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Self-Efficacy and Health Perceptions, a Survey of American Indian Obesity

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Walden University
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Abstract

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MA, Kaplan University, 2011

BS, Western International University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Psychology

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Abstract

Compared to other ethnicities, American Indians have higher rates of obesity and are disproportionately diagnosed with comorbid diseases such as diabetes, high blood pressure, and heart disease. While genetic, behavioral, and social risk factors contribute to health disparities and disease, the concept of self-efficacy, an element of Bandura's social cognitive theory, influences the ability to overcome barriers and reduce risk. When combined with the health belief model, this theory also provides the foundation for understanding perceptions, attitudes, and beliefs about disease. Yet, research in these areas is limited for American Indians. Therefore, the purpose of this cross-sectional survey study was to examine cooking techniques and meal preparation self-efficacy, negative cooking attitude, self-efficacy for eating and cooking with fruits and vegetables, health value, and perceived severity, susceptibility, barriers and benefits on body mass index (BMI) for 92 American Indians in Maricopa County, Arizona. Participants self-reported height and weight to calculate BMI and completed the Cooking with a Chef Evaluation Instrument and the Health Belief Model Scale in Obesity. Quantitative data were analyzed by multiple regression analysis and the combination of all predictors had a statistically significant large effect on BMI prediction. Health value and self-efficacy for cooking techniques and meal preparation were each statistically significant predictors with small effects. Clinicians, physicians, tribal authorities, and researchers may benefit from this study's results by understanding the impact of self-efficacy and health perceptions on BMI to promote positive social change for health equity within American Indian communities.

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Dedication

This study is humbly dedicated to the enrichment of Native American culture and lifelong learning in the pursuit of progress for health equity.

Progress stems from education, culture, freedom, and equality. Without these fundamentals, mankind will flounder. – Matt Chandler

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First and foremost, I want to acknowledge my husband and best friend, Bryan Babbitt, who has faithfully supported my pursuit of education since high school. Without complaint, he has listened to me read and reread sentences, paragraphs, and pages for "thirty years!" Every time I wanted to quit, he encouraged patience and perseverance.

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Chapter 1: Introduction to the Study

Introduction

The obesity rates for American Indian and Alaskan Native (AI/AN) adults, aged 20 to 74, are disproportionately higher than other ethnicities in America (Adakai et al., 2018). In fact, the State of Obesity, a project of the Trust for America's Health and the Robert Wood Johnson Foundation, reported that over half (54%) of the national adult AI/AN population was obese compared to 47.8% of Black, 42.5% of Latino, 32.6% of White, and 10.8% of Asian American adults (Levi, Rayburn, Segal, & Martin, 2015, p. 23). The Kaiser Family Foundation (Kaiser, 2017) further analyzed data in the national Behavioral Risk Factor Surveillance System (BRFSS) survey according to state, and determined that 77.5% of the adult AI/AN population in Arizona is obese and overweight, which is higher than Hispanic (i.e., 71.8%), Black (i.e., 67.6%), and White (i.e., 62%) adults.

Consequently, within the AI/AN population (estimated 2.9 million in 2010), diabetes is diagnosed 2.3 times more often than in the non-Hispanic White population (Diné Policy Institute, 2014, p. 52; Healthy Diné Nation Act, 2014, p. 1; Harvard Law School Food Law and Policy Clinic, 2015, p. 1; Indian Health Services, 2012). The American Diabetes Association (ADA, 2017) estimates 15.1% of the AI/AN population is diagnosed with type 2 diabetes compared to the national population average of 12.7% of non-Hispanic Blacks, 12.1% of Hispanics, 8% of Asian Americans, and 7.4% of non-Hispanic Whites. As a result, the rate of death due to diabetes is 1.6% higher in AI/AN

populations, beginning as early as 20 years old, and doubling by the age of 40 (IHS, 2012; NEC, n.d., p. 40).

Federal and local governments have amended policies and passed legislation to combat the obesity rate and reduce risk of comorbid diseases such as diabetes. In 2014, the federal government amended the Federal Food, Drug, and Cosmetic Act (the FD&C Act) to include nutrition information on menus, and the Navajo Nation's sovereign government implemented a junk food tax in the Healthy Diné Nation Act (HDNA) of 2014 (USFDA, 2017, 2018). Several researchers have examined the effects of these government-based interventions with mixed results for changing obesogenic perceptions for members of minority groups (Chen et al., 2015; Ellison, Lusk, & Davis, 2013; Kiszko, Martinez, Abrams, & Elbel, 2014; Novak & Brownell, 2011; Powell, Chriqui, Khan, Wada, & Chaloupka, 2013; Swartz, Braxton, & Viera, 2011). Meanwhile, researchers also assessed social- and community-based, behavioral-focused strategies aimed at increasing confidence (i.e., self-efficacy) in cooking techniques, meal preparation, and eating and cooking with fruits and vegetables to improve long-term health, including body weight (Bandura, 1995, 1997, 1998, 1999, 2001; Condrasky, Williams, Catalano, & Griffin, 2011; Polak, Sforzo, Dill, Phillips, & Moore, 2015). Yet, research is limited on the relationships between body weight, self-efficacy, and attitudes and beliefs on obesity as a disease in vulnerable populations, specifically within American Indian communities. In the rest of this chapter I outline the background, problem statement, purpose, research questions and hypotheses, theoretical framework,

nature of the study, assumptions, scope, limitations, and significance of this research study.

Background

According to the U.S. Census Bureau (2018), the highest percentage of American Indians (i.e., 2.8% or approximately 123,503) reside in Maricopa County, Arizona, the largest and most populous county in the state. Within Maricopa County, the United States Department of Agriculture Economic Research Service (USDA ERS, 2017) identified 53 urban food deserts (i.e., areas associated with low income and low access to food), impacting approximately 218,000 residents (Babbitt, 2016; DPI, 2014; USDA, 2016). Based on census tracts, the USDA ERS (2017) found that nearly one-third (31.3%) of these urban food desert residents are AI/AN and 15.6% of these residents travel a mile or more to reach a supermarket. Consequently, food desert residents tend to experience high food insecurity, which the USDA (2018) defined as "limited or uncertain access to adequate food," and researchers have correlated with obesity and type 2 diabetes (Seligman, Bindman, Vittinghoff, Kanaya, & Kushel, 2007; Seligman, Laraia, & Kushel, 2010). In short, as income decreases, food insecurity and obesity increase (Brown, 2013; Pan, Sherry, Njai, & Blanck, 2012; Seligman et al., 2007).

Food insecurity is correlated with the lack of food knowledge (Gittlesohn et al., 2006), reduced consumption of fruits and vegetables (Chen & Gazmararian, 2014; Reicks, Trofholz, Stang, & Laska, 2014; Robaina & Martin, 2013), overconsumption of foods higher in calories, fat, and sugar, and an increased reliance on fast food restaurants (Seligman et al., 2007). Traditional farming as a food system has been replaced with

increased access to convenience foods (Babbitt, 2016; DPI, 2014; Drewnowski, 2009; Li, Harmer, Cardinal, Bosworth, & Johnson-Shelton, 2009; Maddock, 2004; Neff, Palmer, McKenzie, & Lawrence, 2009). Plus, in AI/AN communities, food insecurity has been associated with a decrease in the custom of sharing generational cultural knowledge of traditional foods and cooking methods (DPI, 2014; Oski, 2010).

Thus, several socio-structural factors (i.e., economic conditions, food insecurity, low socioeconomic status and education level), demographic (i.e., age, gender, and ethnicity), environmental (i.e., high-fat and high-calorie fast-food consumption), and cultural (i.e., decreased generational transference of cultural knowledge)—collectively referred to with the initials "SSDEC"—influence socio-psychological aspects of the self-system, including self-efficacy, affective states, attitudes, and beliefs (Becker, Maiman, Kirsch, Haefner, & Drachman, 1977; CDC, 2016; Dedeli & Fadiloglu, 2011; DPI, 2014; Janz & Becker, 1984; Oski, 2010; Prestwich et al., 2014, p. 270; Rekhy & McConchie, 2014; Rosenstock, Strecher, & Becker, 1988). Consequently, national interventions like menu labeling (i.e., the FD&C Act) have been ineffective for reducing calorie consumption and obesity rates in ethnic minority populations compared to Whites, women, and those who are highly educated, older, wealthier, or already health conscious and tend to select and consume foods lower in calories, fat, and sugar (Babbitt, 2016; Becker et al., 1977; Chen et al., 2015; Ellison et al., 2013; Kiszko et al., 2014; Prestwich et al., 2014; Rekhy & McConchie 2014; Rosenstock et al., 1988; Swartz et al., 2011; Warren, Beck, & Rayburn, 2015). Simultaneously, territorial interventions, such as junk food taxes, only impact those who purchase high-fat and high-calorie foods within

specific areas. Thus, tax deterrents do not necessarily reduce consumption of junk foods or reduce obesity (Novak & Brownell, 2011; Powell et al., 2013).

Nevertheless, before the FD&C Act and HDNA of 2014, Condrasky (2006) saw the need for a behavioral-focused program. Condrasky (2006) applied Bandura's social cognitive theory (SCT) to develop Cooking with a Chef (CWC), an intervention designed to improve health through experiential cooking classes taught by a chef. CWC has since been implemented in various populations to teach cooking confidence (i.e., self-efficacy) and increase skills related to menu planning, food preparation, and eating and cooking fruits and vegetables (Condrasky et al., 2011; Condrasky, Graham, & Kamp, 2006; Condrasky & Hegler, 2010). Other researchers have studied the impact of behavior-focused programs like CWC and found numerous positive health benefits (Caraher, Dixon, Lang, & Carr-Hill, 1999; Foley, Spurr, Lenoy, De Jong, & Fichera, 2011; Frank, 2011; Hartmann, Dohle, & Siegrist, 2013; Polak et al., 2015; Reicks et al., 2014). However, studies on American Indian (a) self-efficacy, (b) cooking attitudes, and (c) health beliefs about the impact of obesity on body weight were limited, specifically for minority populations in or near urban food deserts. Only a few researchers have assessed American Indian beliefs (i.e., inner truths) and attitudes (i.e., beliefs that are expressed through language and behaviors) about obesity as a disease (DPI, 2014; Gittlesohn et al., 2006). However, these studies were limited to Navajo American Indians living on the Navajo Nation reservation, which excluded other members of the AI/AN community living outside the Navajo Nation reservation.

