

anonymity, answered participants' questions regarding the goals of the study, and discussed the related benefits of participating in the motivational sessions. Target minority female high school students affirmed their agreement to participate in the motivational sessions by signing a Student Assent Form (see Appendix E). After signing this, participants completed the HLBS.

The second part of the orientation session focused on teaching participants how to read food labels. A particular emphasis was placed on following nutritional recommendations. Recommendations for reading food labels provided by the ACT for Youth: Center for Excellence (2011) were utilized. The ACT for Youth (2011) highlighted the following nutritional facts: (a) serving size, (b) servings per container, (c) % Daily Value (%DV), (d) total fat, (e) saturated fat, (f) sodium, (g) fiber, (h) sugars, (i) vitamins and minerals, and (j) calcium.

To increase participants' understanding, this researcher offered an explanation of each identified nutritional fact and modeled how to read food labels. The instructional materials for this activity were PowerPoint slides and general handouts that included information regarding the recommended number of daily calories a person should ingest and the percentage of daily calories that should come from fats, carbohydrates, and proteins. The general handouts had charts and other visual aids that promoted participants' ability to read and interpret food labels. At the conclusion of the week 1 session, this researcher gave each participant two worksheets. The first worksheet included the six open-ended questions while the second worksheet included a series of short-answer questions pertaining to healthy lifestyle behaviors. At the beginning of the week 7 session, participants were supposed to submit their responses to the six open-

ended questions but not their responses to the short-answer questions regarding healthy lifestyle behaviors. At the end of the week 7 session, participants were supposed to answer the same six open-ended questions. Data analysis was supposed to consist of this researcher comparing participants responses to the six open-ended questions.

Activity 1: introduction. Participants were organized into pairs, introduced themselves to each other, and described something important about themselves. After the private discussions, the participant couples introduced each other and shared what they learned. This part of the activity was approximately 10 minutes in length.

Activity 2: overview of the study. Participants were provided with an overview of the study and the related requirements and expectations for their participation. The topics for each weekly session were described by the researcher. Participants then had the opportunity to ask any questions they had about the study.

Activity 3: survey administration. Each participant had up to 20 minutes to anonymously complete the HLBS and then submit it to the researcher at the conclusion of the session. Preliminary results guided the presentation of future activities with the minority female high school students.

Activity 4: discussion part 1. Student participants considered the following questions: "Where am I now in my desire for a healthy lifestyle? Where would I like to be?" This researcher subsequently discussed with each participant where she was with her weight, food intake, physical activity, and self-esteem. The discussions helped the participants establish goals for healthy lifestyle habits.

Activity 5: discussion part 2. Using items from the HLBS, the researcher met with each student participant to assess and evaluate her knowledge of her health and

wellness status. The participants were encouraged to develop short- and long-term goals for improving their overall health and fitness. Participants had the option of writing their short- and long-term goals.

Week 2–session two: healthy foods - eat right, feel right. During the second week of the study, participants received a Personal Food Journal in which they recorded their daily intake of all foods, including meals and snacks, over a three-day period. The related procedures for recording their daily food intake were explained by the researcher. They subsequently began to informally assess their eating patterns. Participants completed this activity between the conclusion of the week 2 motivational session and the beginning of the week 3 motivational session.

The students were also asked to record the beverages they consumed daily for three days and to submit their Personal Food Journals to this researcher at the beginning of the week 3 motivational session. Participants completed the same activity between the conclusion of the week 6 motivational session and the beginning of the week 7 motivational session. The U.S. Department of Agriculture (2010) stated, "Monitoring has been shown to help individuals become more aware of what and how much they eat and drink" (p. 19). Having minority female high school adolescents record their food and drink intake for three days of a week at two key points during the study allowed this researcher to compare the extent to which adolescents' dietary habits changed, based on the USDA's Food Pyramid Guide. The participants resubmitted their Personal Food Journals at the beginning of the week 7 motivational session. These journals included nine entries of daily food and drink intake for each phase of the Personal Food Journal assignment.

Activity 1: correctly recording food journal entries. This researcher modeled for participants the related procedures for documenting their food and beverage intake. Participants gained a clear understanding of the related procedures for documenting their intake and, during subsequent discussions, this activity helped them identify any trends and similarities in their diets.

Activity 2: interactive group discussions. This researcher then placed participants into interactive discussion dyads. Within each pairing, participants discussed their daily food choices, taking note of which foods they consumed that had the most and least nutritional values. By completing this type of an activity, students developed a clear understanding of how food choices contributed to obesity.

Activity 3: identification of foods causing obesity. Next, these minority female high school students identified differences and similarities in foods that were directly linked to obesity. As participants considered the differences and similarities among the foods and their impact on obesity, they considered the nutritional content of the foods. Next, each interactive group discussed the impact their food choices could have on their physical and mental health.

Acti*vity 4: discussion and follow-up activity*. This researcher led students through a meaningful discussion about what participants learned about their eating habits. Participants also discussed the identified similarities and differences in diet among the interactive groups and what dietary habits could contribute to obesity. The participants wrote down foods that were typically consumed on a holiday or a Sunday, which typically was a large family gathering day where large quantities of food were consumed.

They developed an understanding of how foods that they perceived as "comfort foods" could contribute to obesity and impact their ability to practice healthy lifestyle behaviors.

Week 3-session three: interactive groups--perceptions. During week 3, this researcher moderated a whole-group discussion in order to facilitate participant interaction and to explore participants' distinct perspectives about what they and their families ate. Participants also submitted their Personal Food Journals that they received at the conclusion of the week 2 session. Participants recorded their daily food and drink intake over a three-day period. This researcher redistributed the journals to the participants at the conclusion of the week 6 session.

Although the HLBS was used to assess the participants' perceptions and knowledge of healthy lifestyle behaviors, the interactive small- and large-group sessions facilitated in-depth discussions, from the perspetive of participants who had firsthand knowledge of the phenomenon (Gall et al., 2010). Participants openly shared firsthand knowledge of what they and their families ate. Shippen, Curtis, and Miller (2009) stated, "The groups have the capacity to yield valuable insights into information, perceptions, opinions, attitudes, and values expressed by participants" (p. 229). Gall et al. (2010) concluded that group sessions were an opportunity for individuals to share perceptions and beliefs they would not share in a one-on-one interview. By utilizing the group sessions effectively, this researcher gained an understanding of how culture and society influenced healthy lifestyle behaviors among minority female high school adolescents.

To facilitate substantive dialogue among and within the groups, this researcher asked participants to consider the influence that peers, family, culture, community, and the availability of healthy foods had on their ability to practice healthy lifestyle

behaviors. The interactive group sessions focused on participants' perceptions of healthy lifestyle behaviors along with factors that could influence their ability to practice healthy lifestyle behaviors. Participants identified and described foods they perceived as both healthy and unhealthy and discussed the factors that inhibited or enhanced their ability to make healthy food choices. This researcher's role within the focus groups was to moderate the sessions and to promote candid discussion among participants.

Activity 1: culture impacts obesity. Participants were placed in groups of two to investigate each other's perceptions of how culture influenced their beliefs about obesity. Participants considered those they interacted with daily, including individuals within the community, family members, friends, and peers. Participants also considered the manner in which these individuals influence their beliefs regarding obesity.

Activity 2: skit presentations. Group participants performed a short skit on misconceptions about weight in general and obesity in particular among females in their respective cultures. The focus included how some cultures perceived that overweight status was acceptable. Each skit was three-to-five minutes in length.

Activity 3: discussion and follow-up activity. This researcher led participants in a discussion of what they learned while preparing for and watching the skits about the role cultural norms, beliefs, and attitudes had on their ability to practice healthy lifestyle behaviors. The discussion focused on the impact that culture may or may not have on their ability to practice lifestyle behaviors. The aim was for them to internalize what factors influence their behaviors towards diet and exercise.

Week 4-session four: healthy eating. During week 4, the various components of the USDA's Food Pyramid Guide were explained to the participants by the researcher.

The USDA Food Pyramid Guide provided participants with the criteria for making healthy and unhealthy food choices. Each participant received a visual representation of the USDA Food Pyramid Guide at the beginning of the session.

