

EXAMINING THE RELATIONSHIP BETWEEN PERCEIVED WEIGHT STATUS
AND HEALTHY DIETARY HABITS AMONG HIGH SCHOOL STUDENTS IN THE
UNITED STATES

by

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A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science in Health and Human Performance
(Health Concentration)

Middle Tennessee State University
December 2018

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ACKNOWLEDGMENTS

I would like to thank my parents Gail Gause and Thomas Gause Jr. for supporting me through this academic process. It has been far from an easy journey, but well worth it. I also would like to thank my mentors, colleagues, friends, and family for their support as well.

ABSTRACT

Weight status and healthy daily dietary habits are two variables that are essential to American health. There are many factors that relates to daily dietary habits within the high school population. Some factors include: social economic status, social pressures and, academic performance. The purpose of this study was to understand the relationship between daily consumption of healthy dietary choices of high school students when examining their perceived weight status and body mass index. This study used the 2017 Youth Risk Behavior Survey (YRBS) to look at the dietary habits of high school students in America. There were five questions used to identify daily healthy dietary habits which included: consumption of breakfast, milk, fruit, vegetable, and no soda. If the students selected “Yes” to consuming any of these choices daily, it counted as one tally for making a healthy dietary choice. The results indicated that students consumed 3 out of 5 healthy dietary choices daily. As well as students who perceived themselves as slightly overweight and very overweight whom wanted to lose weight, did not choose to make healthier dietary choices compared to someone who was normal weight and did not want to lose weight. Body mass index was shown not to be a significant variable.

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CHAPTER I: INTRODUCTION

Weight status and healthy dietary habits among high school age children are important for ensuring good health and overall quality of life. Proper nutrition is important for growth and development, while having a good diet helps reduce risks for many health conditions such as obesity, iron-deficiency anemia, constipation, and diabetes (Healthy People, 2018). According to *The American Heritage Dictionary of the English Language* (n.d.), weight is a measure of the heaviness of an object. The perceived weight status of a person is how a person interprets his or her own heaviness. Perceptions are believed to be important because of the likely determinants of health behavior (Robinson & Kersbergen, 2017). Feelings and emotions of oneself can be influential to an individual's health, dietary habits, and weight status. Body Mass Index (BMI) can be used to calculate categories for people's weight status (The American Heart Association, 2013). The categories include: underweight, normal, overweight, and obese (The American Heart Association, 2013).

In order for teens to maintain a healthy weight and diet, an understanding of "Energy Balance" is needed. Calories are equivalent to energy. The food and drink that someone consumes is "Energy In" and calories burned from physical activity is "Energy Out" (National Heart, Lung, and Blood Institute, 2013). Additional ways for students to keep balance is to eat out less, consume smaller portions, and become familiar with the dietary guidelines. Studies have shown students who have poor eating habits in school are affected through their academic performance. For example, students who skip breakfast are shown to have a decrease in cognitive performance and students who are

deficit in specific nutrients have lower grades and higher rates of absenteeism (National Center for Chronic Disease and Health Promotion, n.d.). Cognitive performance pertains to performance of the brain. The brain cognitively helps with activities such as information processing, memory, decision making, planning, attention, and learning (Dick & Riddell, 2010). These type of brain engagements in the academic setting are necessary for students to excel in the classroom.

Diet and physical activity are important factors in weight management. When tracking these changes, the United States uses the Youth Risk Behavior Surveillance System (YRBSS), which monitors and tracks adolescent health risk behaviors and protective factors. The surveillance system will be discussed further in depth in *Chapter II*. The Youth Risk Behavior Survey (YRBS) is distributed every two years to high school students, and documents changes seen from one-year to the next two-year period (Centers for Disease Control and Prevention (CDC), 2018e).

The childhood obesity prevalence rate in the U.S. has remained consistent from 2013-2015. The obesity rate for both males and females in 2013 was 13.7% and increased to 13.9% in 2015, though the change was not statistically significant. (CDC, 2016a). In 2013, 16.6% of high school students were overweight and 16% were overweight in 2015, which indicates no significant change as well (CDC, 2016a). Being overweight or obese can contribute to poor health outcomes such as the development of cardiovascular disease. These types of outcomes can lead to increases in health care costs.

A solution for controlling body weight is to engage in physical activity. According to the CDC (2018), it is recommended that adolescents have 60 minutes or

more physical activity each day (CDC, 2018h). In 2013, 15.2% of students did not engage in 60 minutes of physical activity for at least one day out of the seven-day week; likewise, in 2015, 14.3% did not engage in physical activity (CDC, 2016a). There was no statistically significant difference between the years of 2013 and 2015. However, in 2015, 48.6% of students were active at least 60 minutes per day on 5 days or more and 27.1% were active on all 7 days (CDC, 2016a). In 2013, 5% of adolescents reported not consuming any fruits or 100% fruit juice seven days prior to the survey compared to the 5.2% in 2015 (CDC, 2016a). The difference rates in 2013 and 2015 were not significant. These group of students represented the percentages of students who did not consume any amount of fruit or drank 100% fruit juices. In 2015, there were students who took the survey that have ate fruit or drank 100% of fruit juices one or more times per day (63.3%), two or more times per day (31.5%), and three or more times per day (20%) (CDC, 2016a). In 2013, 6.6% of adolescents reported not consuming any vegetables during seven days before the survey compared to the 6.7% in 2015 (CDC, 2016a). The differences between these two groups were not statistically significant. Other questions were answered stating that 61.0% of students ate vegetables one or more times per day, 28.0% ate vegetables two or more times per day, and 14.8% ate vegetables three or more times per day (CDC. 2016a). The focal point of the prevalence's were students who were overweight/obese and students who did not engage in any amount of physical activity, fruit, and vegetable consumption from the years of 2013-2015. The results indicated that there were no statistically differences. This data demonstrates that there is still work to be done to improve the healthy habits among high school students.

Research Problem

There is a limited body of research with examining healthy daily dietary habits and perceived weight status of high school students.

Purpose of the Study

The purpose of this study was to understand the relationship between daily consumption of healthy dietary choices of high school students when examining their perceived weight status and body mass index.

Research Question

When controlling for grade level, sex, and body mass index percentile, what effect does perceived weight status have on daily healthy dietary habits among high school students in the United States?

Hypothesis

When controlling for grade level, sex, and body mass index percentile, students who perceive their weight status to be overweight or very overweight will present healthier dietary habits daily than those who perceive their weight to be normal.

Significance of the Study

The significance of this study is to examine the relationship between the perception of one's weight status and healthy dietary habits daily among United States adolescents and using the knowledge gained to design effective health programs (e.g. weight management) for adolescents.

Limitation

The Youth Risk Behavior Surveillance System (YRBSS) uses a cross-sectional survey. It reflects information collected at a specific point in time. Therefore, cause and effect conclusions cannot be made using the YRBS data.

CHAPTER II: LITERATURE REVIEW

This chapter will discuss research on adolescent dietary behaviors and weight status. It will also provide a look at the chain effects of adolescent's lack of knowledge on nutrition. When an individual does not know what foods to eat or how much of it to be consuming, it is difficult to expect them to be knowledgeable on proper nutritious meals which can affect their weight status. This chapter will also converse about how adolescent's selection of food choices can affect their academic performance, snacking behaviors of adolescents, disordered weight control, and environmental factors which affects weight status (i.e. obesity) of adolescents.