Finally, research was limited on (a) attitudes and beliefs about obesity as a disease based on perceptions about health value, (b) susceptibility to and severity of obesity as a disease, and (c) barriers to and benefits of action to reduce body mass index (BMI). As such, this study was timely and needed to determine relationships among BMI, cooking techniques and meal preparation self-efficacy, cooking attitudes, self-efficacy for eating and cooking with fruits and vegetables (hereafter collectively referred to as "cooking self-efficacy"), and attitudes and beliefs about obesity as a disease based on health attitudes and beliefs for American Indians in Maricopa County.

Problem Statement

In Arizona, 77.5% of the AI/AN population is obese or overweight (Kaiser, 2017), and nearly one-third (31.3%) of the state's American Indian population (i.e., approximately 38,656 of 123,503) lives in a food desert in Maricopa County (USDA ERS, 2017) and 15.6% of these residents are required to travel a mile or more to reach a supermarket (USDA ERS, 2017), many without private transportation and in excessive heat. Obesity is linked to food insecurity as well as to other SSDEC factors—including lack of transportation—that influence the self-system (i.e., confidence, attitudes, and beliefs) and may act as barriers to reducing obesity and motivation to change negative health-related behaviors (Becker et al., 1977; Brown, 2013; Gittlesohn et al., 2006; Oski, 2010; Pan et al., 2012; Prestwich et al., 2014; Rekhy & McConchie, 2014; Robaina & Martin, 2013; Rosenstock et al., 1988; Seligman et al., 2007). According to Janz and Becker (1984), behavioral change is predicated on the perception of barriers, which can reduce confidence (i.e., self-efficacy).

Consequently, understanding perceived barriers to planning and preparing healthy meals at home, as well as eating and cooking with fruits and vegetables, may predict health and weight (Condrasky et al., 2011; Gittlesohn et al., 2006; Polak et al., 2015; Robaina & Martin, 2013). Hence, in this research study, I focused on the concept of confidence to successfully perform cooking tasks as an indication of capacity to overcome obesogenic environmental obstacles and behaviors to reach goals (Bandura, 1998, 2001; Janz & Becker, 1984; Rosenstock et al., 1988; Salazar, Crosby, & DiClemente, 2015; Simons-Morton, McLeroy, & Wendel, 2012).

Within minority communities, assessment of self-efficacy and obesogenic perceptions—based on attitudes and beliefs about obesity as a disease—was limited. Specifically, researchers had not studied the relationships between American Indian BMI, cooking self-efficacy, and health attitudes and beliefs about obesity as a disease in Maricopa County. Thus, research in these areas was timely to begin addressing gaps in the literature.

Purpose of the Study

The purpose of this study was to examine and describe the relationships between obesity as measured by BMI, self-efficacy, and obesogenic attitudes and beliefs for American Indians in Maricopa County via a demographic questionnaire, the CWC Evaluation Instrument, and the Health Belief Model Scale in Obesity (HBMSO).

Research Questions and Hypotheses

I proposed the following research questions, and null and alternative hypotheses for this study:

RQ1: To what extent does self-efficacy as measured by the CWC Evaluation Instrument predict obesity as measured by BMI for American Indians in Maricopa County (Condrasky et al., 2011)?

Alternative Hypothesis: Measuring self-efficacy increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Self-efficacy does not have a relationship with BMI for American Indians in Maricopa County.

RQ2: To what extent do attitudes and beliefs about obesity as a disease as measured by the HBMSO predict obesity as measured by BMI for American Indians in Maricopa County (Dedeli & Fadiloglu, 2011; Janz & Becker, 1984)?

Alternative Hypothesis: Measuring attitudes and beliefs about obesity as a disease increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Attitudes and beliefs about obesity as a disease do not have a relationship with BMI for American Indians in Maricopa County.

Conceptual Framework for the Study

Self-efficacy, the central concept of Bandura's SCT (1995, 1997, 1998, 2001), is intertwined with the HBM, and thus, I employed both to provide the framework for understanding SSDEC factors that engage the self-system (i.e., people's sense of efficacy, affective states, attitudes, and beliefs) resulting in behavior (Babbitt, 2016; Becker et al., 1977; Dedeli & Fadiloglu, 2011; Prestwich et al., 2014; Rekhy & McConchie 2014; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). Indeed, the HBM's purpose is to predict the likelihood of action to change health-

related behaviors based on beliefs about disease (Babbitt, 2016; Becker et al., 1977; Dedeli & Fadiloglu, 2011; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). Bandura's (1995, 1997, 1998, 2001) SCT provided the theoretical underpinnings of the self-system, which characterizes behavior.

As applied to this research, I used SCT as a conceptual framework and a psychosocial foundation to understand motivation and goal attainment, including self-observation, self-evaluation, self-reaction, and self-efficacy (Bandura, 1997). Self-efficacy is associated with confidence to perform tasks related to planning, purchasing and preparing food as well as increasing consumption of fruits and vegetables (Condrasky, 2006; Condrasky et al., 2011). I also integrated the psychosocial HBM as a foundation for examining health attitudes and beliefs linked to obesity as a disease and understanding the potential impact on BMI and behavioral changes (Dedeli & Fadiloglu, 2011; Janz & Becker, 1984; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). Janz and Becker (1984) and Rosenstock et al. (1988) determined that increases in self-efficacy can reduce perceived barriers and promote behavior changes (Salazar et al., 2015; Simons-Morton et al., 2012). In Chapter 2, I provide a comprehensive analysis of the HBM and Bandura's (1995, 1997, 1998, 2001) SCT to understand how cooking self-efficacy and health attitudes and beliefs about obesity as a disease could influence BMI for American Indians in Maricopa County.

Nature of the Study

I selected a quantitative, cross-sectional, survey design to examine the relationship between obesity, as measured by BMI, the dependent variable (DV), and (a)

cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, (c) self-efficacy for eating and cooking with fruits and vegetables, (d) health value, (e) perceived susceptibility, (f) perceived severity, (g) perceived barriers to action, and (h) perceived benefits of action as the independent variables (IV), for American Indians in Maricopa County. I also chose a nonprobability, convenience sampling method to recruit participants and delineated groups according to BMI: (a) underweight, a BMI under 18.5; (b) healthy weight, a BMI between 18.5 and 24.9; (c) overweight, a BMI between 25 and 29.9; and (d) obese, a BMI of 30 or greater (NIH, 2013; Warren et al., 2015). Participants self-reported their height and weight, and I calculated their BMI using the online National Institute of Health BMI calculator (NIH, n.d.; NIH, 2013). Random assignment of participants was not an option in this study. Multiple regression was the appropriate method for statistical analysis. Participants completed Condrasky et al.'s (2011) CWC Evaluation Instrument, which measured the following variables: (a) cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, and (c) self-efficacy for eating and cooking fruits and vegetables, and the HBMSO developed by Dedeli and Fadiloglu (2011) to measure the following variables: (a) health value, (b) perceived susceptibility, (c) perceived severity, (d) perceived barriers to action, and (e) perceived benefits of action (Babbitt, 2016).

Definitions

I identified and defined the following key terms to provide clarity and eliminate confusion between similar constructs and definitions that may apply in different disciplinary contexts:

Body mass index (BMI): A measure of body fat based on height and weight and categorized as underweight (i.e., BMI under 18.5), healthy weight (i.e., BMI between 18.5 and 24.9), overweight (BMI between 25 and 29.9), and obese (BMI of 30 or greater) as defined by the NIH (NIH, 2013; Warren et al., 2015).

Cooking self-efficacy: High or low level of perceived self-efficacy to facilitate performance of tasks related to menu planning, food preparation, and eating and cooking fruits and vegetables (Condrasky et al., 2011).

Food desert: Rural and urban areas associated with low income and low access to food as measured by distance to a grocery store (Babbitt, 2016; DPI, 2014, p. 53; HDNA, 2014, p. 4; USDA ERS, 2017).

Food preparation and cooking skills: Ability to comprehend cooking terms in a recipe, apply cooking methods to prepare food, and understand the process of food safety from selection to storage and disposal (Byrd-Bredbenner, 2005; Condrasky, 2010; Hartmann et al., 2013).

Food insecurity: Limited or uncertain access to adequate food (Babbitt, 2016; Coleman-Jensen, Gregory, & Singh, 2014, para. 1; DPI, 2014; USDA, 2018).

Food sovereignty: The "right of peoples to define their own policies and strategies for sustainable production, distribution, and consumption of food, with respect for their own cultures" (DPI, 2014, p. 7; NNOPVP, 2016).

Health attitudes and beliefs: Beliefs are internal feelings about truth, even if untrue, whereas attitudes are expressions of beliefs in words and behavior (Gittlesohn et al., 2006).

Health value: An overall measurement of health conscientiousness related to education, diet, exercise, hydration, and sleep on the HBMSO according to a 5-point Likert type scale ranging from 1 (*never*) to 5 (*always*) wherein higher values correspond to a higher value of health.

Low access: Measured by distance to a grocery store (USDA ERS, 2017).

Low income: A measurement of population poverty rates exceeding 20% and family median income equal to or less than 80% when compared to the state median (USDA ERS, 2017).

Obesity as a disease: In June 2013, the American Medical Association (AMA) classified obesity as a disease, which has influenced perceptions about severity and susceptibility as well as treatment options (Puhl & Liu, 2015).

Readiness to act: The prediction of action to reduce perceived barriers based on a calculation of an individual's ability to identify threats and benefits of behavioral change minus the capability (i.e., self-efficacy) to perform (Salazar et al., 2015; Simons-Morton et al., 2012, p. 116).

Self-efficacy: The perceived "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Babbitt, 2016; Bandura 1997, p. 3; 1998, p. 624; 2001, p. 15).

Self-system: An individual's sense of efficacy, affective states, attitudes, and beliefs that determine behavioral effects (Becker et al., 1977; Prestwich et al., 2014; Rekhy & McConchie 2014; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012).

SSDEC: Socio-structural (i.e., economic conditions, food insecurity, low socioeconomic status and education level), demographic (i.e., age, gender, and ethnicity), environmental (i.e., high fat and calorie fast food consumption), and cultural (i.e., decreased generational transference of cultural knowledge) factors that influence socio-psychological aspects of the self-system, including self-efficacy, affective states, attitudes, and beliefs (Becker et al., 1977; CDC, 2016; Dedeli & Fadiloglu, 2011; DPI, 2014; Janz & Becker, 1984; Oski, 2010; Prestwich et al., 2014, p. 270; Rekhy & McConchie, 2014; Rosenstock et al., 1988).