The Pyramid includes the following six food groups: (a) grains and starches (sources of carbohydrates), (b) vegetables, (c) fruits, (d) dairy products, (e) meats, and (f) fats and sweets. The USDA provides recommendations for how much food a person should consume from each food group daily. The largest food groups, grains/starches and vegetables, are at the bottom of the pyramid, while the smallest food groups, meats and fats/sweets, are at the top of the pyramid.

Accordingly, the largest food groups should represent the largest percentage of an individual's daily caloric intake, and the smallest food groups should provide the smallest percentage of food intake daily. This researcher used PowerPoint slides and research-based information that listed examples of foods from each of the six food groups and included recommendations for daily caloric intake. Each PowerPoint slide contained 15-20 examples of foods from each food group. The general handouts included information on the number of servings from each food group that an adolescent should have based on his or her daily caloric intake.

This researcher engaged in an open discussion with the participants regarding what they ate for breakfast, lunch, and dinner the previous day. Their responses were written on a Smart Board. As an extension activity, participants classified each food item within the appropriate food group and determined whether the food was a healthy or an unhealthy food choice.

Activity 1: review of food labels. Participants reviewed their study of food labels. The food labels included the amount of calories, protein, fat, and carbohydrates in each item. The need to identify the number of calories per serving was essential to understanding the relationship between obesity and the amount of food participants consume.

Activity 2: discussion and follow-up activity. This researcher then reintroduced students to the USDA Food Pyramid, which was used to identify the basic food groups. Next, participants reviewed their Personal Food Journals to determine if they consumed foods from each of the six food groups, according to the recommendations provided by the USDA. Students also reviewed their Personal Food Journals to determine if they made any unhealthy food choices during the first food journal activity.

As a follow-up, the participants analyzed their Personal Food Journal entries and determined if they received the recommended daily amount of food from each of the six food groups. The participants used the USDA's "My Plate and Historical Food Pyramid Resources" (2015), which is a food guidance system found on the following USDA web page: fnicnal.usda.gov/dietaryguidance/myplate. The purpose of this activity was to encourage participants to eat a balanced diet.

Week 5-session five: the importance and value of physical activity. During week 5, the focus was on the daily recommendations for and the related benefits of physical activity, as noted by the CDC (2012). The CDC (2012) recommends that adolescents get at least an hour of daily physical activity. Participants learned the definitions of aerobic activity and anaerobic activity, learned the difference between

aerobic activity and anaerobic activity, described and classified various aerobic and anaerobic activities, and discerned the related health benefits of both types of activities.

The use of PowerPoint slides and research-based information enhanced the participants' understanding of the importance of daily physical activity. Participants identified the fundamental differences between aerobic and anaerobic activity and described the related physiological benefits of both. Participants also developed a clear understanding of the daily amount of aerobic and anaerobic exercise they needed to experience the related physiological benefits.

Subsequently, in a whole-group activity, the participants created a list of physical activities and classified each as either aerobic or anaerobic. When creating the list, the students listed all physical activities, including walking between classes, to and from school, and to either the store or a friend's house. Next, this researcher helped the participants to classify several physical activities as being either aerobic or anaerobic. By doing this, the process of classifying physical activities was modeled for the students. The participants then were divided into groups of three, and each group classified a list of physical activities as either aerobic or anaerobic. Participants also received pertinent information regarding target heart rates, as defined by the AHA (2014). Participants then determined what their target heart rate should be for certain physical activities.

For the last activity, the students worked in groups of three to determine the number of calories they burned while participating in physical activities. Each group was assigned a distinct list of physical activities. Each group then reported its results. Finally, the participants determined which physical activities burned the most calories.

Activity 1: aerobic and anaerobic exercises. This researcher discussed the differences between aerobic and anaerobic exercises. The PowerPoint slides listed and provided a visual representation of each exercise. The participants then stated whether each exercise was aerobic or anaerobic.

Activity 2: recording caloric intake. The participants recorded the number of calories they consumed over a three-day period, using recorded food and drink intake from the first food journal assignment. This researcher provided the number of calories that must be burned for a person to lose one pound and compared this knowledge with the recorded numbers of consumed calories from participants' Personal Food Journals.

Activity 3: small group discussions and presentations. The students were divided into small groups to discuss the findings from their Personal Food Journals. They identified the relationship between physical activity and caloric expenditure. Students also determined their caloric expenditure based on such variables as the type of physical activity (aerobic or anaerobic) they chose, the intensity at which they exercised, and the frequency with which they exercised.

Activity 4: follow-up activity. For the follow-up activity, each participant's understanding of how she could implement changes for herself and if she felt motivated to set goals to increase her amount of physical activity was assessed. The participants identified the characteristics of aerobic and anaerobic exercises. Next, participants compared aerobic and anaerobic exercises and generated a list of the similarities and differences between them.

Week 6-session six: obesity-related diseases. During week 6, the short- and long-term health-related risks of obesity among minority female high school adolescents

were presented. Using PowerPoint slides and other visual aids, this researcher first provided an overview of the short-term health implications as determined by the CDC (2012). The implications are high cholesterol, high blood pressure, prediabetes, sleep apnea, joint problems, and poor self-esteem (CDC, 2012).

Students received handouts that identified the criteria for determining healthy and unhealthy cholesterol, blood glucose, and blood pressure levels (CDC, 2014). The participants learned about the long-term implications of obesity, which included heart disease, cancer, stroke, and arthritis. The CDC (2014) concluded, "Overweight and obesity are associated with increased risk for many types of cancer, including cancer of the breast, colon, endometrium, esophagus, kidney, pancreas, gall bladder, thyroid, ovary, cervix, and prostate, as well as multiple myeloma and Hodgkin's lymphoma" (para. 6).

The last part of the session focused on identifying strategies that could reduce the short- and long-term implications of the diseases associated with overweight and obesity status. This allowed this researcher to integrate material from earlier sessions that sought to increase participants' knowledge of healthy lifestyle behaviors in the areas of diet and physical activity. Material from week 2, week 4, and week 5 were also integrated into this session. At the end of the week 6 session, the Personal Food Journals were redistributed to each participant. The participants followed the same procedures from the first food journal activity (between the conclusion of week 2 and the beginning of week 3), recording the food and beverages they consumed daily for three consecutive days. They resubmitted their Personal Food Journals at the beginning of the week 7 session.

A*ctivity 1: family health history*. Participants obtained information about their family's health history by asking their parents whether diabetes, hypertension, and or

high cholesterol were present within their families. This researcher stressed to participants and their parents that this information was strictly confidential and used exclusively by the participants and would not be part of the data analysis procedures. Participants were also informed that only they would have access to this information. Parents could choose to not disclose information pertaining to their medical history, without penalty. The purpose of this activity was for participants to determine their potential risk of developing obesity-related diseases.

Activity 2: health implications of obesity. The participants and this researcher discussed the short- and long-term health implications of obesity. The purpose of the discussions was to increase participants' scope of understanding regarding the medical implications of obesity. They also discussed the social and emotional implications of obesity and their possible relationship to the short- and long-term implications of obesity.

Activity 3: follow-up activity. Participants had the option of discussing their findings regarding their family members and possibly themselves. (Participants could choose to not discuss either their findings or those of their family members, without penalty.) This researcher carefully facilitated this delicate discussion by leading participants to think in terms of how they could prevent the short- and long-term health implications of obesity without referencing an individual's disease.

Week 7-session seven: final focus and HLBS postintervention. During week 7, each participant completed the HLBS and was to answer the open-ended questions and submit both sets of answers at the end of the motivational session. Comparing minority female high school adolescents' pre- and postintervention responses to the HLBS enabled this researcher to determine the cumulative impact of the motivational sessions on

students' lifestyles or lifestyle changes. This researcher included the open-ended questions as a means for collecting written evidence of participants' knowledge of healthy and unhealthy eating habits, the related benefits of regular physical activity, and the barriers impacting their ability to practice healthy eating habits. As stated earlier, however, they answered the wrong questions both times. Participants also resubmitted their Personal Food Journals, which included their food and drink intake between the conclusion of the week 2 motivational session and the beginning of the week 3 motivational session and between the conclusion of the week 6 motivational session and the beginning of the week 7 motivational session.