Adolescent Dietary Habits/Behaviors

Diet is defined by food and drink considered in terms of qualities, composition, and its effects on health (Dictionary, n.d.). Baranowski, T. (n.d.) restated that dietary behaviors are the result of behavioral, social, family, and physical environmental factors. During the adolescent years, as much as 50% of adults' ideal body weight is gained (National Institutes of Health, n.d.). Female and male bodies are starting to go through biological changes. For example, female body shapes starts to change into the woman they are becoming, male's voices tend to get deeper, and hair starts to grow in a variety of places. Adolescent years are also a time period where consuming nutritious foods should increase; likewise, the teenage years are a time period where bad choices towards their diet are made, such as skipping meals and eating too little or not enough variety of food (Pediatrics & Child Health, 2004). This particular behavioral act is one reason why educating adolescents about the importance of healthy eating is necessary.

The Importance of Basic Nutrition Knowledge in Relation to Weight Status

The importance of having good nutrition is vital towards having a healthy lifestyle. Food provides our bodies with energy, vitamins, and minerals; and helps people grow and function appropriately. It is necessary for adolescents to understand that the foods they consume and the amount of daily physical activity completed during a week can affect their weight status. In order to be proficient at knowing what foods to eat, adolescents have to be knowledgeable about basic nutrition. According to the Centers for Disease Control and Prevention (CDC), Childhood Nutrition Facts Article (2017b), schools are a unique setting to provide opportunities to learn and practice healthy eating behaviors. Dietary habits/behaviors can be engraved in a person during their adolescent years and maintained during their adult life. It can either portray a range of healthy dietary habits with balanced eating and physical activity or poor dietary habits containing empty calories, non-nutrient dense foods, and lack of physical activity.

Adolescents have access to nutrition information in almost every setting. Nutrition menus are available at many restaurants as well as having the access to the information on food labels in the grocery stores. However, with the information being made available, it has to be ensured that the information is understood by the reader. This ensures that by making conscious decisions about their health, they are making the proper nutrition related selections. According to Naigaga, Pettersen, Henjum & Guttersrud, (2018) they examined the reliability and validity of a newly developed scale, Critical Nutrition Literacy Evaluation Scale (CNL-E), which was used to determine if perceived proficiency in evaluating nutrition information from various sources, targeting

individuals without an advanced level of nutrition education (p. 2). This scale was determined to be valid and reliable. The study included adolescents between the ages of 15 and 16 from approximately 60 schools. Based on the study findings by Naigaga, Pettersen, Henjum & Guttersrud. (2018), the CNL-E scale can be beneficial in evaluating the impact of programs and interventions that primarily focused on nutrition education (p. 12). Overall, this scale can help determine the proficiency of individuals nutrition knowledge and as an example, be utilized in programs that deal with healthy eating.

In a study by Milosavjevic, Mandic, & Banjari, (2015), a General Knowledge Questionnaire was used to assess general characteristics, nutritional knowledge about nutrients, sources of nutrients, dietary recommendations, diet-disease relationship, and dietary habits. The study findings demonstrated knowledge that girls have a better overall knowledge, except for the diet-disease section. According to Milosavjevic, Mandic, & Banjari (2015), “Only 28.2 % of adolescents had shown satisfactory knowledge about nutrition which showed great concern” (p. 105). Knowledge as a predisposing factor is important for changes in the dietary habits of adolescents. At this age group, individuals are forming their own eating habits. They can determine foods they like, dislike, purchase their own foods (ex. snacks) as they are now forming their own health behaviors and attitudes which more than likely will transition into their adulthood lives. These behaviors will also influence their weight status and can result in poor health decisions if the adolescent is not knowledgeable about what it means to eat healthy or have a balanced diet.

Adolescents living in rural areas are less knowledgeable than those in urban areas (Milosavjevic, Mandic, & Banjari, 2015). A factor in this situation might be because of the socioeconomic status and the area of which the student lives. A large number of participants from Milosavjevic, Mandic, and Banjari research study did not know the recommendations for fruits and vegetables (Milosavjevic, Mandic, & Banjari, 2015, p. 103). The concern with this information is that teaching, knowledge, and application of the information learned are lacking if the students do not know how much of these foods they should be consuming. Understanding the importance of basic nutrition can aid in dietary behaviors which can also affect their weight status and how he or she may view their perceived weight/body image. According to Milosavjevic, Mandic, & Banjari, (2015), “Out of a maximum of 23.0 points for the section “Knowledge about food sources,” the mean score was 14.5 with a statistically significant difference between males and females ($p=0.013$)” (p. 103). A likely reason for this is that females try to pay attention to foods consumed as far as trying to maintain or reach an ideal figure pertaining to weight perception. Some of the dietary habit findings indicate that females consume more breakfast daily than males, however males have a better intake of fluids (Milosavjevic, Mandic, & Banjari, 2015). With all the information gathered from this research, males and females have areas that they are excelling in and areas that needs work. This research gives information for professionals to help guide them in future program planning towards informing adolescents about basic nutrition and its relevance to their weight status and overall health.

Dietary Guidelines for Americans

The dietary guidelines provide Americans with evidence-based nutrition information that is planned to help Americans eat a healthier diet (Office of Disease Prevention and Health Promotion, 2018). The current guidelines are for the years 2015-2020. The guidelines are distributed every five years by the U.S. Departments of Agriculture and Health and Human Services. The next set of guidelines will be the years 2020-2025 (Office of Disease Prevention and Health Promotion, 2018). These guidelines are an important tool that professionals can use to help people make healthy choices in their lives, help prevent chronic diseases, and enjoy a healthier life.

The United States Department of Agriculture (USDA's) National School Lunch Program and School Breakfast Program which feeds more than 30 million children each school day are required by law to be consistent with the American Dietary Guidelines (Office of Disease Prevention and Health Promotion, n.d.). MyPlate is another way the USDA and federal agencies implement the Dietary Guidelines for Americans. MyPlate serves as a visual reminder to build healthy eating patterns by making healthy choices across the food groups (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). The implementation of the dietary guidelines include: (a) make half your grains whole grains, (b) vary your protein routine, (c) vary your veggies, (d) focus on whole fruits, (e) make half your plate fruits and vegetables, (f) move to low-fat or fat-free milk or yogurt, (g) drink and eat less sodium, saturated fat, and added sugars (*See Appendix A*) (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015).

Healthy eating habits can be influenced by many factors. A personal preference can determine what a person will or will not eat. Living in a food desert limits an individual's access to certain foods. According to the American Nutrition Association (n.d.), "A food desert is defined as parts of the country void of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas." Culture and social environment also play a role in what people consume. According to Vabo & Hansen (2014), "If there is a huge difference between the familiarity with a food product in different cultures, then the difference in preference for that product will be bigger than if there is a similar familiarity for the product (p. 150)." For example, holidays can impact the type of food people will eat in recognition of the holiday. Some families will choose to eat the traditional turkey and dressing meal versus some who prefer chicken and dressing. MyPlate offers tips and other validations to help individuals form healthier eating patterns. For the five food groups: fruits, vegetables, proteins, grains and dairy, there are dietary recommendations based on sex, age, and level of physical activity. Female adolescents between the ages of 14-18 are to consume 1.5 cups of fruit each day in comparison to males whom are to consume 2 cups each day. These recommendations are based on people who do less than thirty minutes of moderate physical activity. Vegetables for the same age group include 2.5 cups of vegetables for females and 3 cups for males. Protein consumption are 5-ounce equivalent for females and 6.5 for males. Grains are 6 ounces for females and 8 ounces for males. Lastly, dairy consumption includes 3 cups for both males and females.