Traditional foods: Sacred foods believed to hold spiritual qualities and reduce illness in Native cultures such as corn, beans, and squash (i.e., the Three Sisters) as well as water, sage, melons, peaches, rabbit, and deer (Chollett, 2014; DPI, 2014; Frank, 2011).

Urban food desert: Urban is defined as an area with a population of at least 2,500 and food desert is defined by income and distance to a grocery store (USDA ERS, 2017).

Vehicle access: The USDA ERS (2017) measured households with limited or no private vehicle access in relation to distance (i.e., one half a mile, one mile, 10 miles, and 20 miles) to a grocery store (USDA ERS, 2017).

In Chapter 2, I provide additional information for the defined key terms as most are founded within SCT and the HBM. Specific terms related to the American Indian population were included to contextualize the scope of this study. Finally, I included common terms related to cooking to avoid confusion and add clarity to the study's framework.

Assumptions

The main assumptions in this study were as follows: (a) overweight and obese BMI categories are associated with an unhealthy body weight and do not account for muscle, (b) adult American Indian men and women value their health (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012), and (c) they want to make positive health-related behavior changes to reduce the high obesity and diabetes rates impacting their communities (DPI, 2014; HDNA, 2014). I assumed (d) that the lack of shared cultural knowledge about food preparation methods (DPI, 2014; Oski, 2010) was related to low cooking self-efficacy in this population, and (e) that obese American Indians had lower self-efficacy and were not ready to change their obesogenic behaviors (Dedeli & Fadiloglu, 2011). Finally, I assumed that the findings would be generalizable to other American Indians in Maricopa County.

Scope and Delimitations

I examined and described the relationships between BMI, cooking techniques and meal preparation self-efficacy, negative cooking attitude, self-efficacy for eating and cooking with fruits and vegetables, and attitudes and beliefs about obesity as a disease for American Indians in Maricopa County.

The prominent delimitations I foresaw included selecting a cross-sectional survey design and a nonprobability, convenience sampling method based on self-selection into the study, ethnicity, and age. While these delimitations threatened external and statistical conclusion validity, I intentionally screened participants' ethnicity (i.e., American Indian)

and age (i.e., 18 to 65 years old) for inclusion based on reported rates of obesity within Arizona AI/AN communities (DPI, 2014; HDNA, 2014; Kaiser, 2017; USDA ERS, 2017). Nevertheless, I also understood that the generalizability of the findings to other populations would be limited.

I conducted an *a priori* power analysis, discussed further in Chapter 3, to determine that a sample size of 92 was necessary to detect medium differences (Faul, Erdfelder, Lang, & Buchner, 2009). The CWC Evaluation Instrument has three subscales and I selected this tool to measure participants' perceived self-efficacy to perform tasks related to cooking self-efficacy (Condrasky et al., 2011). The HBMSO has five subscales and I selected this tool to measure participants' attitudes and beliefs about obesity as a disease (Dedeli & Fadiloglu, 2011). Both instruments have construct validity (Condrasky et al., 2011; Dedeli & Fadiloglu, 2011) and I purposely selected them to measure related constructs (i.e., convergent validity) and achieve high correlations (Trochim, 2006).

Limitations

Researchers conducting survey research can efficiently collect data about attitudes and beliefs directly from large target populations (Cox, 2016; Creswell, 2009). However, I used a nonprobability, convenience sample versus a simple random sample, which limited generalization of the findings to larger populations and threatened external validity (Babbitt, 2016; Campbell & Stanley, 1963; Creswell, 2009). I also anticipated attrition using the survey research method, which threatened the study's internal validity (Cox, 2016; Campbell & Stanley, 1963). Moreover, the surveys did not include effort- or attention-check items, and I may have unknowingly provided cues to participants and

increased their awareness about the expected results. Therefore, the findings are also limited due to response and experimenter biases (Campbell & Stanley, 1963).

Significance

Government interventions directed toward reducing the obesity rate may act as a barrier for changing food consumption behaviors and may even increase the disparity between majority and minority groups. Accordingly, I used this opportunity to promote positive social change and advance discipline knowledge about the relationship between BMI and SSDEC factors influencing American Indian health attitudes and behaviors in Maricopa County. Future researchers can benefit from and build on the results, including changing SSDEC factors to reduce BMI and subsequently, reduce diabetes and death rates in this population.

Summary

American Indians have higher rates of obesity, and they are disproportionality diagnosed with comorbid diseases like diabetes, high blood pressure, and heart disease. Obesity is linked to food insecurity as well as other SSDEC factors that influence the self-system and may act as barriers to reducing obesity and motivation to change negative health-related behaviors. Thus, the purpose of this quantitative, cross-sectional, survey study was to examine and describe the relationships between BMI, self-efficacy, and attitudes and beliefs about obesity as a disease for American Indians in Maricopa County, Arizona, based on SCT and the HBM.

In Chapter 2, I review literature related to the study's key variables: (a) cooking techniques and meal preparation self-efficacy, cooking attitudes, and self-efficacy for

eating and cooking with fruits and vegetables; and (b) health beliefs and attitudes about obesity as a disease. I also include a thorough review of SCT and the HBM as the study's conceptual frameworks.

Chapter 2: Literature Review

Introduction

Government interventions have failed to reduce obesity rates in minority groups and lack theoretical support for changing food consumption behaviors to improve health (Chen et al., 2015; Ellison et al., 2013; Kiszko et al., 2014; Novak & Brownell, 2011; Powell et al., 2013; Swartz et al., 2011). Conversely, behavior-focused, research-based programs grounded in social cognitive theory (SCT) that are designed to increase self-efficacy and improve health while decreasing perceived barriers have been successfully implemented (Caraher et al., 1999; Condrasky & Hegler, 2010; Condrasky et al., 2006, 2011; Foley et al., 2011; Frank, 2011; Hartmann et al., 2013; Polak et al., 2015; Reicks et al., 2014). Therefore, the purpose of this quantitative study was to examine the impact of cooking techniques and meal preparation self-efficacy, negative cooking attitude, self-efficacy for eating and cooking with fruits and vegetables, health value, perceived susceptibility, perceived severity, perceived barriers to action, and perceived benefits of action on BMI for American Indians in Maricopa County, Arizona (Babbitt, 2016; Condrasky et al., 2011; Dedeli & Fadiloglu, 2011). This chapter includes details of my literature search strategy, theoretical foundation, and literature review related to the key variables necessary to achieve the proposed goals.

Literature Search Strategy

For this literature review, I explored the concept of self-efficacy through the constructs of SCT and the HBM as a means of understanding perceptions related to reducing obesity and perceived barriers to behavior changes. The main research themes

included BMI, cooking, food, obesity, American Indian, Native American, self-efficacy, health promotion, and related attitudes and behavior. I used a variety of search engines such as Google Scholar, ResearchGate, and the Walden University Library to gather literature. I used several databases, including Academic Search Complete, MEDLINE, ProQuest, PsycINFO, PsycARTICLES, PsycEXTRA, PsycTESTS, and Health and Psychosocial Instruments, SAGE Premier, ScienceDirect, and Thoreau. The search terms I used were *American Indian* OR *Native American*; *body mass index* OR *BMI* OR *weight* (adding the subject limiter *health*); *cook** AND *American Indian* OR *Native American*; *tradition** OR *cultur** AND *American Indian* OR *Native American*; *cultur** AND *American Indian* OR *Native American* AND *food*; *American Indian* OR *Native American* AND *obes**; *American Indian* OR *Native American* AND *diabet**; *self-efficacy* OR *social cognitive* OR *social learning* NOT *exercise* NOT *college* NOT *youth* OR *adolesc** (adding the subject limiters *health behavior*, *attitudes*, and *intention*); *BMI* OR *weight* AND *self-efficacy* OR *self efficacy* (with the subject limiters *attitudes*, *health*, *type 2 diabetes*, and *health promotion*); *health belief model* OR *health belief model in obes** AND *nutrition** (with subject limiters *health attitudes*, *health behavior*, *attitudes*, *behavior change*, and *self-efficacy* OR *self efficacy*); *indigenous populations* OR *American Indian* OR *Native American* AND *food desert* AND *urban*; *urban food desert* AND *Arizona* AND *Maricopa County*; *menu labeling* OR *food tax* AND *food desert*; and *food desert* AND *food security* OR *food insecurity* AND *obesity*.

Most of the peer reviewed articles in the literature review were less than 5 years old. However, I included early work from Becker (1977), Janz and Becker (1984), and

Bandura's seminal work (1995, 1997, 1998, 2001) to provide the theoretical background for the HBM, self-efficacy, and SCT. Some other materials exceeded the 5-year limitation; however, they are included to bridge gaps in the research.

I added other types of literature, including published master's theses and dissertations as necessary. For instance, Michaud's (2007) master's thesis established the Cooking with a Chef (CWC) Survey, which was later shortened by Condrasky, Williams, Catalano, and Griffin (2011) to the CWC Evaluation Instrument. I reviewed Michaud's thesis to determine the appropriate assessment tool for measuring this study's independent variables. I also read Kerrison's (2014) master's thesis for new findings about the CWC program based on the CWC Evaluation Instrument, and Frank's (2011) dissertation, which provided cultural detail about American Indian cooking in the Southwest. Finally, in this literature review, I provided relevant industry report data and theories about American Indian culture and the population, specifically related to rates of obesity and diabetes, which I obtained from the Centers for Disease Control and Prevention (CDC), Indian Health Service (IHS), Navajo Epidemiology Center (NEC), United States Department of Agriculture (USDA), United States Census Bureau (U.S. Census), and textbooks published by university presses.

Theoretical Foundation

This literature review is primarily grounded on the theoretical foundation of the self-efficacy component of Bandura's SCT (1995, 1997, 1998, 2001), previously identified as social learning theory (Bandura, 1977; Rosenstock et al., 1988), and the HBM (Becker et al., 1977; Janz & Becker, 1984; Salazar et al., 2015; Simons-Morton et

al., 2012). I utilized these theoretical concepts to support my proposed research questions and hypotheses, which postulated self-efficacy (as measured by cooking techniques and meal preparation self-efficacy, negative cooking attitude, and self-efficacy for eating and cooking with fruits and vegetables) was a factor likely to predict obesity for American Indians. Additionally, I hypothesized attitudes and beliefs about obesity as a disease varied across BMI categories (i.e., underweight, healthy weight, overweight, and obese), but perceptions of health value, susceptibility, severity, barriers, and benefits could predict BMI for American Indians. Of course, I did not ascertain the directional effect of these hypotheses from examination of the theories alone, I also reviewed the literature herein for an indication as to the expected direction of analysis.