Activity 1: researcher's review of study. This researcher thanked the 15 minority female high school students for participating in the motivational sessions and for completing and submitting the Personal Food Journals. This researcher also discussed how students could encourage each other to put into practice what they learned by participating in this study. Finally, this researcher discussed with participants how they could encourage their peers to practice healthy lifestyle behaviors.

Activity 2: setting attainable goals. Participants were encouraged to set attainable goals that demonstrated their newly found knowledge about healthy lifestyle behaviors. The participants expressed the desire to interact with each other as encouragers and motivators and to continue these practices after the completion of the study. Participants also discussed how they could encourage their peers to practice healthy lifestyle behaviors.

Activity 3: survey administration. Participants anonymously completed the HLBS. The participants had 15-20 minutes to complete the questionnaire. Each

participant submitted her questionnaire to this researcher at the end of the session. Participants were also assigned the task of answering the open-ended questions that were also assigned at the end of the week 1 session and submitting both sets of responses.

Data Analysis

To analyze the data from the HLBS, this researcher collected and compared individual and composite mean scores for the week 1 administration and the individual and composite mean scores for the week 7 administration. This researcher used *t*-tests to compare the individual and composite preintervention and postintervention mean scores of participants. Comparing the individual and composite preintervention and postintervention mean scores of participants enabled this researcher to determine if there was a significant difference in the female adolescents' perceptions regarding their ability to practice healthy lifestyle behaviors. Creswell (2012) noted that researchers utilized *t*-tests to compare sample means under two distinct conditions. Although *t*-tests provide a quantitative measure and thus are appropriate for quantitative studies, they have applicability in qualitative studies when researchers utilize the results to provide quantitative evidence of findings, identify patterns that are indistinguishable using qualitative data analysis methods, and to determine and then classify participants' perceptions (Maxwell, 2010).

The other planned data analysis process intended to determine the frequencies and percentages of participants' responses to the six open-ended questions (Bloomberg & Volpe, 2012). The first step in this process was to be the organization of the participants' responses to each of the open-ended questions into categories (Bloomberg & Volpe, 2012). To facilitate this process, this researcher planned to list the main categories that

emerged for a particular open-ended question in an Excel spreadsheet and categorize each participant's response into the appropriate category or into more than one category. If a participant provided a response that was classifiable in more than one category, this researcher was going to break the response into its essential parts and place each part of the response in the appropriate category. The second step was to involve the organization of the various categories that emerged for each open-ended question in descending order based on the number of participant responses. This researcher acknowledged that organizing participants' responses into main categories was a subjective process; therefore, member-checking confirmation of his analysis from an external auditor who had an acute understanding of the content and was familiar with data analysis for qualitative research was intended to be the third step of the process. However, because the students answered the wrong set of questions, this analysis could not be conducted.

Creswell (2012) referred to the intended third step of this researcher's data analysis procedures as establishing the credibility of a study by enlisting the services of an outside person and by developing an audit trail. In regard to this study, the external auditor was to provide insight regarding the manner in which this researcher combined and, if necessary, refined categories. The fourth step of the data analysis procedures would have involved this researcher reporting the frequencies and the percentages of participants' responses to each of the open-ended responses.

To analyze the data provided in the Personal Food Journals, this researcher compared the types of foods and drinks that participants ingested during the first journal activity (between the conclusion of the week 2 session and at the beginning of the week 3 session) and the second journal activity (between the conclusion of the week 6 session

and the beginning of the week 7 session). Each phase of the journal activity had identical conditions: three days in length and nine entries in the journal (three entries per day). The frequency of participants' consumption of healthy foods and beverages for each three-day phase was determined. To determine what foods and beverages were healthy and unhealthy, the criteria set forth by the USDA Food Pyramid Guide were used. Next, this researcher compared the frequency of participants' consumption of healthy foods and beverages during the first three-day phase and their consumption of healthy foods and beverages during the second three-day phase.

To answer this study's central research question, participants' pre- and postintervention responses to items 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13 on the HLBS were compared. To answer subquestion 1, this researcher compared participants' pre- and postintervention responses to items 1, 2, 8, 14, and 15 on the HLBS and their responses from the first three-day phase and the second three-day phase of the Personal Food Journals. Subquestion 2 was supposed to be answered by comparing participants' responses to open-ended journal questions 1, 2, 3, and 4 after week 1 and week 7; however, participants answered the wrong set of questions, and this researcher was unable to answer this subquestion.

Ethical Considerations

The written permission to conduct this study was obtained from the respective school and district authorities. In seeking permission to conduct this study, this researcher ensured that each participant submitted both the Parent/Guardian Consent Form and Student Assent Form. School system personnel were provided with all requisite documentation. Finally, this researcher met with school system personnel and discussed

any concerns and addressed all questions they had regarding the nature and the purpose of this study. School system personnel had no concerns about any aspect of this study.

This researcher completed the National Institute of Health online training regarding the protection of human subjects. To maintain participant confidentiality, each HLBS, sheet containing the open-ended journal questions, and Personal Food Journal were numbered and randomly distributed and participants were told not to place their names on any of these documents. All data were kept in a locked file cabinet, located in this researcher's home, to which only he had a key.

All data pertaining to this study will be kept for three years after its conclusion, at which time all data will be destroyed by this researcher. During this three-year period, nobody else will have access to this study's data. Finally, this researcher informed parents that their children, who were participants in this study, could withdraw from this study at any time and at their discretion, without penalty.

Trustworthiness and Potential Research Bias

To ensure that participants' responses were accurate, this researcher used member checking. The member checking process occurred when participants submitted the HLBS. When a participant completed the HLBS, the researcher reviewed each response with the participants to ensure that the participant understood the question and provided a precise response. This researcher followed this procedure during week 1 and week 7. This researcher also reviewed each participant's Personal Food Journal to ensure that the researcher's interpretation of the participant's food choice and the participant's actual food choices aligned. This researcher conducted this review during the conclusion of the week 7 session.

Limitations

This study only included African-American, Hispanic, and African-Caribbean female students who attended a large urban high school located in the southern part of the United States. Therefore, the transferability of findings to other high school settings and to nonminority and other minority female or male student populations was limited. The use of a purposeful sampling procedure was another limitation as utilizing this type of sampling procedure limited the transferability of findings to other high school settings.

Summary

A qualitative case study approach and a purposeful sampling procedure were used for this study. The small but representative sample population included 15 minority female students, ages 15-18, who attended a large urban high school in the southern part of the United States and had a BMI > 90. Data for each participant were collected from the HLBS and a Personal Food Journal to determine the impact that seven motivational support sessions had on students' knowledge of healthy lifestyle behaviors. The data collected for the open-ended questions could not be used as the students twice answered the wrong set of questions and the mistake was not noticed until after the study ended and the participants were released. Conducting a study of this nature contributed to the related body of knowledge by determining if the implementation of seven motivational sessions improved female minority adolescents' knowledge of healthy eating behaviors and increased their capacity to apply their knowledge by making healthy food choices.

Chapter 4: Findings

Introduction

This chapter describes the findings from the data collected for this study. The following two forms of data were collected by this researcher: the HLBS and the Personal Food Journals. The third form of data, answers to the open-ended questions, was collected but, as stated earlier, could not be used because the students answered the wrong set of questions each time and the error was not discovered until after the study was concluded and the participants were released. Nevertheless, the data collected were sufficient to satisfy the purpose of the study.

The researcher administered the HLBS during week 1 and week 7 of the study. The participants (n = 15) completed their Personal Food Journals between week 2 and week 3 and then between week 6 and week 7; they answered the open-ended questions during week 1 and week 7 of the study. In the subsequent sections of this chapter, this researcher will provide the related findings for the central research question and the two subquestions; a summary of the findings will follow. Table 1 lists each participant's race and BMI. Fourteen of the 15 participants had a BMI between 30 and 40, and all the participants were in the obese range based on the criteria set forth by the CDC (2014).