Dietary Habits and Academic Performance

According to Kim et al. (2016), prior studies indicate a relationship between academic performance and dietary habits (p.8). The amount of fast food being consumed and adolescents who skip breakfast regularly are affected through their academic performance. In general, individuals who eat fast food consume less nutrients than someone cooking their own meal at home. According to Kim et al. (2016), “The lack of nutrients adolescents consume, particularly iron, and high intakes of fat and added sugar are due to frequent fast food meals which are associated with poor school performance, insulin resistance, and obesity” (p.1). The school system has been trying to counteract these behaviors during the school year by offering “Smart Snacks.” Smart snacks refer to the national nutrition standards for foods and beverages sold outside of the federal reimbursable school meal programs during the day (CDC, 2017c). Adolescents spend most of their days in school and reaching through them through their everyday environment will hopefully influence their decision making. All competitive foods and beverages sold during the school day has to meet or exceed Smart Snacks in School nutrition standards, which includes limiting fat, sodium, sugar, and calorie content (Centers for Disease Control and Prevention, 2017-d). Although these are the minimum requirements, stronger nutrition standards could be implemented. *Appendix B*, demonstrates what snacks looked like in the school system prior to having smart snacks.

Studies have shown that breakfast is important towards cognitive function. According to the CDC (2017b), eating a healthy breakfast is associated with improved cognitive function (especially memory) reduced absenteeism, and improved diet. Kim et

al. (2016), analyzed the relationships between dietary habits and school performance. They were specifically concerned with sugar consumption, fast food, instant noodle, skipping breakfast, and meal times. The study used the Korean Youth Risk Behavior Survey analyzing data from 2009-2013. There was a total of 359, 264 participants. The results showed that consuming regular amounts of breakfast, vegetables, fruits, and milk contributed to high academic school performance (Kim et al., 2016). Therefore, adolescents who consume balance diets and breakfast on a regular basis are more likely to have a better academic performance in comparison to those who do not regularly eat breakfast. On the opposing side, frequent consumption of soft drinks, fast food, instant noodle intake, and sugar were associated with poor school performance (Kim, et al., 2016).

Cognitive function continues to develop during adolescence (Correa-Burrows, Burrows, Blanco, Reyes, Gahagan, 2016). This includes deductive reasoning, problem solving, and abstract thinking (Correa-Burrows, Burrows, Blanco, Reyes, Gahagan, 2016). Previous researchers have examined nutrition and academic performance in high-income countries but omit looking at low to middle income countries. Coorea-Burrows et. al (2016), looked at the academic performance of 16-year old students in Chile from low-middle socioeconomic backgrounds. What they found was a higher quality of diet was positively associated with scores in math, English, and grade point average. This finding was consistent with other studies such as Iceland, which showed math, language, and foreign language were associated a poor diet, Norwegian adolescents had a significant association between poor diet and math skills, and unhealthy dietary habits

among children ages three, four, and seven in the United Kingdom were associated with negative performances on standardized test (Correa-Burrows, P., Burrows, R., Blanco, E., Reyes, M., & Gahagan, S., 2016). Overall, this study indicates that there is a relationship between academic performance and their dietary habits.

Weight Status and Diet of Adolescents

Snacking behaviors. Snacking behaviors are important when focusing on the adolescent population. Twenty-five percent of total daily energy intake for girls and boys come from foods and drinks that are consumed during “Snacking Occasions” (Larson, Miller, Watts, Story, & Neumark-Sztainer, 2016). Larson, Miller, Watts, Story & Neumark-Sztainer (2016), examined the relationship between snacking behavior, dietary intake, and weight status. The researchers used the Eating and Activity in Teens (EAT), 2010 survey to determine the regularity of adolescents snacking while watching television, including the number of hours watched weekly, fast-food restaurant consumption, physical activity, meal skipping, the intent to lose weight, and social and demographic characteristics. The survey was completed by 2,793 adolescents. The Youth and Adolescent Food Frequency Questionnaire was used to answer questions about daily servings, energy dense foods, etc. The results indicate that adolescents consumed a total of four snacks per day, more than two daily servings of energy dense foods, and eat snacks prepared away from home three times per week. The results also concluded that 69% of adolescents consumed snacks while watching television (Larson, Miller, Watts, Story, & Neumark-Sztainer, 2016). There was a direct relation between daily servings of

energy-dense foods and BMI; such that the consumption of more snacks was linked to a higher BMI z score (Larson, Miller, Watts, Story, & Neumark-Sztainer, 2016).

It is of an importance to ensure that snacks being consumed by adolescents are healthy options. It is normal for children to want to snack after school and having caregivers provide them with healthy snacks options can lead to a healthier diet. Consuming healthy snacks can benefit adolescents positively by incorporating additional nutrients that they may not be receiving during their regular meal hours.

Disparities in dieting. Adolescents who are overweight/obese are more likely to engage in a dieting behavioral change. According to Rodgers et al. (2017), disordered weight control behaviors (DWCB) can include self-induced vomiting and or the use of dietary supplements. At this age group, the social pressures of wanting to be identified with the body type that is deemed socially acceptable is of concern. Body image issues can also be related to an individual's level of self-esteem. According to Rodgers et. al (2017), "Disordered weight control behaviors and overweight/obesity have been shown to happen occur at higher rates among racial/ethnic minority youth" (p. 104). Research indicates that racial/ethnic minorities are at an increased risk of disordered eating because of weight stigmatization within that population. Rodgers et al. (2017) examined whether racial/ethnic minority early adolescents who are overweight/obese demonstrate a higher risk for dieting and DWCB. The data collected were self-reported and included 12,511 early adolescents. Results indicated that more females reported dieting within the past 30 days compared to males and females surpassed males in DWCB rates. In terms of ethnic/race differences, females who were obese/overweight had demonstrated no

difference in the prevalence of dieting between the four racial/ethnic minority groups (i.e. Asian, Black, Latino, and other) and those identifying as white (Rodgers et. al, 2017). Compared to their white counterparts without overweight/obesity, racial/ethnic minority females with overweight/obese weight status were at increased risk of dieting, with a confidence interval of [2.39-3.94] and a DWCB of [2.97-2.61]; similarly, the males had shown a significant increase as well in comparison to their white counterparts (Rodgers et. al, 2017).

Neighborhood Nutrition and Physical Activity Environment

Childhood obesity is rampant in the United States. Many factors such as environment, family, socioeconomic status can influence a child's weight status. A longitudinal study completed by Saelens (2018), over a period of two years, examined changes in children's weight status and related behaviors among children who participated in the Neighborhood Impact on Kids study. Neighborhoods were selected based on differences in both activity and nutrition environments. Since this was a longitudinal study, the timing of data collection from participants was divided into two phases, T1 and T2. T1 represented the data collection from 2007-2009 and T2 reflected the data collection between is 2009-2011.

Saelens et. al (2018) study found the following results:

Children living in neighborhoods more conducive to walking with at least one high-quality park and a favorable nutrition environment, marked by the availability of at least one supermarket without a high concentration of fast food restaurants, had significantly more favorable weight status changes than children

in two of the three other less environmentally supportive neighborhoods. (p. 1344)

Having community programs detailing children getting active and taking initiative of their food choices can help individuals pursue a healthy weight status and overall quality of life. Environmental factors of having access to certain food choices can be limited, but choosing the better option of the available choices can be supported. For example, when going out to eat, individuals can choose a grilled meat option versus something fried or perhaps unsweet tea versus sweetened. These recommendations are supported by the United States Department of Agriculture on tips for healthy eating away from home (United States Department of Agriculture, 2016). It should also be encouraged for more meals to be cooked at home. According to Mills et al. (2017), a higher frequency of consuming home cooked main meals was significantly associated with indicators of a healthier diet (p.7).