Social Cognitive Theory

An individual's food system is based on a multidimensional organization of sources wherein food is obtained and then eaten or wasted (Babbitt, 2016; Neff et al., 2009). Within this system, people's choices, beliefs, and attitudes about which foods to select (i.e., whole organic foods, processed, prepared convenience, or fast foods) are influenced according to various levels of environmental (social and cultural), personal (internal and external), and micro- and macro-economic factors (Babbitt, 2016; Fitzgerald & Spaccarotella, 2009; Maddock, 2004). However, Bandura's social learning and social cognitive models (1977, 1995, 1997, 1998, 1999, and 2001) implied behavioral, environmental, and internal (i.e., cognitive, affective, or biological) factors bidirectionally influence one another equally. Essentially, behavioral responses are individualistic, which is a contradictive concept to behaviorist theories contending

environmental factors are the primary influence on behavior (Sun, Krakow, John, Liu, & Weaver, 2016).

Bandura (1997, 1999, 2001) explained cognitive theories involve individual capacity (i.e., agentic power) to shape and control the environment by increasing knowledge. Behavior is also shaped according to positive or negative cues, incentives, and expected outcomes (Rosenstock et al., 1988). Thus, positive outcomes are likely to produce continued behaviors whereas negative outcomes may reduce recurring behaviors, unless incentives are present (Bandura 1997, 1999; Rosenstock et al., 1988). Agentic power resides in the belief of ability to complete tasks (Bandura 1997, 1999, 2001). Bandura posited the concept of perceived self-efficacy in SCT, and he defined it as "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Babbitt, 2016; Bandura 1997, p. 3; 1998, p. 624; 2001, p. 15). Moreover, according to Bandura (1997), self-efficacy levels are dynamic, and change based on performance and experience, watching others, social encouragement, and biological and emotional conditions. Therefore, applying SCT, behavioral change is possible by engaging agentic power through self-efficacy (Bandura, 1997, 1998, 1999, 2001).

Self-efficacy. Self-efficacy levels range from high to low and are influenced by a number of factors, namely (a) capability, (b) perceived difficulty, (c) effort required, (d) availability of external help, (e) performance conditions, (f) previous success and failure patterns, and (g) experience (Bandura, 1997, p. 81). Motivation, learning, self-regulation, and achievement are also correlated with perceived self-efficacy levels (Bandura, 1997,

1999, 2001). Indeed, people with high self-efficacy tend to imagine success and attribute failure to lack of effort, whereas people with low self-efficacy are consumed with uncertainty and attribute failure to a lack of ability (Bandura, 1997, 1999, 2001). Perceived self-efficacy is a multifaceted concept, but I limited the scope of this research to the relationship of self-efficacy with perceived barriers.

Performance and experience. Belief in future success or failure is attained from past performance and experience (Bandura, 1995, 1997, 1998). As such, previous successes build confidence to successfully perform similar tasks in the future; contrariwise, previous failures weaken self-confidence (Bandura, 1995, 1997, 1998). Interestingly, failure before success and successes achieved easily each have the same outcome. Both may eventually weaken self-efficacy as people may develop a habit of quitting when failure occurs, a characteristic Bandura (1995, 1997, 1998) identified as lack of persistence. Although guided experiences tend to help people build efficacy even when they failed in the past (Bandura, 1995, 1997). In this research study, I measured self-efficacy to perform cooking related tasks using the CWC Evaluation Instrument (Condrasky et al., 2011).

Social models and vicarious experiences. People can measure their capability to perform tasks by watching other people (Bandura, 1997). Indeed, others often act as social models who provide observers comparative examples to follow (Bandura, 1995, 1997). The level of efficacy achieved through social modeling and vicarious experiences is dependent on similarities (i.e., experiences, characteristics, qualities, etc.) between the

model and observer (Bandura, 1995, 1997). However, these components of SCT were beyond the scope of my study.

Social encouragement. Words are powerful tools, though encouragement is not entirely dependent on what is said, but rather who is speaking and how the message is interpreted (Bandura, 1997). Self-efficacy increases when trusted others provide words of encouragement that match internal beliefs about ability, which produces long-term effects for success (Bandura, 1997). Alternatively, self-efficacy decreases when words of encouragement contradict internal beliefs and can lead to harmful long-term effects (Bandura, 1997).

Framing. People filter and interpret what they hear through an emotional lens. Bandura (1997) referenced Tversky and Kahneman's (1981) work on the concept of framing to illustrate how people rely on emotion when interpreting language (Kahneman, 2011). As an example, Kahneman (2011) provided the following problem:

> Would you accept a gamble that offers a 10% chance to win $95 and a 90% chance to lose $5?
>
> Would you pay $5 to participate in a lottery that offers a 10% chance to win $100 and a 90% chance to win nothing? (p. 364)

Each of these questions has the same outcome. Yet, participants were more likely to select the second option based on experiencing negative emotion associated with losing (Kahneman, 2011, p. 349 and 364; Tversky & Kahneman, 1981).

Similarly, Sun, Krakow, John, Liu and Weaver (2016) used negative framing to provoke blame (i.e., emotion) for the obesity epidemic then measured attitudes and motivation for change. Framing the obesity epidemic as a social condition influenced by

the environment versus individual behavior led to the belief society was responsible for obesity, which increased collective action for change (Sun et al., 2016). According to SCT, collective action is based on the idea people with similar beliefs, knowledge, skills, and intentions work together to achieve their goals (Bandura, 1997, 1999, 2001). Sun et al.'s (2016) findings support SCT and reiterate how effective framing can increase efficacy and decrease barriers to action for behavioral change (Bandura, 1997, 1999, 2001). However, negative framing impacts collective agency by decreasing effort for behavioral change in low self-efficacy groups and increasing effort in high self-efficacy groups (Bandura, 1997). Hence, how verbal and social encouragement is framed has a direct impact on perceived self-efficacy levels.

Biological and emotional factors. How people feel physically and emotionally can impact their capacity to think and make decisions (Bandura, 1997). In fact, stress and negative emotions are common risk factors for obesity (Rajita & Jastreboff, 2013), and both tend to reduce self-efficacy (Bandura, 1998). For that reason, reducing stress and negative emotion may have a positive impact on self-efficacy (Bandura, 1997, 1998). Particularly, an optimistic and positive outlook can increase self-efficacy, whereas the opposite is also true (Bandura, 1997, 1998).

Health Belief Model

In the 1950s, public health services began a shift from the treatment paradigm to prevention of diseases (Rosenstock, 1974). As health problems arose, researchers developed the psychosocial HBM to predict behaviors based on beliefs about disease (Babbitt, 2016; Janz & Becker, 1984; Rosenstock, 1974; Rosenstock et al., 1988).

However, the HBM could not be used to explain varying outcomes until Rosenstock, Strecher, and Becker (1988) proposed the inclusion of self-efficacy. Now, self-efficacy is a modifying variable in the HBM that explains behavioral outcomes related to perceived (a) susceptibility to disease, (b) severity of disease, (c) benefits of behavioral change, and (e) barriers to behavioral change (Janz & Becker, 1984; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). Granted, an underlying assumption of the HBM is everyone values their health (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Simons-Morton et al., 2012). However, motivation to change health-related behaviors typically occurs when health is threatened (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Simons-Morton et al., 2012). Under threat, people tend to weigh the potential benefits of changing their current health habits against perceived barriers to action (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Simons-Morton et al., 2012).

Perceptions (i.e., psychological factors) of threats and cues to take action are individualistic and adjusted according to structural, demographic, sociopsychological, and environmental factors (Babbitt, 2016; Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). For example, perceptions vary according to age, gender, ethnicity, personality, socioeconomic status, social identity, group categorization, knowledge of or prior experience with a disease as well as exposure to media campaigns and advice from doctors, family, and friends (Babbitt, 2016; Becker et al., 1977; Janz & Becker, 1984). Likewise, the probability of action differs according to level of self-efficacy, which is ultimately based on the

perceived benefits minus barriers to change (Babbitt, 2016; Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988).

Conceptual Framework

Self-Efficacy and the Health Belief Model

Janz and Becker (1984) reviewed 29 HBM investigations spanning from 1974 through 1984 and found perceived barriers were the most dominant factor for influencing behavioral change. At the end of their discussion, Janz and Becker (1984) recognized self-efficacy influenced behavioral change, specifically for people with high self-efficacy who tend to view barriers differently than people with low self-efficacy (Rosenstock et al., 1988). Janz and Becker (1984) also determined the HBM was a tool that could predict the ability to overcome barriers (Simons-Morton et al., 2012). In 1988, when Rosenstock and colleagues proposed adding self-efficacy as an explanatory (i.e., modifying) variable to the HBM, the model was expanded to include the conceptual idea of an individual's readiness to act. Readiness to act is defined as a calculated prediction of action to reduce perceived barriers based on identifying threats and benefits of behavioral change against the capability (i.e., self-efficacy) to perform (Salazar et al., 2015; Simons-Morton et al., 2012, p. 116). Therefore, determining an individual's level of self-efficacy is central to ascertaining whether he or she will successfully overcome barriers to accomplish behavioral change.

Health Belief Model Scale in Obesity

The HBM is a widespread framework that has been used in research and public health for over 60 years to predict and explain health-related behaviors associated with

the prevention of disease, participation in health programs, and behavioral change (Dedeli & Fadiloglu, 2011; Janz & Becker, 1984; Rosenstock, 1974; Salazar et al., 2015; Simons-Morton et al., 2012). In 2011, Dedeli and Fadiloglu used the HBM framework to develop the Health Belief Model Scale in Obesity (HBMSO), which measures attitudes and beliefs about obesity as a disease based on perceptions of health, threats, benefits, and barriers (Dedeli & Fadiloglu, 2011; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012). However, the American Medical Association (AMA) did not classify obesity as a disease until June 2013 (Puhl & Liu, 2015), and the classification remains controversial. Though, Puhl and Liu (2015) found over half (i.e., 51 to 61.7%) of 1,118 adults surveyed supported the AMA's decision and thought the classification would provide better access to treatment.