Table 1

Participants' Race and BMI

Participant	Race	BMI
Participant 1	Hispanic	32.8
Participant 2	Hispanic	34.0
Participant 3	Hispanic	38.0
Participant 4	Caribbean	32.8
Participant 5	African American	32.2
Participant 6	Hispanic	37.2
Participant 7	Hispanic	30.8
Participant 8	African American	44.2
Participant 9	Hispanic	33.4
Participant 10	African American	34.3
Participant 11	African American	32.0
Participant 12	Caribbean	33.5
Participant 13	African American	38.8
Participant 14	Caribbean	35.0
Participant 15	African American	36.2

Note. All female participants were in the obese range according to the criteria published by the Center for Disease and Prevention Control. BMI = body mass index.

Central Question

The central question for this study was as follows: How will participating in motivational support sessions improve the perceptions of minority female high school students regarding healthy eating behaviors? To answer the central research question, this researcher compared participants' pre- and postintervention composite scores for items 3,

4, 5, 6, 7, 9, 10, 11, 12, and 13 on the HLBS. Table 2 provides each participant's composite score for both the preintervention and the postintervention phases of the study. Fourteeen of the 15 participants had higher postintervention scores than preintervention scores and one participant's scores did not change.

Table 2

HLBS: Composite Scores

Participant	Preintervention	Postintervention
Participant 1	59	64
Participant 2	59	65
Participant 3	59	67
Participant 4	57	69
Participant 5	57	69
Participant 6	59	63
Participant 7	58	63
Participant 8	59	69
Participant 9	58	68
Participant 10	60	67
Participant 11	61	66
Participant 12	62	65
Participant 13	66	66
Participant 14	62	68
Participant 15	66	67

Note. Participants' overall scores on the Healthy Lifestyle Belief Scale on a scale of 16 to 80, with higher scores indicating a healthier lifestyle.

The sample's mean, mode, and standard deviation for each of the items on the HLBS were also determined. Table 3 provides the two measures of central tendency and the standard deviation for each item for both the preintervention phase and the postintervention phase. This researcher concluded that the sample scores increased for 15 of the 16 items, and one sample score remained the same from the preintervention phase

to the postintervention phase. It was also found that the overall sample mean score for items 1-16 on the HLBS increased by 0.43 points from the preintervention phase to the postintervention phase.

Table 3

Preintervention and Postintervention: HLBS

Item	M		Mode		SD	
	Pre	Post	Pre	Post	Pre	Post
Item 1	4.00	4.73	4(15)	5(11)	0.00	0.47
Item 2	3.87	4.19	4(13)	4(12)	0.34	0.41
Item 3	3.47	3.87	3(8)	4(13)	0.50	0.35
Item 4	3.40	3.87	3(9)	4(13)	0.49	0.35
Item 5	4.07	4.60	4(10)	5(9)	0.57	0.51
Item 6	3.40	3.87	3(9)	4(13)	0.49	0.35
Item 7	4.00	4.30	4(15)	4(10)	0.00	0.49
Item 8	3.90	4.27	4(12)	4(11)	0.44	0.46
Item 9	3.00	3.00	3(15)	3(15)	0.00	0.00
Item 10	3.40	4.10	3(9)	4(14)	0.49	0.26
Item 11	3.67	3.87	4(10)	4(13)	0.47	0.52
Item 12	3.50	3.87	4(8)	4(13)	0.50	0.35
Item 13	4.27	4.87	4(11)	5(13)	0.44	0.35
Item 14	4.07	4.10	4(14)	4(13)	0.25	0.35
Item 15	3.60	4.13	4(9)	4(13)	0.49	0.35
Item 16	4.27	5.00	4(11)	5(15)	0.44	0.00

Note. Item 16 did not address eating or physical activity behaviors and was not included in the data analysis .

To answer the central research question, a paired *t* test was used to determine if the difference in participants' pre- and postintervention mean scores was significant. This included participants' pre- and postintervention responses to items 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13 on the HLBS. Using $p < .05$ as the level of significance, a statistically significant difference was found between participants' preintervention scores ($M = 3.62$,

SD = 0.39) and their postintervention scores (*M* = 4.02, *SD* = 0.51,: *t*[9] = 5.28, *p* = 0.001 [two-tailed value]). The findings also revealed that participants' overall mean scores increased by 0.40 points from the preintervention phase to the postintervention phase.

Subquestion 1

Subquestion 1 was as follows: How will participating in motivational support sessions perceivably mitigate cultural and societal factors that influence unhealthy eating behaviors for female minority high school students? To answer this question, this researcher used multiple forms of data. The first form of data was participants' pre- and postintervention responses to items 1, 2, 8, 14, and 15 on the HLBS. The second form of data was participants' responses for the first three-day phase of the Personal Food Journal activity (between week 2 and week 3) and their responses for the second three-day phase of the Personal Food Journal activity (between week 6 and week 7). The final form of data was intended to be the participants' responses to open-ended journal questions 1, 2, 3, 4, 5, and 6. For the two forms of data, participants' responses under two distinct conditions were compared to determine the extent to which the intervention may have mitigated cultural and societal factors that influenced unhealthy eating behaviors for female minority high school students.

The findings from the HLBS revealed that participants' mean scores increased by 0.39 points from the preintervention phase to the postintervention phase. This researcher then used a paired *t* test to determine if the difference in participants' pre- and postintervention mean scores for responses to items 1, 2, 8, 14, and 15 on the HLBS was statistically significant. Using $p < .05$ as the level of significance, this researcher found a

statistically significant difference between participants' preintervention scores (M = 3.89, SD = 0.18) and their postintervention scores (M = 4.28, SD = 0.26: t[4] = 3.41, p = 0.03 [two-tailed value]). Further analysis of the findings revealed that participants' overall mean scores increased by 0.39 points from the preintervention phase to the postintervention phase.

For the Personal Food Journal activity, the number of instances in which participants made healthy food choices between week 2 and week 3 and between week 6 and week 7 was determined first. The number of times participants made healthy food and beverage choices during each phase was then compared. By comparing participants' responses during two distinct phases, the extent to which participation in the intervention may have helped to increase participants' consumption of healthy foods and beverages was determined.

To ensure that all participants participated in this phase of the study, special accommodations for participants who did not attend motivational support session 2 and motivational support session 5 because of school absences, illness, or academic-related responsibilities had to be made. Completing motivational support session 2 and motivational support session 5 were mandatory because the related procedures for completing the Personal Food Journals were explained when the Personal Food Journals were distributed to the participants. Makeup sessions for these participants were held both during and after the intervention. These accommodations needed to be made because not all participants completed their Personal Food Journals between week 2 and week 3 and between week 6 and week 7 as originally planned; however, all 15

participants eventually recorded their food and beverages choices for three consecutive days during both phases of the journal activity.

As stated previously, the USDA's Food Pyramid Guide provided the criteria for determining if participants made healthy food choices. The Food Pyramid Guide includes the following four levels: (a) fats and sweets, which are arranged visually at the top of the Food Pyramid Guide; (b) milk and meats, which are directly below fats and sweets on the pyramid; (c) vegetables and fruits, which are directly below milk and meats, and (d) breads, cereals, rice, and pasta, which are at the very bottom of the pyramid. The USDA recommends that adolescents eat meals that include foods from the bottom three levels of the pyramid and if possible avoid foods and beverages from the top level of the pyramid, which includes foods that are high in fat and sweets.

For this study, a healthy meal was one in which the participant included a food choice from all three of the following groups: (a) milk/dairy and meats, (b) vegetables and fruits, and (c) breads, cereals, rice, and pasta. Food choices from the fats and sweets group were not part of the criteria for determining a healthy meal as the USDA classifies foods from this group as unessential; in addition, and unlike the other three food groups, the USDA also does not provide recommendations for the number of servings of fats and sweets that students should have each day. For the purpose of this study, participants who included a food choice from the fats and sweets group did not receive credit for eating a healthy meal.