Children living in the more disadvantaged neighborhood environments had an increase in their relative adjusted daily average energy intake by 100 calories more and 50 minutes more of sedentary time than children living in more favored environments (Saelens et.al, 2018, p. 1344). Saelens et al. (2018), tells us that caregivers in low physical activity environments whom had suitable financial resources and time, may transport their children to private or public programs and facilities (p.1345).

Encouraging children and explaining to them the importance of maintaining good health is crucial to their being. It must be explained, retained, and reinforced and not just voiced about the benefits so that it can be instilled of a lifestyle choice instead of

something seasonal or temporary. Engaging in sports is a great way to stay active, but also informing adolescents about the importance of remaining active during the off seasons. Adolescents also have to be mindful of the foods that they consume and make sure they are getting the correct amount of nutrients. Knowing the available resources in the community is a lasting way for people in their community to be aware of what can be done to take action towards their weight status, diet, and health overall.

Background on the Youth Risk Behavior Surveillance System (YRBSS)

The YRBSS was developed in 1990 to monitor health behaviors that contribute substantially to the leading causes of disability, death, and social problems among youth and adults in the United States (CDC, 2018d). The surveillance system covers topics such as unhealthy dietary behaviors, inadequate physical activity, tobacco use, alcohol and other drugs, sexual behaviors, and behaviors that contribute to violence and unintentional injuries. For the 2017 survey, 89 questions were asked under these topics.

From 1991 through 2017, the YRBSS has collected data from more than 4.4 million high school students in more than 1,900 separate surveys (CDC, 2018d). The YRBSS includes national, state, territorial, tribal government, and local school-based surveys representative samples of 9th through 12th grade students (CDC, 2018d). This national survey is conducted every two years during the spring semester by the Centers for Disease Control and Prevention.

Theoretical Framework

The social ecological model addresses behavior changes at multiple levels and considers the inter-relationship between the individual and the environment (McLerory, Bibeau, Steckler, Glans, 1988). This model highlights multiple levels of influence which

includes the following: intrapersonal, interpersonal, institutional, community, and public policy, see Figure 1. Individual factors focus on the predisposing factors of the behavioral change (i.e. knowledge, beliefs, and self-concept). Interpersonal factors are defined by the influence of social network such as family, friends, peers, etc. These are the people in your social networks and social support systems that can influence his or her behavior. Institutional refers to churches, workplaces and other organized social institutions (McLeroy et al., 1988). The community level represents the community norms. For example, local parks, transportation services, having relationships with community leaders, etc. The community level of this model is the relationships among organizations, institutions, and informal networks within defined boundaries (McLeroy et al., 1988). Lastly, public policy are laws and polices formed by the local, state, or national government in which may help enable an individual's environment.

When examining adolescent's weight status and dietary behaviors using the socioecological model, this model can help describe the impact seen at the intrapersonal, interpersonal, institutional, community, and public policy level. When looking at the "Intrapersonal" level of the Social Ecological Model, adolescent's knowledge about healthy eating is important in relation to their dietary habits and weight perception as referenced in *Chapter II*. A study was completed by Lemus et al. (2016), to examine whether the implementation of nutrition education curriculum was followed by significant changes in an intrapersonal factor-specifically increased nutrition knowledge (p.65). The results concluded that intrapersonal (i.e. knowledge) changes did not translate to behavior changes (i.e. increased consumption of healthy foods). According Lemus et

al. 2016, (as cited by Foster et al. (2008) and Hoelscher (2002) it takes 50 hours of nutrition education for an intervention to reach behavioral change (p. 66). Likewise, they only completed 3 hours out of a total of 12 weeks. Within this study, more time should have been given when teaching students about healthy eating. This is something that can be learned when planning interventions for adolescents when coming up with programs that educate about healthy eating. It is a difference when adolescents are told to eat healthy versus being explained on “How” to eat healthy and its importance. Adolescents will also have to acknowledge the importance of being acquainted towards foods they put into their body and how it might affect their weight perception and dietary habits. Adolescent’s being knowledgeable on how many cups of vegetables, fruits, and dairy or how many ounces of grains and protein they should be consuming daily will help them keep their diet balanced. Having basic nutrition knowledge is important to the adolescent mind; thus, to be able to apply the knowledge gained while incorporating the right attitude to make a behavior change towards their dietary habits and weight status.

Looking at the “Interpersonal” level of the Social Ecological Model, family and friends help influence the adolescent’s behavior. Researchers Lane et al. (2016), completed a systematic review examining adolescent and child sugar-sweetened beverage intervention studies, examining the extent to which studies reported on reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) indicators and assess differences in reporting on RE-AIM indicators by using the socioecological model (p. 1296). What they found is that 38% of researchers used intrapersonal/interpersonal strategies and 33% used environmental or policy strategies (Lane et al., 2016). This

shows that researchers are putting more focus on the individual self (i.e. intrapersonal) of a person and their social networks (i.e. interpersonal) to influence behavior change.

During this age period, parents are the main suppliers for what food items are in the adolescent's home. Adolescents may have some say in the choices of foods they want to consume, but they are more than likely not purchasing the groceries. The meals parents prepare, or lack thereof will also impact the adolescent dietary habits. In relation to friends, their social circle (i.e. peers) influences the foods adolescents consume outside of the home. When a teenager is able to drive and take their friend out to eat, he or she may consume an abundance amount of fast food options. It is okay to have a "Cheat Meal" or not consume the healthiest food item ever so often, but maintaining a balanced diet is what keeps the body healthy.

As for the "Institutional" level of the Social Ecological Model, school plays a dominant role. During the school year(s), adolescents will spend approximately eight hours of their day and five days a week on school grounds. The school offers each student breakfast, which is shown that students who skip breakfast regularly are affected through their academic performance. Using the data results from the YRBS 2015, "Students who reported receiving mostly A's were twice as likely as students who received D's and F's to report eating breakfast everyday in the past week" (CDC, 2017f). The National School Breakfast Program (SBP) is a federally funded meal program in the United States that funds meal programs designed to provide nutritious meals to students in public and nonprivate schools (Wang et al., 2017, p. 213). One of the aims of this study completed by Wang et al. (2017) was to identify breakfast location patterns and

changes in location in a longitudinal sample of middle school students. The study examined students who were frequent skippers of breakfast, inconsistent eaters (i.e. ate at school, home, or both), regular school eaters, and double breakfast eaters (i.e. ate at home before school and ate again at school). The results concluded that breakfast frequency decreased over time as students aged (Wang, et al., 2017, p. 216). This can demonstrate an era where researchers will see academic grades drop specifically in the middle school years and possibly decrease even more in the unknown of the high school years based off breakfast consumption.

The "Community" level of the Social Ecological Model can affect healthy dieting and physical activity of adolescents through their environment. Socio-economic status plays a role in the individual(s) environment. According to Cheon, B & Hong, Y. (2017), the mere feeling or experience of lower socioeconomic (SES) status alone, can stimulate appetite and food intake (p.74). This means that psychologically or in actuality, when people feel low about their SES they may consume higher calorie foods for snacks and meals. On the opposing side, certain community's dietary habits can be affected by living in a food desert. Food deserts which are defined as parts of the country where fresh fruit, vegetables, and whole foods are limited (American Nutrition Association, n.d.). When fresh produce is not accessible to some communities, it makes it harder to promote healthier eating options such as cooking meals at home or consuming less process foods. For promotion of physical activity, communities that lack parks and community centers help restrict the promotion of getting people physically active. Having a balanced diet and regular amount of physical activity go hand in hand in improving the overall quality

of life. Being able to access these types of establishments is crucial in aiding towards a behavioral shift in dietary habits and one's perception of their weight status.