Literature Review Related to Key Variables

Self-efficacy was a key variable in this study, and according to research on SCT and the HBM, can predict one's readiness to overcome perceived barriers to behavioral change (Bandura, 1995, 1997, 1998, 2001; Dedeli & Fadiloglu; 2011; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012, p. 116). Perceived barriers impact the self-system (i.e., socio-psychological factors relating to confidence, emotions, attitudes, and beliefs), and include socio-structural, demographic, environmental, and cultural (SSDEC) factors such as age, gender, ethnicity, knowledge of or prior experience with disease, economic environment and socioeconomic status (SES), education level, food security, and cultural traditions (Babbitt, 2016; Becker et al., 1977; Caraher et al., 1999; Gittlesohn et al., 2006; Pan et al., 2012; Pardilla, Prasad, Suratkar, & Gittelsohn,

2014; Prestwich et al., 2014, p. 270; Rekhy & McConchie 2014; Robaina & Martin, 2013; Rosenstock et al., 1988; Seligman et al., 2007). Other key variables I reviewed for this study were specifically related to self-efficacy for meal planning, food preparation, cooking attitude, and eating and cooking fruits and vegetables, which are all predictors of health and may influence attitudes and beliefs about obesity as a disease (Condrasky et al., 2011; Dedeli & Fadiloglu, 2011; Gittlesohn et al., 2006; Polak et al., 2015; Robaina & Martin, 2013).

Menu Planning

Planning healthy, affordable, and interesting meals requires forethought (Condrasky, 2010). Individuals with high cooking self-efficacy may approach this task with a positive attitude and have the capability to organize and perform all the steps necessary to structure balanced and healthy meals. Comparatively, individuals with low self-efficacy may perceive menu planning as daunting or difficult. Nevertheless, meal planning may be perceived as a barrier to behavioral change considering the necessary time, effort, and skills required (Condrasky, 2010).

Performance and experience increase menu planning self-efficacy. In a quasi-experimental pretest-posttest design, with one control group and one intervention group, Condrasky, Graham, and Kamp (2006) demonstrated the benefits of performance and experience (i.e., enactive mastery experiences) to increase cooking self-efficacy in a random sample of 29 parents and caregivers of preschool children. After attending cooking sessions with a chef, posttest results reflected an increase in the treatment group's ability to use spices, although researchers did not find any significant differences

between the groups for fruit and vegetable consumption. Nevertheless, after the study, a nutrition educator conducted an informal focus group and participants reported an increase in the children's daily fruit and vegetable intake. Unfortunately, generalization of this study's findings was limited as researchers did not report participant sociodemographic information or include statistical data. Still, the constructs of interest measured by Condrasky et al. (2006) are within the scope of my study, therefore, her study was included for review.

More recently, Foley, Spurr, Lenoy, De Jong, and Fichera (2011) used a qualitative approach to understand how culture influenced cooking attitudes and behaviors for Australian nutrition and dietetic students in three Aboriginal and Torres Strait Islander community groups. Each group averaged 11 participants (ranging between 8 and 16), and participants attended three 3 hour or four 2 hour cooking workshops as time allowed. Participant discussions revealed the importance of a social environment on trying new foods and learning new cooking techniques. Though, some participants expressed concern related to the cost of eating healthy, which seemed to act as a barrier to change (Rao, Afshin, Singh, & Mozaffarian, 2013; Robaina & Martin, 2013; Rosenstock et al., 1988).

Largely, Condrasky et al. (2006, 2011) and Foley et al. (2011) agreed that enactive mastery experiences (i.e., performance and experience) in cooking classes improved cooking attitudes, reduced some barriers, and increased self-efficacy that may lead to positive health behavior changes (Polak et al., 2015). Although, Foley et al. (2011) explicitly recommended incorporating culturally appropriate components

consistent with the health goals and beliefs of participants to sustain behavioral changes (Chollett, 2014; Cunningham-Sabo et al., 2008; Reicks et al., 2014; Rekhy & McConchie 2014). Ultimately, perceived barriers, negative attitudes, and low self-efficacy are variables that effect successful, long-term behavioral change.

Perceived barriers to menu planning. Perhaps the most prominent barriers to menu planning and cooking at home are perceived lack of time, low income, and low access to a grocery store, which may lead to consuming low cost, high calorie convenience foods (Condrasky et al., 2006, 2011; Cunningham-Sabo et al., 2008; Polak et al., 2015; Reicks et al., 2014). In the progression of America's waistline from 1980 to 2012, the daily percentage of calories consumed outside the home increased from 18% to 30%, as did the obesity rate from 14% to 34.9% (Cutler, Glaeser, & Shapiro, 2003; Ogden, Carroll, Kit, & Flegal, 2014; USFDA, 2017). In low income urban food deserts, fast food restaurants and convenience stores are more accessible than grocery stores (DPI, 2014; HDNA, 2014; Oski, 2010). Still, grocery stores in food deserts tend to have a limited amount of healthy food, usually of low quality and higher cost than less healthy foods offered at local fast food restaurants and convenience stores (DPI, 2014, p. 12; HDNA, 2014; Oski, 2010).

Urban food deserts. Food deserts are areas associated with low income and low access to food, high food insecurity, obesity, and type 2 diabetes (Babbitt, 2016; DPI, 2014; Seligman et al., 2007, 2010; USDA, 2016; USDA ERS, 2017). The USDA ERS (2017) and USDA (2018) categorize urban food deserts according to population (minimum 2,500), income, and distance to a grocery store (minimum one mile) and

define food insecurity as “limited or uncertain access to adequate food” (Babbitt, 2016; DPI, 2014; USDA, 2016). Based on data from the 2010 U.S. Census, 218,363 Arizonans lived in one of 53 urban food deserts across Maricopa County (USDA ERS, 2017). In 2017, the USDA published the Food Access Research Atlas (FARA), which further segregated the population by ethnicity to explore differences based on income and access to food and transportation.

In the FARA, 323 of 874 urban tracts in Maricopa County were labeled "low access" and 348 were labeled "low income" with approximately 31.9% of the AI/AN population (i.e., 10,663) living at least one mile from a grocery store (USDA ERS, 2017). The median family income for all ethnicities reported in low income tracts was $62,071.00, while the average poverty rate for AI/AN households in these same areas was 32.1% (USDA ERS, 2017). Based on data obtained from the American Community Survey (U.S. Census Bureau, 2017), the highest concentrated AI/AN population (i.e., 29%) was found in census tract 3200.02, a low income and low access area otherwise known as Guadalupe, Arizona. The poverty rate in this .8 square mile area is double the rate (i.e., 32.7%) of Maricopa County (15.7%) covering 9,224 square miles (U.S. Census Bureau, 2017). FARA researchers also identified 152 urban tracts where a minimum of 100 households did not have access to a private vehicle and lived more than one half a mile from a grocery store (USDA ERS, 2017). In Guadalupe, 216 out of 1,686 households (i.e., 7.8%) were classified as low vehicle access located more than one mile from a grocery store, of which 13.5% (i.e., 16) were identified as AI/AN households (U.S. Census Bureau, 2017; USDA ERS, 2017).

In addition to low income and low access, American Indians face unique menu planning barriers including lack of traditional food knowledge, kitchen equipment, and reliable storage (DPI, 2014; Cunningham-Sabo et al., 2008; Oski, 2010). Oski (2010) described the impact of these barriers on Navajo communities citing the 2000 U.S. Census, which reported 30% of the population was living without electricity, running water, or refrigeration. Although, perhaps the most powerful barrier impacting the AI/AN population may be the lack of traditional food knowledge resulting from decreased community connection, as older generations have noticed a significant disconnect with younger generations (DPI, 2014). American Indians place high value on community and their heritage; however, transference of cultural information of values, cultural traditions, and food knowledge has declined (DPI, 2014).

Food insecurity. Access to healthy food for menu planning is a multiconceptual barrier with several consequences, including increased risk of obesity and comorbid diseases (DPI, 2014; HDNA, 2014; Oski, 2010). Food security has been defined by the USDA (2018) as having "dependable access to enough food for active, healthy living" (Babbitt, 2016; Coleman-Jensen et al., 2014, para. 1; DPI, 2014). Respectively, food insecurity (i.e., not "having dependable access to enough food for active healthy living") has a negative correlation with obesity (Babbitt, 2016; Brown, 2013; Coleman-Jensen et al., 2014; DPI, 2014; Pan et al., 2012; Seligman et al., 2007). In 2012, researchers for Gallup and Healthways collected 350,000 national surveys from American adults and found as income decreased (i.e., from $90,000.00 to less than $36,000.00) obesity rates increased by 9.3% (Babbitt, 2016; Brown, 2013). Similarly, Pan, Sherry, Njai, and

Blanck (2012) found as income decreased across ethnic subgroups, obesity increased more for food insecure adults (35.1%) compared to food secure adults (25.2%) in 12 states.

In a cross-sectional survey study, Pardilla, Prasad, Suratkar, and Gittelsohn (2014) collected data from 276 randomly selected Navajo American Indians in various community locations, including grocery stores, on the Navajo Nation reservation to determine factors related to food insecurity. According to their findings, over three quarters (i.e., 76.7%) of the participants had some level of food insecurity as measured by the 10-item Radimer/Cornell instrument. Common factors determining food insecurity were: (a) lower rates of full time employment; (b) less education; and (c) lower scores on a material lifestyle assessment, food knowledge, and healthy eating self-efficacy. Comparable to the findings in Foley et al. (2011), participants perceived healthy food was expensive and inconvenient to access, prepare, and eat.

Cost. Note, participants in Pardilla et al. (2014) and Foley et al. (2011) equated eating healthy with high cost, which acts as a barrier and influences attitudes and beliefs about obesity. In a meta-analysis conducted by Rao, Afshin, Singh, and Mozaffarian (2013), data from 27 studies and 10 countries was analyzed to determine the average cost of eating healthy foods. In their findings, Rao et al. (2013) determined eating healthy foods costs on average $1.50 more per day than eating unhealthy foods.

Perceived beliefs related to the cost of eating healthy not only act a barrier for behavioral change, these perceptions act as barriers for menu planning and eating more fruits and vegetables (Rao et al., 2013; Robaina & Martin, 2013). Alternatively, social

encouragement and positive framing may reduce perceptions of cost as a barrier and promote the likelihood of behavioral change (Bandura, 1997; Dedeli & Fadiloglu, 2011; Kahneman, 2011; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012; Tversky & Kahneman, 1981). For example, exorbitant healthcare costs may be reduced by employing preventative measures to improve health, including eating healthy. Framing this argument as an investment towards reducing future health losses may incite positive behavioral changes (Kahneman, 2011; Rao et al., 2013; Tversky & Kahneman, 1981). People could also subsidize the costs of eating healthy by growing their own food and recognizing gardening's benefits, such as weight loss from exercise as well as reduced stress and depression (DPI, 2014; NNOPVP, 2016; Oski, 2010).