Individual snacks were counted as a meal, and participants received credit for choosing a snack from any one of the following three food groups: (a) milk/dairy and meats, (b) vegetables and fruits, and (c) breads, cereals, rice, and pasta. Examples of

healthy snack choices from the milk/dairy and meats group included chicken breast (no skin), tuna (without mayonnaise), turkey, yogurt, low-fat or skim milk, cottage cheese, and low-fat yogurt. Healthy food choices from the vegetables and fruit group included carrots, tomatoes, baked potatoes (plain), apples, strawberries, blueberries, and peaches. Healthy food choices from the breads, cereals, rice, and pasta group included rice cakes, high-fiber cereal, whole wheat pasta, whole grain bagels, and oatmeal.

During the data review process, it was also found that some participants skipped meals. Because the USDA identifies skipping meals as unhealthy behavior, participants did not receive credit for eating a healthy meal if they skipped a meal. The number of healthy and unhealthy food choices each participant made during the first three-day phase and the second three-day phase are shown in Table 4.

A paired *t* test was used to determine if any difference in the mean number of healthy food choices participants made under two distinct conditions--the first three-day phase and the second three-day phase--was significant. Using $p < .05$ as the level of significance, no statistically significant difference was found between the number of healthy food choices participants made during the first three-day phase *(*$M = 6.20$, $SD = 2.54$) and the number of healthy food choices they made during the second three-day phase ($M = 6.60$, $SD = 1.80$: $t[14] = 0.61$, $p = 0.55$ [two-tailed value]). Although participants did not demonstrate a statistically significant improvement in their eating habits, their overall healthy-choice mean score increased by 0.40 points from the first three-day phase to the second three-day phase. Another noteworthy finding showed that the overall mean number of unhealthy food choices participants made increased by 0.07 from the first three-day phase to the second three-day phase.

Table 4

Journal Phases

Participant	Number of Healthy Food Choices		Number of Unhealthy Food Choices	
	First three-day phase	Second three-day phase	First three-day phase	Second three-day phase
Participant 1	0	7	2	3
Participant 2	6	8	4	2
Participant 3	3	7	9	5
Participant 4	6	8	6	3
Participant 5	5	6	5	5
Participant 6	6	6	5	4
Participant 7	5	3	6	6
Participant 8	10	9	0	3
Participant 9	10	10	2	2
Participant 10	6	4	7	8
Participant 11	7	5	5	5
Participant 12	9	7	2	3
Participant 13	7	7	3	5
Participant 14	6	6	4	6
Participant 15	7	6	3	4

Note. Participants recorded in their Personal Food Journals what they ate.

In summary, the findings for subquestion 1 varied as there was a statistically significant difference between their responses to items 1, 2, 8, 14, and 15 on the HLBS during the preintervention phase and their responses to the same items during the postintervention phase; however, there was not a statistically significant difference between the number of healthy food choices participants made during the first three-day phase and the number of healthy food choices they made during the second three-day phase. When considering these results, this researcher found that the intervention had a

statistically significant impact on participants' knowledge of healthy food choices but not on their ability to make healthy food choices.

Subquestion 2

Subquestion 2 was as follows: How will the awareness and knowledge of physical activities through reading informational resources and participating in motivational support sessions change the perceptions of minority female high school students toward obesity? To answer subquestion 2, this researcher was supposed to compare participants' pre- and postresponses to researcher-created open-ended journal questions 1, 2, 3, 4, 5, and 6 but was unable to collect this form of data because participants completed the wrong set of open-ended questions each time. Having participants complete the open-ended questions in an additional session was not possible because (a) this researcher only received permission to conduct seven sessions, (b) the participants had already been released from the study when the error was discovered, and (c) taking time out of other classes and or planned activities to complete the questions would have negatively impacted the participants. He also felt that he had sufficient data from which to draw the conclusions he determined were most important for the stated purpose of this study.

Summary

To answer this study's central research question**,** a paired *t* test was used to compare participants' pre- and postintervention composite scores for items 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13 on the HLBS. There was a statistically significant difference between participants' preintervention and post intervention scores ($t[9] = 5.28$, $p = 0.01$ [two-tailed value]). When considering these findings, it was concluded that participating in

motivational support sessions improved the perceptions of minority female high school students regarding healthy eating behaviors.

To answer subquestion 1, paired *t* tests were used to conduct two data analyses. The first data analysis involved comparing participants' responses to items 1, 2, 8, 14, and 15 on the HLBS. A statistically significant difference between participants' preintervention and postintervention scores ($t[4] = 3.41$, $p = 0.03$ [two-tailed value]) was found. The second data analysis involved comparing the number of healthy food choices participants made during the first three-day phase and the number of healthy food choices they made during the second three-day phase. There was no statistically significant difference found between the number of healthy food choices participants made during the first three-day phase and the number of healthy food choices they made during the second three-day phase ($t([4] = 0.61$, $p = 0.55$ [two-tailed value]). When considering these results, this researcher found that the intervention had a statistically significant impact on participants' knowledge of healthy food choices but not on their ability to make healthy food choices. This researcher was unable to collect the necessary data to answer subquestion 2 because participants completed an incorrect set of open-ended questions and time was not available to propose, schedule, and have approved an additional session.

Chapter 5: Discussion

Introduction

The purpose of this qualitative study was to determine if seven carefully crafted motivational group sessions that focused on obesity intervention improved minority female high school students' perceptions toward, knowledge of, and behavior regarding healthy eating habits and physical exercise. Researchers found the obesity rate among America's adolescents continuously increased and that minority adolescents had disproportionately higher obesity rates than other subgroups of adolescents (Kim, 2011; Reich, 2013). When comparing obesity rates among minority adolescents by gender, researchers concluded that females had a higher obesity rate than males (Groth & Morrison-Beedy, 2011; Williams, 2012). This chapter describes the findings of this study, an interpretation of the findings, a discussion of the related literature in relation to this study's findings, recommendations for further research, and the limitations of this study.

Findings and Analysis

The central question for this study was as follows: How will participating in motivational support sessions improve the perceptions of minority female high school students regarding healthy eating behaviors? This researcher used a paired *t* test to determine the difference in participants' pre- and postintervention mean scores on the HLBS. This included participants' pre- and postintervention responses to items 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13. Using $p < .05$ as the level of significance, this researcher found a statistically significant difference between participants' preintervention scores ($M = 3.62$,

SD = 0.39) and their postintervention scores (*M* = 4.02, *SD* = 0.51: *t*[9] = 5.28, *p* = 0.001 [two-tailed value]).

This finding was noteworthy as previous researchers found that school administrators had negligible success promoting adolescents' willingness to adopt healthy lifestyle behaviors, especially at high schools with disproportionately high minority adolescent populations. Wall (2013) believed a school-based intervention focusing on increasing adolescents' knowledge of healthy lifestyle behaviors would promote adolescents' willingness to practice these behaviors. Similar to Wall, this researcher concluded that increasing knowledge of healthy lifestyle behaviors was a prerequisite for practicing them.

Subquestion 1 was as follows: How will participating in motivational support sessions perceivably mitigate cultural and societal factors that influence unhealthy eating behaviors for female minority high school students? To answer this question, this researcher used two forms of data. The first form of data was participants' responses to items 1, 2, 8, 14, and 15 on the HLBS. There was a statistically significant difference between participants' preintervention scores (*M* = 3.89, *SD* = 0.18) and their postintervention scores (*M* = 4.28, *SD* = 0.26): *t*[4] = 3.41, *p* = 0.03 [two-tailed value]). The second form of data was participants' Personal Food Journals. Using $p < .05$ as the level of significance, this researcher found there was no statistically significant difference between the number of healthy food choices participants made during the first three-day phase *(M* = 6.20, *SD* = 2.54) and the number of healthy food choices they made during the second three-day phase (*M* = 6.60, *SD* = 1.80: *t*[14] = 0.61, *p* = 0.55 [two-tailed value]). Based on these results, this researcher found that the intervention had a

statistically significant impact on participants' knowledge of healthy food choices but not on their ability to make healthy food choices.