"Policy" is the level where the local, state, or national government comes to make policy changes or embed laws to better the people within that population. For example, Smart Snacks, as discussed in *Chapter II*. Smart Snacks require foods that are sold on/off campus ground (i.e. cafeteria, vending machines, school store, in-school fundraising) to meet nutrition standards.

In 2012, Massachusetts implemented a state law that is similar to "Smart Snacks" which launches nutrition standards for competitive beverages and foods sold or provided by public schools (Gorski, et al., 2016, p. 1101). The goal was to limit students' saturated and trans-fat consumption, calories, sodium, portion sizes, sugar, and promote water, milk, fruits, vegetables, and whole grains. The study completed by Gorski, et al., whom wanted to assess the nutrition quality/compliance between middle and high schools students and the availability of packaged "Snack" foods and beverages (pre and post the implementation) based on the new law, while also observing the degree of compliance over time (i.e. year of 2012-2014) (Gorski, et al., 2016, p. 1102). There was shown to be an increase in compliance over the two-year mark between middle and high schools. Compliance was at its highest for cookies, brownies, graham crackers, and chips, while noncompliant items were nuts (other salty snacks), yogurt, cheese products, ice cream, popsicles, and frozen treats (Gorski, et al., 2016, p. 1103). There was also an increase in compliance with beverages such as providing more milk (flavored or unflavored) and fewer sports drinks. By 2014, 60% of competitive foods and 79% of competitive

beverages were in compliant with the new policy (Gorski, et al., 2016, p. 1106). “Smart Snacks” helps introduce adolescents to foods that they may would not have chosen if they only have been presented competitive food options. It also lessens the consumption of foods that adolescents should avoid. This school regulation will help influence the dietary behaviors of adolescents.

The Social Ecological Model demonstrates how each level may affect or influence a behavior change in adolescents, in regards to weight status and dietary habits. This model can show public health professionals multiple levels from where a person’s health can be impacted and gives them a great direction on where to start an intervention.

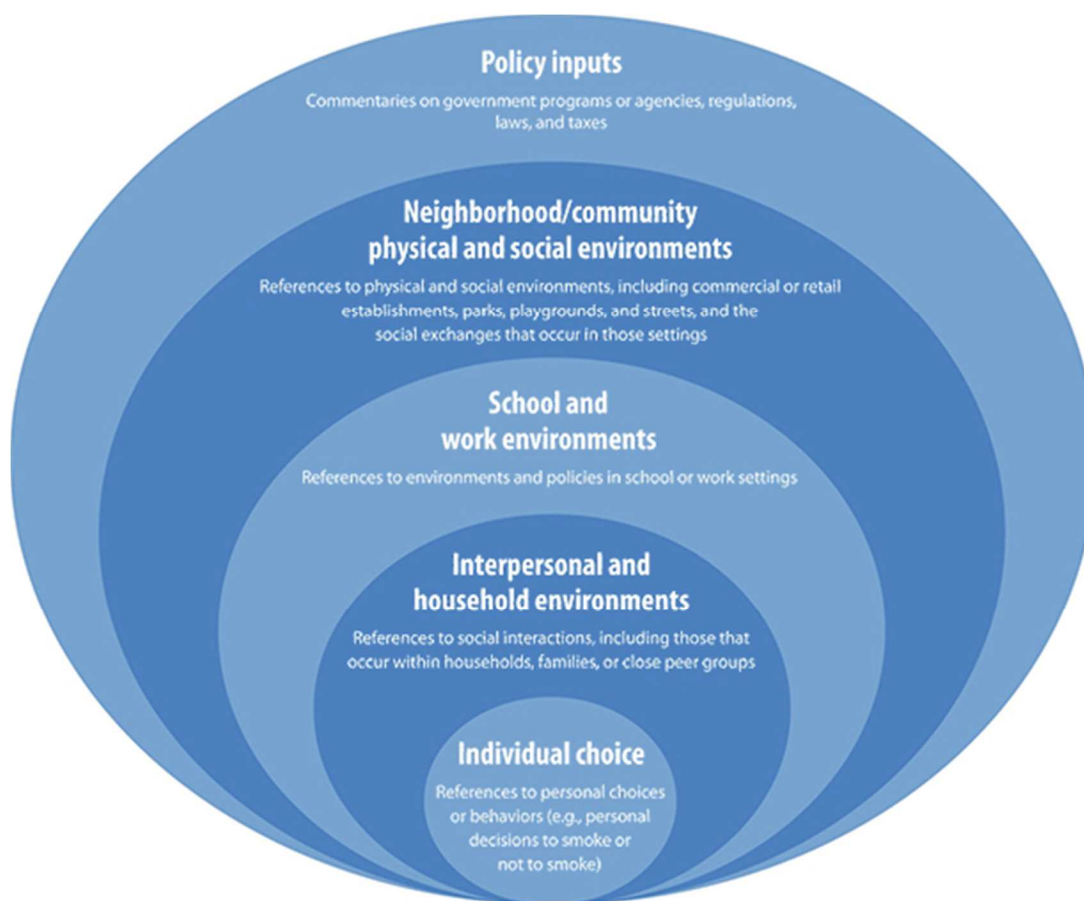


Figure 1. The Social Ecological Model. Reprinted from FitzGerald, E.A., Frasso, R., Dean, L.T., Johnson, T.E., Solomon, S., Bugos, E., Mallya, G., & Cannuscio, C. (2013). Community-generated recommendations regarding the Urban nutrition and tobacco environments: A photo-elicitation study in Philadelphia. *Centers for Disease Control and Prevention, 10*, 1-15.

CHAPTER III: METHODOLOGY

This study examined the effect of perceived body weight on dietary habits, when controlling for age, sex, and body mass index percentile. This chapter discusses the data source/instruments, participants, variables, and the analysis plan used within this research.

Data Source and Instruments

As previously mentioned in Chapter II, this study used data from the 2017 Youth Risk Behavior Surveillance System Survey (YRBSS). There were eighty-nine questions on this survey.

The YRBSS was designed to: determine the prevalence of health behaviors, assess whether health behaviors increase, decrease, or stay the same over time, examine the co-occurrence of health behaviors, provide comparable data among subpopulations of youth, and monitor progress toward achieving the Healthy People objectives and other program indicators (CDC, 2018d).

The YRBS uses a multi-stage cluster sample design.

Participants

The participants in this study included high school students, which includes the 50 states in the United States and the District of Columbia. Puerto Rico, the trust territories and the Virgin Islands were excluded from the sample frame (CDC, 2018e). The schools were selected systematically with probability proportional to enrollment in grades 9 through 12 using a random start (CDC, 2018e). The class level selection process was dependent on all classes in a required subject or all classes during a particular period of

the day, depending on the school, were included in the sampling frame (CDC, 2018e). Systematic equal probability sampling with a random start was used to select the classes from each school that participated in the survey (CDC, 2018e). There were one hundred and ninety-two schools that were selected to participate and they are from all public, Catholic, and other private schools. According to the CDC (2018e), of 192 sampled schools, 144 participated which equals out to a 75% school response rate. The total population of sampled students are 18,324. The student's response rate was 14,956/18,324 sampled student's questionnaires; leaving 14,765 questionnaires usable after data editing (CDC, 2018e). The 2017 response rate is at 60% (School response Rate (75%), times student response rate, (81%) equaling the overall response rate) (CDC,2018e).