Overcoming barriers to menu planning. Since 2006, American Indians on the Navajo Nation reservation have invested in school gardening programs (e.g., Farm to School) to reduce child hunger and perceived barriers related to food access and recultivate farming as a food system (Oski, 2010). Additionally, in June 2016 the Navajo Nation Office of the President and Vice President launched the Navajo Nation Gardening Challenge to inspire families to reconnect with their cultural heritage, language, and traditions through gardening. This endeavor simultaneously satisfies the Navajo Nation Counsel's (NNC) goals to increase individual self-sufficiency and rebuild the food system (DPI, 2014). The underlying purpose of the challenge also supports the NNC's philosophy of food sovereignty, which is described as the "right of peoples to define their own policies and strategies for sustainable production, distribution, and consumption of food, with respect for their own cultures" (DPI, 2014, p. 7). The Navajo Nation's Vice

President, Jonathan Nez, started the initiative by planting his own garden with a few traditional foods known as the Three Sisters: corn, beans, and squash. Thus, the Navajo Nation Gardening Challenge has set an example that could promote positive social change in any community and reduce perceived barriers related to food access, cost, and storage as well as increase the opportunity for generational transference of culture and food knowledge.

Food Preparation and Cooking Skills

Food preparation and cooking skills are measured by the ability to comprehend cooking terms in a recipe, apply various cooking methods to prepare food (i.e., grilling, roasting, baking, sautéing, pan frying, stir frying, poaching, steaming, boiling, and braising), and understand the process of food safety, including selection, storage, and disposal (Byrd-Bredbenner, 2005; Condrasky, 2010; Hartmann et al., 2013). Caraher, Dixon, Lang, and Carr-Hill (1999) conducted a study using a random sample of 5,553 interviews from the 1993 Health and Lifestyles Survey of England to determine the importance of cooking skills. Unfortunately, researchers did not find a direct relationship between participants' cooking skills and health statuses (e.g., BMI), but they were able to determine poor cooking skills may act as a barrier to eating healthy food by limiting choices and preparation options.

Caraher et al.'s findings (1999) pointed to distinctions among participants' cooking skills according to age, gender, education, and socioeconomic status. Specifically, older females with higher education and income generally cooked more often, and consequently reported higher levels of confidence using a variety of cooking

methods, except microwaving. These findings clearly signify group differences in food preparation confidence based on sociocultural and socioeconomic statuses. Caraher et al. (1999) also reported 76.1% of female participants and 58.3% of male participants learned cooking techniques from their mothers, which is a sociocultural factor that superseded socioeconomic status and education. At the same time, the source for teaching participants how to cook varied according to age and socioeconomic status (). Respectively, more men reported learning from significant others later in life than women, and participants with lower socioeconomic status favored cooking classes over cookbooks (). Thus, Caraher et al. (1999) provided a foundation for understanding the importance of increasing cooking confidence, and particularly the significance of cultural transference, as Native communities have experienced a decrease in sharing knowledge of traditional foods and methods of preparation (DPI, 2014; Oski, 2010). In concurrent research, Frank (2011), Foley et al. (2011), Hartmann, Dohle, and Siegrist (2013), and Reicks, Trofholz, Stang, and Laska (2014) address the importance of learning cooking skills to make healthier food choices, and transferring cooking knowledge, methods, and behaviors to youth.

Cooking attitudes. In Hartmann et al.'s (2013) development of the cooking skill scale, researchers examined data collected from 4,436 (n = 52.8% female and n = 47.2% male) European participants ranging in age from 21 to 99 in the 2010 and 2011 Swiss Food Panel questionnaire and found variations in skill related to cultural, sociodemographic, and psychological differences. In the final analysis, researchers found cooking attitudes influenced skill level with implications for behavior. Particularly, older,

health conscious women who enjoyed cooking had higher skill levels and ate more vegetables whereas a negative cooking attitude correlated with lower skill levels and higher consumption of prepared convenience foods. Overall, Hartmann et al.'s (2013) findings suggested participants with more food knowledge (i.e., high food self-efficacy) had more skill, and consequently more experience with various cooking methods for an assortment of foods (Foley et al., 2011; Reicks et al., 2014).

Attitudes are subjective and can depend on a variety of factors including gender, culture, and perception of the task. For example, 29% of the male participants (n = 607) in this study reported they were responsible for preparing weekly meals in their households (Hartmann et al., 2013). Specifically, within this group, cooking by choice rather than duty assigned by gender roles increased enjoyment and motivation (Hartmann et al., 2013, p. 129).

Conversely, Szabo (2012) explored this argument in a qualitative study of 30 men in Toronto, Canada who were responsible for preparing most of the household's meals. Using a 5-day meal diary, observations, and in-depth interviews, Szabo's (2012) findings were similar to Hartmann et al.'s (2013), 86.7% of the participants (n = 26) perceived cooking as an enjoyable leisure activity. However, all participants (n = 30) reported having a negative cooking attitude when meal preparation was perceived as work (p. 629). In the overall analysis, Szabo demonstrated a connection between health and attitudes toward meal preparation at home.

Both Hartmann et al. (2013) and Szabo (2012) described sociodemographic, psychological, and cultural differences in food preparation. Although, the main difference

between these studies was Szabo's qualitative approach, which allowed her to collect detailed data and assess male cooking attitudes without speculation. Moreover, Szabo observed participants change their environments, which had an impact on their psychological and affective states (Bandura, 1997, 1998). In stressful conditions, the men in Szabo's study created situations to make cooking more enjoyable, including spending time with family or friends, talking on the phone, adding music, or drinking an adult beverage. Conversely, researchers used statistical data in the quantitative approach employed by Hartmann et al. (2013) to postulate positive male attitudes toward cooking are based on less defined gender role responsibilities. Nevertheless, Hartmann et al. (2013) and Szabo (2012) demonstrated the concept that cooking attitudes are impacted by psychological and affective states and may be influenced to increase cooking confidence and related health benefits (Bandura, 1997; Condrasky, 2010; Condrasky et al., 2011).

Native culture. Over the past 60 years, Native culture has shifted from an agriculture to wage based economy, though low employment and income rates have increased reliance on the government for food via assistance programs (Babbitt, 2016; DPI, 2014, p. 52). In fact, 63% of the 230 participants who completed the 2012 Community Food Assessment confirmed receipt of government aid through Electronic Benefits Transfer/SNAP (i.e., formerly known as food stamps), Women, Infants, and Children (WIC), free lunch, and food distribution (DPI, 2014, p. 14). Reliance on government food assistance programs contradicts most American Indian values about food sovereignty and self-sufficiency, which prompted the Navajo Nation Office of the

President and Vice President to reintroduce community farming (DPI, 2014; NNOPVP, 2016; Oski, 2010).

Food preparation is a culturally diverse concept (Foley et al., 2011; Hartmann et al., 2013; Reicks et al., 2014; Szabo, 2012). In Native cultures, verbal stories are passed down from generation to generation to teach people about the origins, preparation, and use of food as medicine to avoid illnesses (DPI, 2014; Frank, 2011; Nezzie, 2016). Storytelling provides older generations a creative method for teaching younger generations about foodborne illness related to seafood, okra, blue agave syrup, cattle, pigs, and chickens, and also offers an opportunity for elders to encourage eating sacred traditional foods like corn, squash, beans, sage, and melons (Chollett, 2014; DPI, 2014; Frank, 2011). Native cultures also value water, a common overlooked ingredient, and consider it a life source attributed with the highest spiritual qualities (Frank, 2011). However, a generational gap has developed, and storytelling has declined (DPI, 2014; Oski, 2010), which may impact cooking attitudes and skills. Therefore, increasing traditional food knowledge and cultural education may be necessary to reduce perceived barriers and facilitate positive behavioral change (Granillo, 2016).

Socioeconomic and psychosocial factors. Using a cross-sectional research design, Gittlesohn et al. (2006), randomly surveyed 270 households located in the White Mountain and San Carlos Apache reservations in Arizona to describe the relationships between food behaviors (i.e., healthy or prepared convenience food purchases and healthy cooking) and psychosocial factors (i.e., food self-efficacy, intentions, and knowledge) with obesity and comorbid diseases. Survey participants were defined as

adult (≥ 18 years of age) primary food preparers and shoppers who had lived in the household for a minimum of 30 days. The sample was mainly female (95%, n = 256, $\bar{x}$ = 42 years old, $\bar{x}$ = 10.9 years of schooling), unmarried (60%, n = 162), unemployed (63%, n = 170), and benefiting from food assistance programs (70%, n = 189) with 192 (71%) households reporting an annual income over $15,000.00 (Gittlesohn et al., 2006). In their findings, Gittelsohn and colleagues (2006) found self-efficacy correlated with food intention to predict food behavior. Specifically, low food self-efficacy was the strongest predictor of frequent high fat/sugar purchases and pan frying. Conversely, high food self-efficacy scores positively influenced food intentions, including healthy food purchases and utilizing healthier cooking techniques.

Some of Gittlesohn et al.'s (2006) findings on food behavior predictors echo the results in recent studies evaluating the amendment to the FD&C Act (i.e., menu labeling). In these studies, researchers found menu labeling generally benefited highly educated, older, wealthier, and health conscious patrons who usually purchase and consume foods lower in calories, fat, and sugar (Chen et al., 2015; Ellison et al., 2013; Kiszko et al., 2014). Essentially, low income and less educated minority populations tend to ignore menu label information designed to increase food knowledge (i.e., food self-efficacy) and intention on food behavior (Babbitt, 2016; Chen et al., 2015; Ellison et al., 2013; Kiszko et al., 2014; USFDA, 2017, 2018). Although Gittlesohn et al.'s (2006) findings are informative, the data are not representative of all American Indians and other factors may have influenced results.

Fruit and Vegetable Consumption

In 2013, Robaina and Martin found a negative correlational relationship amid consumption of fruits and vegetables, food insecurity, and obesity for most food pantry users in Hartford, Connecticut (Babbitt, 2016). While food security was not correlated with obesity in this study, researchers found a positive correlation between food security and the consumption of fruits and vegetables. Consequently, food security is a primary factor for increasing fruit and vegetable consumption but is not necessarily linked with obesity.