Several factors may have contributed to minority female adolescents' inability to connect their knowledge of healthy food choices and their ability to make healthy food choices. The first factor may have been that they were at different points of the acculturation and assimilation processes. Acculturation is the process in which individuals retain some of the traditions, habits, and values of the native country and adopt some, but not all, of those of the host country (Hernandez, Cohen, & Garcia, 2011; Lopez & Miller, 2011). Assimilation is the process wherein individuals relinquish the traditions, habits, and values of the native country and adopt those of the host country (Schwartz et al., 2010). Researchers found that total assimilation occurred in varying degrees, with some individuals seamlessly adopting the norms and practices of the foreign country while others incrementally adopting them (Creighton et al., 2012; Hernandez et al., 2011).

These cultural influences include perceptions of body image within the native country (Caprio et al., 2008). Researchers found perceptions of body image varied across contexts, and individuals, specifically female minority adolescents, often held on to the predominant beliefs of the native country regarding body image; therefore, female minority adolescents who came from cultures where the ideal body image was a large frame had trouble assimilating the beliefs of the host country regarding ideal body image when they differed from the beliefs of their native countries (Coulter, 2012; Yam, 2013). Caprio et al. (2008) found discrepancies between cultural groups. For example,

Caucasian females expressed a positive perception at a lower BMI, when compared to African American females.

Subquestion 2 was as follows: How will the awareness and knowledge of physical activities through reading informational resources and participating in motivational support sessions change the perceptions of minority female high school students toward obesity? To answer subquestion 2, this researcher was supposed to compare participants' responses to researcher-created open-ended journal questions 1, 2, 3, and 4 but was unable to collect this form of data because participants completed the wrong set of open-ended questions during both administrations. This researcher explored other options, including having participants complete the open-ended journal questions in an additional session; however, this option was not possible because this researcher could not conduct more than seven motivational sessions. This researcher also felt there were sufficient data from which to draw conclusions. The inability to collect the other form of data could provide a segue into further research wherein researchers use similar open-ended questions.

Limitations

The first limitation of this study was minority female adolescents did not complete the correct set of researcher-created open-ended journal questions. Without this form of data collection, this researcher was unable to answer subquestion 2, and without the findings to subquestion 2, this researcher lacked the anecdotal evidence to elucidate the impact that minority female adolescents' participation in motivational sessions had on their perceptions of healthy and unhealthy eating habits, the barriers preventing them

from practicing healthy eating habits, the physiological and cognitive benefits of physical activity, and the amount of daily and weekly physical activity they should get.

The second limitation of this study was its limited scope and small sample size. This researcher conducted this study at one urban high school located in the southern part of the United States whose student population was primarily composed of minority students. By limiting this study to one setting, this researcher impacted the transferability of findings to other high school settings with student populations different from the student population at the target high school. In addition, the small sample size may have skewed the results.

The third limitation was the length of the intervention. The intervention was seven weeks in length, and the researcher had only 55 minutes each week with the participants. By the conclusion of the seven motivational sessions, this researcher believed that the intervention should have been longer. By increasing either the length of each session or the number of motivational sessions each week, this researcher may have been able to administer open-ended journal questions 1, 2, 3, and 4 to the participants. It is recommended that any future studies should include a longer implementation period.

Implications of the Study

The implications of this study are significant for minority female adolescents and for school leaders from the target high school. The first implication is that by applying their knowledge of healthy eating behaviors, female minority adolescents may reduce their risk of having short- and long-term health issues. These short-term health risks include high blood pressure, increased blood sugar and cholesterol levels, and psychological and social problems; the long-term health issues include diabetes,

hypertension, stroke, heart disease, sleep apnea, and osteoarthritis (Center for Disease Control and Prevention, 2009; Kuebler et al., 2013; Saluhuddin, 2013).

The second implication is that although female minority adolescents increased their knowledge of healthy food choices, they lacked the ability to apply their knowledge and to make healthy food choices. This researcher believes the disconnect between female minority adolescents' ability to acquire knowledge and their ability to apply knowledge is significant. Several factors may have influenced the ability of female minority adolescents to make healthy food choices as determined by their responses in their Personal Food Journals. The first factor is the cultural and ethnic backgrounds of female minority adolescents may influence their food choices. Caprio et al. (2008) found that culture had an influence on individuals' perceptions of dietary habits and obesity-related prevention. Culture can also impact individuals' perceptions of ideal body image (Coulter, 2012; Yam, 2013). Another factor that may have impacted the ability of female minority adolescents to make healthy food choices include a low level of both nutritional knowledge and educational attainment among participants' parents regarding healthy eating behaviors. Cluss et al. (2013) found that African American parents with low levels of educational attainment had disproportionately low levels of nutritional knowledge.

The school environment is the final factor that may have influenced female minority adolescents' ability to make healthy food choices. This researcher noted that the vending machines at the school contained food and drinks that are unhealthy and contribute to obesity among adolescents. Schwarz and Peterson (2010) found that limited access to healthy foods contributed to the prevalence of obesity among minority adolescents. The CDC (2010c) recommended that state and school leaders provide

students healthy food choices and establish precise guidelines for what leaders of schools can and cannot sell in their vending machines.

The third implication is that target school leaders may not be creating an environment that is conducive to female minority adolescents' making healthy food choices and practicing healthy lifestyle behaviors. The majority of the food and drink choices found in the target school's vending machines were high in sugar and therefore had no nutritional value. Researchers recommended that calories from sugar account for less than 10% of adolescents' daily caloric intake, yet they found that sugar and other ingredients that had no nutritional value accounted for almost 20% of adolescents daily caloric intake (Welsh et al., 2011).

Recommendations

Recommendations for further research. Because participants were unable to answer the open-ended questions, it is recommended that future researchers conduct similar studies and ask open-ended questions pertaining to the types of foods minority female adolescents eat within their home environments and the potential barriers that prevent them from practicing healthy lifestyle behaviors. Collecting this type of data may promote an in-depth understanding of minority female adolescents' misconceptions of healthy eating habits and a precise understanding of the barriers they encounter across multiple settings. Researchers found that many minority adolescents come from single-parent homes where the mother or father works multiple jobs and is unable to cook healthy meals for the family. Lacking a clear understanding of healthy eating habits and not having a parent to guide their food choices, many minority adolescents resort to

eating fast food, frozen meals, and baked goods, most of which are high in fat, sugar, and sodium.

Another recommendation for further research is to conduct a similar study and measure and compare minority female adolescents' preintervention and postintervention BMIs. Although the target school nurse provided each participant's BMI, this researcher did not determine participants' BMI prior to and after participating in the seven motivational group sessions. It is recommended that further researchers measure and compare minority female adolescents' BMIs prior to and after participating in the intervention. Conducting this type of an investigation would enable researchers to quantify the impact of the intervention on minority female adolescents' body masses.

The next recommendation is to expand the scope of this study by including female minority adolescents who are in Grade 9 and Grade 10. Twelve of the 15 participants in this study were in their junior and senior years of high school. Future research should include more minority female freshmen and sophomores, as establishing healthy lifestyle behavior in their early high school years may reduce their potential risk of developing obesity-related diseases as adults (Safron et al., 2011).

The final recommendation for further research is to expand the scope of this study by having female minority adolescents participate in a moderately rigorous physical program for at least 30 minutes two to three times per week. Researchers conducting this type of a study should measure and compare minority female adolescents' BMIs and their body fat percentages prior to and after participating in the program. To gain a precise understanding of the program's impact on BMI and body fat percentages, researchers should conduct this study over a period of 12 to 16 weeks.

Recommendation for practice at the target school. The inability of female minority adolescents to apply their knowledge of healthy food choices was compelling. Participants needed additional time to develop a clear understanding of the extent to which unhealthy eating habits impact their short- and long-term health. Because of the challenges that many minority adolescents encounter with their home settings, which include cultural influences and limited access to healthy foods within the home setting, it is recommended that target school leaders provide a comprehensive menu of healthy food choices for both breakfast and lunch and that they limit student access to soda machines and vending machines that include any unhealthy food options. Target school leaders should also establish guidelines for the types of food and drinks that can be sold during school hours.