Selected YRBS Measures

Independent variable. The independent variable for this study was perceived weight. The independent variable was measured by using the response to the question, "How do you describe your weight?". The original answer options are (a) very underweight, (b) slightly underweight, (c) about the right weight, (d) slightly overweight, and (e) very overweight. This question will be used to analyze the results as well as the dichotomized version which answers the question of "Percentage of students who described themselves as slightly or very overweight." The answer choice is dichotomized to answers "Yes or No."

Dependent variable. The dependent variable for this study is number of daily healthy dietary choices consumed over a seven day period prior to completing the survey. The questions that were included are the variables that relate to fruit, vegetable, milk, no soda, and breakfast consumption. The questions include the following:

- Percentage of students who ate fruit or drank 100% fruit juices one or more times per day (such as orange juice, apple juice, or grape juice, during the 7 days before the survey). The answer options are 1 equaling “Yes” and 2 “No.”
- Percentage of students who ate vegetables one or more times per day (green salad, potatoes [excluding French fries, fried potatoes, or potato chips], carrots, or other vegetables, during the seven days before the survey). The answer options are 1 equaling “Yes” and 2 “No.”
- Percentage of students who drank one or more glasses per day of milk (counting the milk they drank in a glass or cup, from a carton, or with cereal and counting the half pint of milk served at school as equal to one glass, during the seven days before the survey). The answer options are 1 equaling “Yes” and 2 “No.”
- Percentage of students who drank a can, bottle, or glass of soda or pop one or more times per day (such as Coke, Pepsi, or Sprite, not counting diet soda, or diet pop, during the seven days before the survey). The original answer options were 1 equaling “Yes” and 2 “No.”

The answer options were reverse coded such that 1 reflected a healthy choice in that they did not drink soda, and 2 as in the students drank soda daily.

- Percentage of students who ate breakfast on all 7 days (during the 7 days before the survey). The answer options are 1 equaling “Yes” and 2 “No.”

These five questions represented the number of daily healthy dietary choices consumed by students. If the student answers “Yes” to one of the questions, it will count as one tally towards their daily consumption of healthy dietary choices.

Control variables. The control variables are grade, sex, and body mass index percentile. Grade will be assessed by utilizing question, “In what grade are you?” The answer choice includes: (a) 9th grade, (b) 10th grade, (c) 11th grade, (d) 12th grade, and (e) ungraded or other grade. Sex is assessed by the question, “What is your sex?”. The answer options will include: (a) Female and (b) Male. In regard to body mass index percentile, to get a better understanding about how the perception of the student’s weight relates to their actual body weight, the variable Body Mass Index Percentile was used. These percentiles refer to categories that demonstrates percentile ranks that determine if a child is underweight, normal or healthy weight, overweight, or obese, see Appendix C.

Analysis plan. Once the variables were recoded as described above and the index variable for number of healthy choices made daily were created, a complex sample Analysis of Variance (ANOVA) was utilized. Descriptive statistics were examined by performing complex sample descriptive and frequency analyses. The analysis used was a complex sample design because of the probability of sampling techniques and sample weight. A weighting factor was applied to adjust for nonresponse and the oversampling

of Hispanic and Black students (CDC, 2018e). According to the CDC (2018e), “The final, overall weights were scaled so the weighted count of students in each grade matched population projections for each survey year” (CDC, 2018e). ANOVA was used to run the data.

CHAPTER IV: RESULTS

The purpose of the study was to understand the effect of perceived weight on healthy dietary habits of high school students. The 2017 Youth Risk Behavior Survey was utilized to analyze the results. Data were analyzed using IBM SPSS Version 25.0 via the complex samples analysis module.

Demographic Data

Table 1 shows the demographic data of the students described by their grade level and sex including variable information.

Table 1

Participant Demographics for Grade Level and Sex including Variable Information

Demographics	Estimated Population <i>N</i> (<i>S.E.</i>)	Estimated Population %	<i>M</i> (<i>S.E.</i>)
Grade Level			
9th Grade	3998.18 (267.88)	27.30%	
10th Grade	3761.46 (267.01)	25.60%	
11th Grade	3504.10 (239.33)	23.90%	
12th Grade	3379.54 (232.02)	23.00%	
Ungraded or Other	22.02 (5.76)	0.20%	
Total	14665.29 (951.37)	100.00%	
Sex			
Female	7427.63 (576.37)	50.70%	
Male	7223.57 (432.70)	49.30%	
Total	14651.19 (947.79)	100.00%	
Variable Information			
Number of Daily Health Items Consumed			2.58 (.04)
Body Mass Index Percentage			62.99 (.49)

Note: *S.E.* = Standard Error of the Estimate

M = Mean

The Mean is out of 5 Daily Healthy Dietary Choices

Perception of Weight Status by Body Mass Index Percentage

Table 2 represents student's responses to how they perceive their body weight in comparison to their body mass index percentile (BMIPCT). Students who perceived their body weight to be very underweight had a BMI percentile rank of 28.74 with a standard error score of 3.12. According to the CDC, this BMIPCT is considered normal for this age group. Students who considered themselves very underweight were at or below the 71.26% of the rest of the population. In addition, students who felt that they were slightly underweight had a BMI percentile rank of 31.52 with a standard error score of .87. This group fell in the normal category and were at or below 68.48% of the population. Students who saw themselves to be about the right weight had a BMIPCT score of 58.43 with a standard error score of .52, meaning they were in the normal category. These students fell at or below 41.57% of the rest of the population. Students who seen themselves as slightly overweight had a BMIPCT of 85.61 and a standard error score of .51. These students were indeed borderline overweight and were at or below 14.39% of the population. According to the CDC (2015g), overweight is a BMI percentile of 85th to less than the 95th percentile. Lastly, students who perceived themselves as very overweight had a mean BMIPCT of 92.06 and a standard error score of .87. These students were considered in the overweight category, not the obese and/or the equivalence of very overweight. These students fell at or below 7.94% of the population.

Table 2
Perception of Weight Category and Body Mass Index Percentage

Perception of Weight	Average BMI Percentile Rank (S.E.)
Very Underweight	28.74 (3.12)
Slightly Underweight	31.52 (0.87)
About the Right Weight	58.43 (0.52)
Slightly Overweight	85.61 (0.51)
Very Overweight	92.06 (0.87)

Note: S.E. = Standard Error of the Estimate

The BMI-for-Age Percentile Growth Chart

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Normal or Healthy Weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Students Perception of their Weight and Intent to Lose Weight

There were 16.2% of students who perceived themselves as very underweight stated that they were trying to lose weight. There were 9.7% of students who perceived themselves as slightly underweight were trying to lose weight as well. Looking at the students who considered themselves about the right weight, 34.1% were trying to lose weight and 86.5% of students who felt that they were slightly overweight were trying to lose weight. Lastly, 86.3% of students who were very overweight stated “Yes” they were trying to lose weight in comparison to the 13.7% who were not trying to lose weight.