The Navajo Nation Gardening Challenge was designed to rejuvenate farming, recultivate Native traditional food systems, increase food security, and reduce obesity for American Indians living on Navajo Nation reservation (DPI, 2014; NNOPVP, 2016). In a qualitative study conducted by Lombard et al. (2014), an adult focus group consisting of 31 Navajo American Indians discussed gardening attitudes and the impacts of community gardening on health. Many participants expressed the preference for a cultural approach to gardening that incorporated hands-on learning, storytelling, and visual aids. Further, the group recognized the benefits of gardening such as better access to fruits and vegetables, increased food security, and reduced obesity and disease rates, but they also perceived barriers such as poor access to water and land. Although Lombard et al.'s (2014) qualitative approach demonstrated the importance of considering culture on perceived barriers, researchers failed to address participants' perceived efficacy to cook and eat fruits and vegetables as well as assess readiness to change negative health-related behaviors.

Fruits and vegetable consumption was also significantly correlated with cooking skills and socioeconomic status according to Chen and Gazmararian (2014) who assessed 249 Black participants in two metro-Atlanta WIC agencies and found differences between participants who believed they consumed adequate amounts of fruits and vegetables daily versus participants (i.e., 28%) who consumed the daily recommended servings. Chen and Gazmararian (2014) found consuming less than the daily recommended amount (i.e., five servings) of fruits and vegetables negatively correlated with increased concern for money and lack of food knowledge about fruits and vegetables, especially preparation, cooking, and preventing spoilage (Reicks et al., 2014). Chen and Gazmararian (2014) noted their findings have limited generalizability as the sample size was small and the participants attended a nutrition education class before they completed the baseline survey, which may have influenced their responses. Nevertheless, the perception of consuming enough fruits and vegetables may act as a barrier to consuming the daily recommended amounts in low income populations. This barrier not only limits consumption of fruits and vegetables as determined by Chen and Gazmararian (2014), but according to Caraher et al. (1999) may also reduce the variety of foods selected based on low efficacy and poor cooking skills (Bandura, 1997; Condrasky et al., 2011).

Summary and Conclusions

In this literature review, I examined SCT and the HBM to identify and understand factors increasing American Indian obesity rates, including the consequences of self-efficacy, and attitudes and beliefs about obesity. However, the existing literature lacked

studies examining BMI in relation to cooking techniques and meal preparation self-efficacy, negative cooking attitude, and self-efficacy for eating and cooking with fruits and vegetables for American Indians in Maricopa County. Moreover, the current literature established that self-efficacy acts as an explanatory variable for predicting action to reduce perceived barriers and facilitate behavioral change (Janz & Becker, 1984; Rosenstock et al., 1988; Salazar et al., 2015; Simons-Morton et al., 2012, p. 116). Yet, research was limited pertaining to self-efficacy in relation to American Indian attitudes and beliefs about obesity as a disease. Therefore, I focused on these areas to advance the field and add to the current literature.

In Chapter 3, I research methodology to assess the independent and dependent variables and provide an outline of the study's procedural details, including research design, methodology, instrumentation information, data analysis plans, and ethical considerations.

Chapter 3: Research Method

Introduction

The main purpose of this quantitative, cross-sectional survey study was to examine and describe the relationship between body mass index (BMI), cooking self-efficacy, and attitudes and beliefs about obesity as a disease for American Indians in Maricopa County, Arizona, using the Cooking with a Chef (CWC) Evaluation Instrument and the Health Belief Model Scale in Obesity (HBMSO). A subsequent goal was to collect demographic information to identify SSDEC factors contributing to American Indian obesity rates. In this chapter, I outline the procedural details of the study, including the research design, methodology, and threats to validity, sampling procedures, intervention and instrumentation information, data analysis plans, descriptions of threats to internal, external, and construct validity, and ethical considerations.

Research Design and Rationale

Research Design and Variables

I selected a quantitative, cross-sectional, survey design to examine the relationships between obesity as measured by BMI, the dependent variable (DV), and (a) cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, (c) self-efficacy for eating and cooking with fruits and vegetables, (d) health value, (e) perceived susceptibility, (f) perceived severity, (g) perceived barriers to action, and (h) perceived benefits of action, the independent variables (IV), for American Indians in Maricopa County. The demographic questionnaire included space for participants to self-report their height and weight, which I used to calculate BMI and delineate the following

categories: (a) underweight, a BMI under 18.5; (b) healthy weight, a BMI between 18.5 and 24.9; (c) overweight, a BMI between 25 and 29.9; and (d) obese, a BMI of 30 or greater (Warren et al., 2015). The CWC Evaluation Instrument, developed by Condrasky et al. (2011), was used to measure the IVs (a) cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, and (c) self-efficacy for eating and cooking fruits and vegetables (Babbitt, 2016). The HBMSO, developed by Dedeli and Fadiloglu (2011), measured the IVs (a) health value, (b) perceived susceptibility, (c) perceived severity, (d) perceived barriers to action, and (e) perceived benefits of action (Babbitt, 2016). Accordingly, multiple regression was the appropriate statistical test for studying the relationships between the dependent variable and multiple independent variables.

Resource and Time Constraints

I projected resource and time constraints based on choosing a nonprobability, convenience sampling method and survey design that required self-selected participants to volunteer their time to complete the questionnaire and two assessments. Additionally, volunteers were screened, based on ethnicity and age, for inclusion in the study. As a result, I budgeted several weeks to complete data collection. I also considered financial resource constraints and included provisions in my budget for travel, survey printing costs, and pencils.

Design Choice Advanced Research

I selected a quantitative, cross-sectional, survey design, which would allow efficient data collection about attitudes and beliefs directly from a large population (Cox, 2016; Creswell, 2009). Specifically, I chose quantitative surveys to measure population

characteristics and advance research on American Indian obesity, efficacy, and perceptions. Finally, I chose a cross-sectional design to collect data from participants who shared similar characteristics (e.g., ethnicity, geographic location, socioeconomic status, etc.), but likely differed in body weight as measured by BMI, which was a key variable that I intended to use to detect differences in the groups.

Methodology

Population

The target population for this research proposal were adult (≥ 18 years of age and < 65 years of age) American Indians in Maricopa County.

Sampling and Sampling Procedures

I selected a nonrandom, convenience sampling method to recruit volunteers as there was no defined sampling frame for the target population (Babbitt, 2016). Determining the sample size for this study was based on hypothesis testing, or rather the type of statistical tests needed to answer the research questions (Field, 2013). Specifically, for this research proposal, I chose multiple regression to measure one DV (i.e., BMI) and the following eight IVs: (a) cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, (c) self-efficacy for eating and cooking with fruits and vegetables, (d) health value, (e) perceived susceptibility, (f) perceived severity, (g) perceived barriers to action, and (h) perceived benefits of action. Accordingly, I used G*Power 3.1.9.4 software to conduct an *a priori* power analysis for linear multiple regression, fixed model, R^2 deviation from zero with five predictors. I used a standard alpha ($\alpha = .05$) to reduce the risk of rejecting the null hypothesis when it is true (i.e.,

Type I errors), and standard power (1-β = .80) to increase statistical power and probability of rejecting the null hypothesis when it is not true (i.e., Type II errors), to determine the minimum sample size (n = 92) needed to achieve a medium effect size (i.e., f = .15) in the analysis (Faul et al., 2009).

Procedures for Recruitment, Participation, and Data Collection

Upon approval from Walden's Institutional Review Board (IRB), I planned to recruit volunteers for participation in the study from various public locations throughout Maricopa County, such as convenience and grocery stores, health clinics, and community events. I also expected to verbally screen volunteers' ethnicity and age to determine eligibility for participation but changed to a written screening test to reduce perceptions of intrusion.

I initially planned to review the consent form with volunteers and request signatures for consent to participate in the study. However, I removed the requirement for signatures pursuant to the IRB recommendation that survey completion implied participation consent. Participants received an unsigned copy of the consent form for their records, which introduced me as the student researcher, provided details about the study, and explain the informed consent process. Finally, the consent form contained my contact information in the event participants had questions about the study, and Walden University's Research Participant Advocate's contact information in the event of an adverse experience or questions pertaining to the rights of human participants in research. I also outlined a plan to email or mail participants and stakeholders a summary and explanation of the study results (American Psychological Association, 2010). However,

upon IRB recommendation, a summary of the results was provided to the community partner for dissemination. The consent form followed the requirements of the U.S. Department of Health and Human Services (2009) and conformed to the standards outlined by Walden University (American Psychological Association, 2010).

All eligible participants were expected to complete a demographic questionnaire, the CWC Evaluation Instrument, and the HBMSO (Babbitt, 2016; Condrasky et al., 2011; Dedeli & Fadiloglu, 2011). On the demographic questionnaire, participants were asked to self-report: (a) ethnicity; (b) height and weight; (c) weight status; (d) age; (e) gender; (f) marital status; (g) education level; (h) employment status; (i) income level; and (h) number of people living in the home, including number of children under the age of 18 and adults over the age of 55 (Babbitt, 2016; Condrasky, 2010; White et al., 1997).

Instrumentation and Operationalization of Constructs

CWC Evaluation Instrument. Condrasky et al. (2011) developed the CWC Evaluation Instrument to assess the effectiveness of the CWC program. The CWC Evaluation Instrument is a 22-item survey consisting of three subscales designed to measure cooking techniques and meal preparation self-efficacy, negative cooking attitude, and self-efficacy for eating and cooking with fruits and vegetables (Babbitt, 2016; Condrasky et al., 2011). Contrasky gave me permission to use the CWC Evaluation Instrument on May 22, 2016 (see Appendix A). Although, instead of receiving the CWC Evaluation Instrument as expected, Condrasky provided the CWC Survey, which is a 121-item survey with five scales, an index, a test, and demographic section. Nevertheless, according to Condrasky et al. (2011), the CWC Evaluation Instrument is a shorter version

of the CWC Survey and has been validated as a reliable measurement. Therefore, I evaluated both instruments to determine which instrument would be the most appropriate for this research study.