Conclusions

The purpose of this qualitative case study was to determine if seven carefully crafted motivational group sessions that focused on obesity intervention improved minority female high school students' perceptions and knowledge of healthy eating habits and physical exercise. Conducting a study of this nature was necessary as the prevalence of obesity and metabolic syndrome has increased among minority adolescents (Groth & Morrison-Beedy, 2011; Williams, 2012). Obesity in adolescence is associated with an increased risk of developing insulin resistance, high blood pressure, and depression (Currence, 2013; Hu, 2014; Jator, 2014). Metabolic syndrome in adolescence is associated with a twofold increased risk of contracting type 2 diabetes and cardiovascular disease. The link between metabolic syndrome in adolescence and both type 2 diabetes and cardiovascular disease is noteworthy as the prevalence of metabolic syndrome is

disproportionately high among minority adolescents (Miller et al., 2014; Texas Biomed, 2013). Promoting adolescents' knowledge of healthy lifestyle behaviors is an effective means for increasing their ability to practice these behaviors and to decrease their risks of developing negative physiological, psychological, and social outcomes (Soraoka, 2013).

By determining that minority female high school students improved their overall perceptions and knowledge of healthy eating behaviors after their participation in motivational group sessions, the potentially transformative impact the school setting could have in combatting the obesity epidemic among a group of adolescents who had BMIs ranging from 30.8 to 44.2 was clearly established. Based on the criteria set forth by the CDC, each participant had a BMI in the obese range. Adolescents with a BMI in the obese range have a disproportionately higher risk of experiencing social, psychological, and health-related consequences when compared to their same-age peers with BMIs in the healthy range (Coulter, 2012; Groth & Morrison-Beedy, 2011).

The social, psychological, and health-related consequences of obesity include social anxiety, low self-esteem, eating disorders, depression, high levels of LDL (bad cholesterol) and low levels of HDL (good cholesterol), high blood pressure, type 2 diabetes, and metabolic syndrome (Currence, 2013; Hu, 2015; Jator, 2014; Kalra et al., 2013). By improving their overall knowledge and perceptions of healthy eating behaviors, minority female high school students could subsequently make healthy food choices and thereby decrease their likelihood of experiencing the social, psychological, and health-related consequences associated with obesity.

Although the minority female high school students improved their overall knowledge and perceptions of healthy eating behaviors, they did not demonstrate the

ability to apply this knowledge. Several factors could have contributed to the inability of the minority female high school students to apply their knowledge of healthy food choices within their Personal Food Journals. The first factor could have been the extent to which the assimilation process occurred. The construct of assimilation is the process wherein individuals relinquish the norms of the native country and adopt those of the host country. Assimilation occurs in either a classical or segmented manner. Classical assimilation is a linear process in which individuals adopt the norms of the native country in an uninterrupted manner; conversely, segmented assimilation is a nonlinear, multifaceted process in which individuals adopt the norms of the native country in a divergent manner (Allen et al., 2014; Tiedje et al., 2014; Waters et al., 2010). Contributing to segmented assimilation are the constructs of family, socioeconomic status, food preferences, intrapersonal goals, and interpersonal characteristics and relationships (Tiedje et al., 2014). This researcher believes that the minority female high school students exhibited the characteristics associated with segmented assimilation and thereby had not relinquished the norms of their native country regarding eating habits and body image.

When considering family and interpersonal relationships, the microsystem of Bronfenbrenner's Ecological Systems Theory has relevance (Bronfenbrenner, 1979, 1984). Bronfenbrenner (1979) described the microsystem as the immediate environment wherein individuals had direct interactions with family, peers, and community members. Those with whom adolescents interact within the microsystem have the greatest impact on their behaviors (Cluss et al., 2013; Jakubowski et al., 2012). This researcher asserts that those who interacted with the minority female high school student participants could

have impacted their ability to apply their knowledge throughout the Personal Food Journal activity.

Another factor that could have impacted the ability of the minority female high school students to apply their knowledge was the interconnected relationships between their environments. Bronfenbrenner (1984) referred to this interconnected relationship as the microsystem, asserting that adolescents' home environments influenced their behaviors in the school setting. In the case of their eating behaviors, this researcher believes that the home environments of minority female high school students had a more profound impact on their eating habits than the school environment. This researcher believes that more definitively elucidating the impact of the home environment on their behaviors may have been possible if participants completed the open-ended journal questions. The inability to determine the degree to which home environment impacted the eating habits of minority female high school students could be an area of concentration for further research.

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Appendix A

Permission for Use of HLBS

Permission for Use of HLBS

THE OHIO STATE UNIVERSITY
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May 25, 2016

Nova Southeastern University
3301 College Avenue
Fort Lauderdale, Florida 33314-7796

To Whom It May Concern,

This letter is to confirm that Eric Hughes has permission to use my Healthy Lifestyles Belief Scale for Teens in his doctoral study entitled "Impact of a School-based Obesity Intervention for Minority Female High School Students".

Please let me know if you have any questions or require anything further.

Warm regards,

Bernadette Melnyk

Bernadette Mazurek Melnyk, PhD, RN, CPNP/PMHNP, FAANP, FNAP, FAAN
Associate Vice President for Health Promotion
University Chief Wellness Officer
Dean and Professor, College of Nursing
Professor of Pediatrics & Psychiatry, College of Medicine

Appendix B

Open-Ended Journal Questions

Open-Ended Journal Questions

1. What types of foods do you eat within your home?
2. Do you believe that eating healthy foods is important? Why or why not?
3. What are healthy and unhealthy eating habits?
4. What barriers prevent you from practicing healthy eating habits?

5 How much physical activity should you get on both a daily and a weekly basis?

6. What are the benefits of participating in regular physical activity?

Appendix C

Parental Cover Letter

Parental Cover Letter

Dear Parent,

My name is Eric Hughes, and I am a student at Nova Southeastern. As part of the requirements for my doctoral program at Nova Southeastern University, I am conducting a study that focuses on improving minority female high school students' attitudes toward, and knowledge of healthy eating habits and physical exercise, and your daughter has been selected to participate in this study. The title of this study is as follows: Impact of a School-Based Obesity Intervention for Minority Female High School Students. The goal is to determine factors that may influence and increase African American parental involvement.

I am requesting permission for your daughter to participate in this study. As a participant in this study, your daughter will attend seven motivational group sessions over a seven-week period. There will be one motivational session each week. Each motivational session will occur during the school day in a classroom setting and will be approximately 60 minutes in length. During the motivational sessions, your daughter will complete the Healthy Lifestyles for Teens Scale (HLBS), answer a series of open-ended questions, maintain a food journal, perform skits during the motivational group sessions, and participate in interactive discussions about healthy eating habits, aerobic and anaerobic exercise, obesity-related diseases, and healthy lifestyle behaviors. Please understand that your daughter's participation in this study will be confidential. I will not be collecting or reporting any information that will reveal the personal identity of either your daughter or your family. The researcher will keep all records pertaining to this study in a locked file cabinet. Participating in this study poses no immediate risks to your daughter. Finally, your daughter may withdraw from this study at any time without penalty.

By attending all seven sessions, and completing and submitting both the Personal Food Journal and the HLBS, your daughter will earn 10 community service hours of credit toward her required services hours for graduation. If you have any further questions regarding the nature of this study, please feel free to contact me at any time, Eric Hughes at coachhughes1@aol.com or by telephone at 786-267-2050. In closing, I ask that you read the enclosed consent form, and if you agree to let your daughter participate, then please sign your name and include the date at the bottom of page 3.

Thank you,

Eric Hughes

Appendix D

Parent/Guardian Consent Form

Parent/Guardian Consent Form

Parent/Guardian Consent Form for Participation in the Research Study Entitled Impact of a School-Based Obesity Intervention for Minority Female High School Students

Funding Source: None.