Table 3
Students Perception of their Weight and Intent to Lose Weight

Perception of Weight	Estimated % (S.E.)
Very Underweight	
Trying to Lose Weight	
Yes	16.2% (3.10%)
No	83.8% (3.10%)
Total	100% (0.00%)
Slightly Underweight	
Trying to Lose Weight	
Yes	9.7% (1.40%)
No	90.3% (1.40%)
Total	100% (0.00%)
About the Right Weight	
Trying to Lose Weight	
Yes	34.1% (0.80%)
No	65.9% (0.80%)
Total	100% (0.00%)
Slightly Overweight	
Trying to Lose Weight	
Yes	86.5% (0.90%)
No	13.5% (0.90%)
Total	100% (0.00%)
Very Overweight	
Trying to Lose Weight	
Yes	86.3% (1.30%)
No	13.7% (1.30%)
Total	100% (0.00%)

Note: S.E. = Standard Error of the Estimate

Number of Healthy Items Eaten by Students Daily

There were 3.9% of students who consumed zero items of healthy food daily. Then 17.8% of students consumed at least one healthy item daily and 25.2% of students consumed two healthy items daily. Next, 28.5% of students consume at least three healthy items daily and 18% of students consume four healthy items daily. Lastly, 6.5%

of students consume at least five healthy items daily. Looking at this table, we can see the median of 28.5 % of students who consumes healthy dietary items at least three times daily.

Table 4
Number of Healthy Dietary Choices Consumed Daily

<i>N</i>	Estimate % (<i>S.E.</i>)
0	3.9% (0.40%)
1	17.8% (0.70%)
2	25.2% (0.60%)
3	28.5% (0.60%)
4	18.0% (0.90%)
5	6.5% (0.40%)
Total	100% (0.00%)

Note: S.E. = Standard Error of the Estimate

N = Number of Healthy Choices Consumed

Perception of Weight and Number of Healthy Dietary Choices Consumed Daily

In table 5, students who perceived themselves to be very underweight indicated consuming one healthy dietary choices as the most common response at 35.20%. The most common response for students who perceived themselves slightly underweight was three healthy dietary choices at 27.90%. For students who perceived themselves to be about the right weight, the highest consumption of healthy options was three choices at 27.60%. Students who were slightly overweight consumed three healthy dietary choices

at its highest percentage of 32.60%. Lastly, students who were very overweight consumed three healthy choices at the highest level of 29.50%.

Table 5
Perception of Weight and Number of Healthy Dietary Choices Consumed Daily

Perception of Weight	N	Estimated % (S.E.)
Very Underweight	0	5.0% (1.40%)
	1	35.2% (4.70%)
	2	19.1% (3.20%)
	3	23.0% (3.10%)
	4	11.9% (2.80%)
	5	5.8% (1.60%)
	Total	100% (0.00%)
Slightly Underweight	0	3.1% (0.50%)
	1	17.6% (1.70%)
	2	23.7% (1.40%)
	3	27.9% (1.10%)
	4	19.9% (1.60%)
	5	7.7% (0.60%)
	Total	100% (0.00%)
About the Right Weight	0	2.8% (0.40%)
	1	16.7% (0.90%)
	2	24.9% (0.80%)
	3	27.6% (0.60%)
	4	19.8% (1.00%)
	5	8.2% (0.60%)
	Total	100% (0.00%)
Slightly Overweight	0	2.9% (0.40%)
	1	17.4% (0.80%)
	2	26.0% (1.00%)
	3	32.6% (1.20%)
	4	17.2% (1.00%)
	5	4.0% (0.40%)
	Total	100% (0.00%)
Very Overweight	0	3.9% (1.00%)
	1	21.9% (1.90%)
	2	28.1% (2.20%)
	3	29.5% (2.30%)
	4	13.2% (1.70%)
	5	3.4% (0.60%)
	Total	100% (0.00%)

Note: S.E. = Standard Error of the Estimate

N= Number of Healthy Items Consumed

Effect of Perceived Body Weight on the Number of Daily Healthy Dietary Choices Consumed in the Past Week

The complex samples ANOVA indicated that perception of weight was significantly differently from zero, $F(1,35) = 9.86$, $p = .003$, $R^2 = 0.12$. However, the effect of this variable is more than likely due to the large sample as indicated by the confirmations of the confidence interval overlapping and the variance.

When controlling for other variables in the model, the main effect of the number of daily healthy items consumed, was a significant factor in this study, $F(7,29) = 12.72$, $p = .001$

The main effect of grade level had a significant impact on the number of healthy items consumed, $F(4,32) = 3.20$, $p = 0.25$ and did the main effect of sex $F(1, 35) = 59.26$, $p = .001$ were significant. The main effect of body mass index percentile did not have a significant effect, $F(1,35) = .01$, $p = .931$.

The variable information on table 1 shows that the number of health items daily had a mean score of 2.58 (S.E. = .04) and BMIPCT score was 62.99 (S.E. = .49). The BMIPCT expresses that students from this study had a body weight classified as normal or in the healthy weight range.

The estimated marginal mean of perception of students who described themselves as slightly overweight had a weight had a score of 2.46 [95% CI= 2.21, 2.71]. In comparison, students who did not perceive themselves as slightly or very overweight had a mean score of 2.58 [95% CI= 2.34, 2.81].

Table 6

Effect of Perceived Body Weight on the Number of Daily Healthy Dietary Choices in the Past Week

Source	df1	df2	Wald F	p
N	7	29	12.72	0.001*
(Intercept)	1	35	327.61	0.001*
Perception of Weight	1	35	9.86	0.003*
Sex	1	35	59.27	0.001*
Grade Level	4	32	3.20	0.025*
BMIPCT	1	35	0.008	0.931

Note: *S.E.* = Standard Error of the Estimate

R Square = 0.12

N = Number of Daily Health Items Consumed

P = Probability

* = Indicates Significance at a cutoff of $p < .05$

Factor and Variable Information

Described Themselves as Slightly or Very Overweight	<i>M</i> (<i>S.E.</i>)	Weighted %	95% <i>C.I.</i>	
			Lower	Upper
Yes	2.46 (.12)	31.40%	2.21	2.71
No	2.58 (.11)	68.60%	2.34	2.81

Note: *S.E.* = Standard Error of the Estimate

M = Mean

C.I. = Confidence Intervals

CHAPTER V: DISCUSSION

This study aimed to find if there is an effect of perceived weight status on daily healthy dietary habits among the high school population in the United States. BMI percentile was included in this study to control for any relationship between the student's weight perception and their actual weight, when looking at the amount of healthy dietary choices being made. Unhealthy eating can affect adolescent health by contributing to obesity and other health issues such as diabetes. According to the United States Department of Health and Human Services (n.d.), "17% (or 12.5 million) of children and adolescents aged 2-19 years are obese." Along with obesity, people with a healthy weight and a poor diet can contribute to health issues and illnesses laterally with people who are obese (United States Department of Health and Human Services, n.d.).

Smart Snacks being added to the school's educational system is one way of many to help and encourage better weight status and dietary habits among high school adolescents. Smart Snacks give students the option to make decisions on healthier food choices and hopefully engrave a healthy habit into a lifestyle. Food items can include popcorn and granola bars versus donuts and chocolate bars, see Appendix B. Adolescents are in school majority of their day and they are there to learn skills to be prepared for life after school. Smart Snacks have certain nutritional standards that schools must follow, but stronger standards can be applied. Students consumed an average of 3 healthy choices daily. The school system can incorporate other tactics through smart snacks to increase the number of healthy options students are consuming. As stated in Chapter II, according to the CDC (2017b), eating a healthy breakfast is associated with improve cognitive

function. A suggestion would be for the school system to offer a variety of healthy options during breakfast time or give the student an option to purchase a healthy snack during breakfast time to eat later in the day.

The demographics demonstrated approximately an even number of students per grade level and sex. Students who perceived their weight to be slightly or very underweight were not the correct weight status under the BMI-for-age percentile growth chart. They were considered normal weight. Students who felt that they were about the right weight were correct as far as their perception. People who were perceived their weight status to be slightly overweight were borderline overweight. Lastly, the students who perceived their weight to be very overweight were in the overweight category, according to the BMI-for age percentile growth chart. Overall, the students who perceived themselves as about the right weight and slightly overweight had shown some knowledge about their perceived weight status (i.e. their perception of his or her own heaviness).

Majority of students who considered their weight to be very underweight, slightly underweight, and about the right weight, did not want to lose any weight. Likewise, students who perceived their weight to be slightly overweight and very overweight stated “Yes” they wanted to lose weight. Three out of the five were the daily number of healthy dietary choices that majority of the students consumed. The 3 out of 5 healthy dietary options were consistent being the highest average amount of healthy options consumed across all weight perception categories with an exception of very underweight. For students who perceived themselves as slightly overweight and very overweight and

wanted to lose weight, consumed the same average as people who were content with their weight. Results from this study indicated that students who perceived themselves slightly/very overweight were not making any difference in the amount of healthy dietary choices being consumed compared to students who perceived themselves as slightly underweight and about the right weight. The healthy choices included no soda, fruit, vegetable, breakfast, and milk consumption. Several researchers such as Rodgers et al. (2017) found that female adolescents wanted to lose weight more than their male counterparts and engaged more in disordered weight control behaviors. Adolescents go through social pressures and want to be accepted by their peers during their high school years. The significance of this state is to design a health program that targets the female population before they become freshman in high school. Students who perceived themselves to be slightly or very overweight can be educated on having a balanced nutritional diet through MyPlate and promote higher self-esteem in students who perceive themselves less than normal weight.

This study showed that perception of weight, sex, and grade level, were all significant factors for student's consumption of healthy dietary habits. BMIPCT did not demonstrate significance within this study. The significance level for BMIPCT was .931. Although the results report the study to be significant, the variance level of the study is 0.12. This is equivalent to 12% out of 100%, which shows this study to not be significant. The confidence intervals also overlap for the student's perception of their weight which is another way that determined the study is not significant. The significant difference given by the ANOVA analysis is because of the large sample size. Overall, the ANOVA

analysis reports that there is a relationship between weight status and dietary habits among high school students in the United States. However, this is due because of the large sample size of the study.

The hypothesis as stated in chapter one was, “When controlling for grade level, sex, and body mass index percentile, students who perceive their weight status to be overweight or very overweight will present healthier dietary habits than those who perceive their weight to be normal.” The findings show that students who perceived their weight status to be overweight or very overweight did not present healthier diet choices from students in the normal weight category.

Conclusions

The results of this study indicated that there is a relationship between perception of weight status and healthy dietary habits, although the BMI Percentile was not a significant variable. The ANOVA analysis reported a significant relationship due to the large sample size. However, the results showed that students in high school consumed an average of 3 daily healthy dietary options. As well as students who were perceived themselves as “Slightly/Very Overweight” wanted to lose weight but did not make any effort to consume more daily healthy options compared to people who were in the healthy weight range. Lastly, student’s perception of their weight is closely accurate to the BMI percentile range with an exception of students who perceived themselves as “Slightly/Very Underweight.”

Researchers and public health professionals can use the knowledge gained from this study to design effective health programs for adolescents or to further research and

enhance on public knowledge. The purpose of this study was to understand the relationship between daily healthy dietary habits of high school students when examining their perceived weight status and body mass index percentile.

Future Implications and Research

Based on the literature and the results for this study, future implications can include:

- Controlling for self-esteem and determine how it affects individual's dietary habits
- Explore health issues such as diabetes and hypertension to determine the reasoning to why high school students would like to lose weight
- Explore school policies that recommend or influence nutrition education in schools and report the data of the school's progress towards healthy dietary changes

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APPENDICES

APPENDIX A: DIETARY GUIDELINES THROUGH MYPLATE

Figure 3-2.
Implementation of the *Dietary Guidelines* Through MyPlate

MyPlate, MyWins.
 Find your healthy eating style and maintain it for a lifetime. This means:

Everything you eat and drink over time matters. The right mix can help you be healthier in the future.

Start with small changes to make healthier choices you can enjoy.
 Visit ChooseMyPlate.gov for more tips, tools, and information.

U.S. Department of Health and Human Services and U.S. Department of Agriculture.

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APPENDIX B: SMART SNACKS

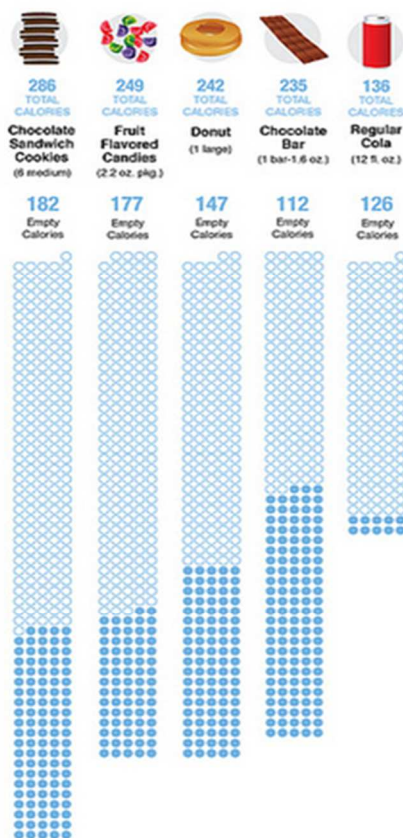


SMART SNACKS IN SCHOOL

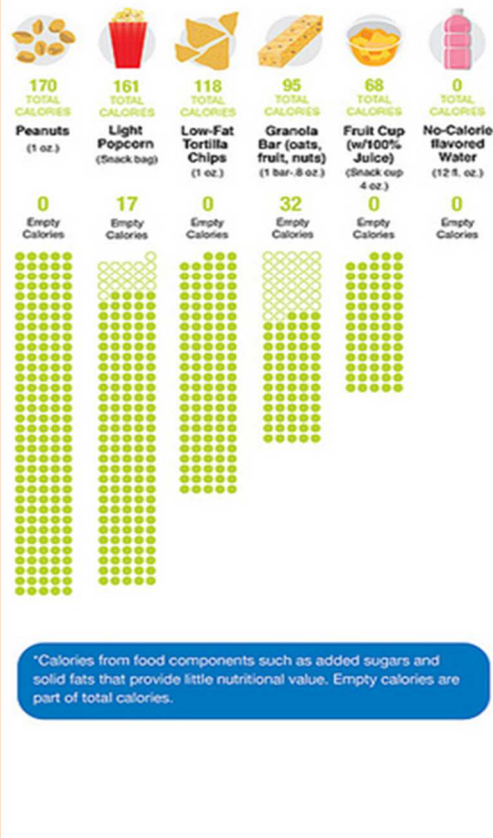
The Healthy, Hunger-Free Kids Act of 2010 requires USDA to establish nutrition standards for all foods sold in schools—beyond the federally-supported meals programs. This new rule carefully balances science-based nutrition guidelines with practical and flexible solutions to promote healthier eating on campus. The rule draws on recommendations from the Institute of Medicine, existing voluntary standards already implemented by thousands of schools around the country, and healthy food and beverage offerings already available in the marketplace.

● Equals 1 calorie ○ Shows empty calories*

Before the New Standards



After the New Standards



*Calories from food components such as added sugars and solid fats that provide little nutritional value. Empty calories are part of total calories.

USDA is an equal opportunity provider and employer.



Centers for Disease Control and Prevention. (2017). *Smart snacks*. Retrieved from

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