IRB protocol #:

Principal investigator(s)
Eric Hughes, Candidate for Doctor of Education

Co-investigator(s)
Dr. Robert Esenberg
Dr. Ashley Russom
c/o Applied Research Center
Fischler School of Education
1750 NE 167th Street
North Miami Beach, FL 33162
800-986-3223, Ext. 28500

For questions/concerns about your research rights, contact:
Human Research Oversight Board (Institutional Review Board or IRB)
Nova Southeastern University
(954) 262-5369/Toll Free: 866-499-0790
IRB@nsu.nova.edu

What is the research about?
I request permission for your child to participate in a study that will focus on improving minority female high school students' attitudes toward and knowledge of healthy eating habits and physical exercise. This study will also seek to increase minority female high school students' knowledge of obesity-related diseases. This study will include 15-20 female minority students, ages 15-18, who attend the same high school and have a body mass index greater than 90.

What will (I and/or) my child be doing?
Your child will participate in 7 weekly motivational sessions. Each session will be held during the school day in one of the target high school's classrooms and will be approximately 60 minutes in length. During the weekly motivational sessions, your child will complete the Healthy Lifestyle Beliefs Scale for Teens (HLBS), participate in both skits and interactive whole group and small group discussions, develop short- and long-term healthy lifestyle goals, maintain a food journal, learn about aerobic and anaerobic exercise, give small group presentations, and answer open-ended questions. The topics for the whole group and small group discussions will be as follows: (a) healthy lifestyle behaviors, (b) the health-related risks of obesity and the prevalence of obesity-related diseases within participants' families; (c) the types and the related benefits of aerobic and anaerobic exercise; (d) the influence that peers, family, culture, and community have on participants' ability to practice healthy lifestyle behaviors; (e) the related procedures for

maintaining a food journal; (f) the impact that food choices have on participants' physical and mental health; (g) the criteria for making healthy and unhealthy food choices. The Healthy Lifestyle Beliefs Scale for Teens (HLBS) will assess the participants' attitudes toward and knowledge of healthy lifestyle behaviors at the beginning of the motivational sessions and at the conclusion of the 7 motivational sessions. The researcher notes that any data gathered is strictly confidential and will be used exclusively for purposes of this research study; in addition, you may choose for your child to not participate in any of this study's activities or for your child to not disclose any information pertaining to this study's topics (family medical history etc.), without penalty. In the event that your child is no longer a participant in this study, the researcher will contact you.

Is there any audio or video recording?
There will be no audio or video recording of the motivational sessions.

What dangers are there for (me and/or) my child?
Although procedures or activities in this study may have unknown or unforeseeable risks, the researcher believes these risks are minimal. If you have any questions about the research or your research rights, you may contact the principal investigator at the phone number listed above. You may also contact the IRB at the phone numbers indicated above with questions as to your research rights.

What good things might come about for (me and/or) my child?
By participating in this study, your child will increase her knowledge of healthy lifestyle behaviors. The lifestyle behaviors the researcher will focus on during the motivational group sessions will include how to develop healthy eating habits and the benefits of aerobic and anaerobic exercise. Your child will also increase her understanding of obesity-related diseases.

Do I have to pay for anything?
You will not incur any costs for your child's participation in this study.

Will I or my child get paid?
Neither you nor your child will be paid for participating in this study.

How will my (and/or my child's) information be kept private and confidential?
The researcher notes that all information obtained in this study is strictly confidential unless disclosure is required by law. To ensure that your child's information is kept private and confidential, the researcher will number each HLBS, sheet containing the open-ended responses, and personal food journal and tell students not to place their names on any of these documents. The researcher will also keep all data pertaining to this study in a locked file cabinet, located in the researcher's home, to which only the researcher has a key. At the conclusion of this study, the researcher will keep all data for 3 years. After 3 years, the researcher will destroy all data pertaining to this study. The researcher notes that the IRB, regulatory agencies, and the dissertation chair/thesis adviser may review research records.

What if I do not want my child to be in the study or my child doesn't want to be in the study?
Your child's participation in this study is voluntary. You have the right to refuse for your child to participate or withdraw your child at any time. Your child may also refuse to participate or withdraw. If you do withdraw your child, or your child decides not to participate, neither you nor your child will experience any penalty or loss of services that either of you has a right to receive. If you choose to withdraw your child, or he/she decides to leave, any information collected about your child before the date of withdrawal will be kept in the research records for 36 months from the conclusion of the study but you may request that it not be used.

Other Considerations:
If significant new information relating to the study becomes available, which may relate to your willingness to have your child continue to participate, this information will be provided to you by the investigator.

Voluntary Consent by Participant:
By signing below, you indicate that

- this study has been explained to you
- you have read this document or it has been read to you
- your questions about this research study have been answered
- you have been told that you may ask the researchers any study related questions in the future or contact them in the event of a research-related injury
- you have been told that you may ask Institutional Review Board (IRB) personnel questions about your study rights
- you are entitled to a copy of this form after you have read and signed it
- you voluntarily agree for (you and/or) your child to participate in the study entitled Impact of a School-Based Obesity Intervention for Minority Female High School Students

Child's Name: _____

Parent's/Guardian Signature: _____ Date:_____

Parent's/Guardian Name: _____ Date: _____

Signature of Person Obtaining Consent: _____

Date: _____
Initials_____ Date_____

Appendix E

Adolescent Assent Form

Adolescent Assent Form

Assent Form for Participation in the Research Study Titled Impact of a School-Based Obesity Intervention for Minority Female High School Students.
Funding Source: None.
IRB approval #

Principal investigator(s)
Eric Hughes, Candidate for Doctor of Education

Co-investigator(s)
Dr. Robert Esenberg
Dr. Ashley Russom
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North Miami Beach, FL 33162
800-986-3223, Ext. 28500

Institutional Review Board
Nova Southeastern University
Office of Grants and Contracts
(954) 262-5369/Toll Free: 866-499-0790
IRB@nsu.nova.edu

What is a research study?
I am requesting your participation in a study that focuses on developing healthy lifestyle behaviors in adolescent females. These healthy lifestyle behaviors include how to make healthy food choices and the related benefits of physical exercise. This study will also seek to increase your knowledge of the health-related consequences of obesity. You will participate in a variety of learning activities, including skits, group discussions, individual and group learning activities, and oral presentations. You will also learn how to complete and maintain a personal food journal.

Why is this study being done?
The purpose of this study is to determine if motivational group sessions that focus on obesity intervention will improve your attitude toward and knowledge of healthy eating habits and physical exercise.

What will happen to me?
You will participate in 7 weekly motivational sessions. These motivational sessions will be held during the school day in one of the high school's classrooms. Each weekly session will be approximately 60 minutes in length. During the motivational sessions, the researcher will ask you to complete a survey, answer open-ended questions, maintain a food journal, and participate in learning activities.

What are the good things about being in the study?
If you attend all 7 motivational sessions and complete and submit the Personal Food Journal, the open-ended questions, and the survey, you will earn 10 Community Service

Credit Hours towards your required services hours for graduation. **Will being in the study hurt me?**
You will not be hurt if you choose to participate in this study; however, you will increase your knowledge of the benefits of practicing healthy lifestyle behaviors. You will also learn how to complete and maintain a personal food journal.

Initials: _____ Date: _____

How long will I be in the study?
You will participate in this study for 7 weeks.

Do I have other choices?
If at any point you decide that you no longer want to participate in this study, you may withdraw without penalty.

Will people know that I am in the study?
The only people who will know that you are in the study are the researcher and the other students who choose to participate in the study. Anything you tell us or do for us might be found out by someone else, but we will do everything we can to keep it secret.

Whom should I ask if I have questions?
If you have any questions about participating in this study, you should ask your parent or guardian. You may also ask the researcher and the school nurse questions about participating in this study.

Is it OK if I say "No, I don't want to be in the study"?
You do not have to be a part of this study if you don't want to. No one will be mad or upset. If you change your mind, you can decide during the study to stop being in the study.

Other Information
If we learn important new information about this study, we will tell you and let you decide if you want to stop being a part of the study.

Do you understand and do you want to be in the study?
I understand. All my questions were answered.

- ❑ I want to be in the study.
- ❑ I don't want to be in the study.

_____
Your name

_____ _____
Your signature Date

_____ _____
Signature of person explaining the study Date