The CWC Survey, constructed by Michaud (2007), contained seven scales in addition to the Knowledge of Cooking Terms and Techniques Index: (a) Cooking Attitude (Cronbach's α = .79), (b) Cooking Behavior (α = .29), (c) Produce Consumption Self-Efficacy (α = .78), (d) Cooking Self-Efficacy (α = .79), (e) Self-Efficacy for Using Basic Cooking Techniques (α = .87), and (f) Self-Efficacy for Using Fruits, Vegetables, and Seasonings (α = .80). The CWC Survey also included the Availability and Accessibility of Fruits and Vegetables Index, which Michaud (2007) adapted from published work.

Condrasky et al.'s (2011) CWC Evaluation Instrument is a shortened version of the CWC Survey (Michaud, 2007). Condrasky et al. (2011) tested and retested the 22-item CWC Evaluation Instrument on study participants who were recruited from childcare settings, churches, and public elementary schools (p. 513). The study's sample (n = 245) included 19 participants from the pilot study (Condrasky et al., 2011). Condrasky et al. (2011, p. 514) split the sample into two groups of 162 parents and caregivers and 83 cooks. Participants were predominately female (92.2%, n = 226), over the age of 35 (76.4%, n = 187), married (75.1%, n = 184), employed at least part time (73.9%, n = 181), educated with a minimum of a Bachelor's degree (71.4%, n = 175), and White (67.8%, n = 166) according to Condrasky et al. (2011, p. 514). Additionally, household income was missing for 36 (14.7%) participants; however, 81 (33.1%)

participants reported a yearly income of greater than $70,000.00, which was slightly higher than the 70 (28.6%) participants who reported a yearly income of less than $30,000.00 per year, leaving 58 (23.7%) participants in the middle (Condrasky et al., 2011, p. 514).

Using factor analysis, Condrasky et al. (2011) determined three items were under the acceptable value for factor loading and reduced the original 25-item scale to 22 items, which increased construct validity and internal reliability for the new instrument. The CWC Evaluation Instrument also has three factors that accounted for 85% of the sample's total variance and an average .83 Cronbach's alpha: (a) Cooking Techniques and Meal Preparation Self-Efficacy (α = .90 to .93), (b) Negative Cooking Attitude (α =.84 to .86), and (c) Self-Efficacy for Eating and Cooking Fruits and Vegetables (α = .71 to .76). Test-retest reliability ranged from r = .63 to .88, and significant correlations (r = .36, p = .001) between the Cooking Techniques and Meal Preparation Self Efficacy Scale (Factor 1) and the Self-Efficacy for Eating and Cooking Fruits and Vegetables Scale (Factor 2) suggest construct validity for the theoretical concept of self-efficacy (Babbitt, 2016; Condrasky et al., 2011; Frankfort-Nachmias & Nachmias, 2008). Thus, I selected the CWC Evaluation Instrument (see Appendix B) for this research study, which provided a valid and reliable tool for measuring self-efficacy and reduced participants' burden to respond to redundant and excessive items contained within the CWC Survey (Condrasky et al., 2011).

HBMSO. Dedeli and Fadiloglu (2011) developed the HBMSO to measure adult attitudes and beliefs about obesity. Specifically, the HBMSO is a 32-item 5-point Likert

type scale designed to assess attitudes and beliefs toward obesity according to five separate subscales: (a) health value, (b) perceived susceptibility, (c) perceived severity, (d) perceived barriers to action, and (e) perceived benefits of action (Babbitt, 2016; Dedeli & Fadiloglu, 2011; Rosenstock et al., 1988). The HBMSO (see Appendix D) is appropriate for this research proposal, and I obtained permission to use the instrument from Dedeli on May 29, 2016 (see Appendix C).

In July 2008 and May 2010, Dedeli and Fadiloglu (2011) collected data via face-to-face interviews and developed the HBMSO. Results from the pilot study did not reflect any changes to the HBMSO after testing the scale on 10 obese men and 10 obese women (Dedeli & Fadiloglu, 2011, p. 535). Thereafter, Dedeli & Fadiloglu (2011, p. 535-536) recruited 400 obese men and women (n = 262 female and n = 138 male) from obesity clinics (Dedeli & Fadiloglu, 2011, p. 535-536). Similar to Condrasky et al. (2011), participants were predominately female (65.5%, n = 262), married (70.3%, n = 281), and educated with either a high school diploma (36.5%, n = 146) or Bachelor's degree (27.8%, n = 111) according to demographic data (Dedeli & Fadiloglu, 2011, p. 536).

Dedeli and Fadiloglu (2011) used principal component factor analysis to determine nine items were under the acceptable value for factor loading and reduced the 41-item scale to 32, which increased construct validity and internal reliability of the new instrument. The HBMSO also has five factors that accounted for 50.56% of the sample's total variance (Dedeli & Fadiloglu, 2011). Moreover, Dedeli and Fadiloglu (2011) found the HBMSO had reasonable internal consistent reliability (α = .80), and Cronbach's alpha ranged from .62 to .85 for each subscale, specifically (a) Health Value (α = .63),

(b) Severity (α =.74), (c) Susceptibility (α = .62), (d) Barriers (α = .85), and (e) Benefits (α = .62). Test-retest reliability suggests scores are consistent ($r > 0.60$, $p < .00$), and the significant correlations between susceptibility and severity ($r = .50$, $p < .000$), barriers and benefits ($r = .24$, $p < .000$), health value and benefits ($r = .66$, $p < .000$), and barriers and severity ($r = .22$, $p < .000$) indicate construct validity for the model (Dedeli & Fadiloglu, 2011; Frankfort-Nachmias & Nachmias, 2008).

Operationalization of Variables

Demographic, weight-related, and miscellaneous data. In this research study, I sought participant demographic information to further describe the population. Specifically, participants self-reported height and weight, which I planned to use to calculate their BMI via the NIH's online BMI calculator (NIH, n.d.; NIH, 2013). Participant BMI was operationalized as follows: (a) underweight, a BMI under 18.5; (b) healthy weight, a BMI between 18.5 and 24.9; (c) overweight, a BMI between 25 and 29.9; and (d) obese, a BMI of 30 or greater (Warren et al., 2015). Additionally, participants were also asked to self-report: (a) gender, operationalized as female, male, or other; and (b) weight status, operationalized according to how an individual perceives his or her current weight. Weight status choices were (a) underweight, (b) normal weight, (c) overweight by 5 to 10 pounds, (d) overweight by 11 to 20 pounds, (e) overweight by more than 20 pounds (Condrasky, 2010; White et al., 1997).

The sample was restricted to individuals who identified as AI/AN between the ages of 18 and 65 years old. I intended to dichotomize this data as yes or no answer according to a screening test, and then corroborate the information with self-reported data

on the demographic questionnaire. Education level, employment status, marital status, and income level ranges were also self-reported items on the demographic questionnaire in addition to the number of people living in the home (including the number of children under the age of 18 and adults over the age of 55).

Independent and dependent variables. Participant BMI was the dependent variable and the IVs were (a) cooking techniques and meal preparation self-efficacy, (b) negative cooking attitude, (c) self-efficacy for eating and cooking with fruits and vegetables, (d) health value, (e) perceived susceptibility, (f) perceived severity, (g) perceived barriers to action, and (h) perceived benefits of action.

CWC Evaluation Instrument. The 22-item CWC Evaluation Instrument contains three subscales with various response formats based on Likert type scales (Condrasky et al., 2011). For example, "Using knife skills in the kitchen," is one of the 14 items ranked according to a 5-point Likert scale from 1 (*not at all confident*) to 5 (*extremely confident*) that measures cooking techniques and meal preparation self-efficacy (Condrasky et al., 2011, p. 513). Higher scores equate to higher cooking self-efficacy (Kerrison, 2014; Michaud, 2007). Negative cooking attitude was measured using four items such as "Cooking is frustrating" according to a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) (Condrasky et al., 2011, p. 513). These items were reverse scored with higher scores indicating a more negative attitude (Kerrison, 2014; Michaud, 2007). Finally, four items including "Eating the recommended 9½ cup servings of fruits and vegetables each day" measured self-efficacy for eating and cooking with fruits and vegetables ranging from 1 (*not at all confident*) to 5 (*extremely confident*) with higher

scores demonstrating higher self-efficacy to eat and cook with fruits and vegetables (Condrasky et al., 2011, p. 513; Kerrison, 2014; Michaud, 2007). The mean of each subscale was calculated by summing the items then dividing by the total number of items answered in the subscale.

HBMSO. Participants' attitudes and beliefs about obesity as a disease was measured using the HBMSO, which contains five subscales: (a) health value, (b) perceived susceptibility, (c) perceived severity, (d) perceived barriers to action, and (e) perceived benefits of action (Babbitt, 2016; Dedeli & Fadiloglu, 2011). The HBMSO has 32 items and uses various response formats based on Likert type scales (Dedeli & Fadiloglu, 2011). The health value subscale has eight items including "I am careful about the things I eat and drink every day and I try not to skip meals," "I do activities such as exercise, walking, cycling and running regularly," "I have a fixed sleep pattern," and "I drink 1.5-2 liters of water everyday" (Dedeli & Fadiloglu). Responses on this subscale range from 1 (*never*) to 5 (*always*) with higher scores indicating a greater value of health and consciousness of weight (Dedeli & Fadiloglu, 2011). Perceived severity and susceptibility to obesity subscales each have four items and are rated by agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) (Dedeli & Fadiloglu, 2011). For example, statements such as "Obesity is a disease," measures the perceived severity of obesity as a health problem, whereas assertions like "The possibility of developing health problems due to obesity frightens me" measures an individual's perceived vulnerability to obesity (Dedeli & Fadiloglu, 2011). Higher scores on these subscales indicate higher perceived severity and susceptibility, except for item 16 on the perceived susceptibility subscale,

which is reverse scored: “I do not believe that I will develop health problems due to obesity as long as I take good care of myself” (Dedeli & Fadiloglu, 2011). The perceived barriers and benefits subscales each have eight items rated according to agreement (Dedeli & Fadiloglu, 2001). For instance, one item on the barrier subscale is “I feel that I lose control over my life when I follow a doctor’s advice to lose weight,” and one item on the benefit subscale is “I believe that regular exercising will help me lose weight” (Dedeli & Fadiloglu, 2011). High scores on the perceived barrier subscale indicate a high perception to barriers for losing weight whereas a high score on the benefit subscale suggests a high perception to the benefits of losing weight (Dedeli & Fadiloglu, 2011). The mean of each subscale was calculated by summing the items then dividing by the total number of answered items in the subscale (Dedeli & Fadilglu, 2011).

Data Analysis Plan

Statistical software. I used the Statistical Package for the Social Sciences (SPSS) software to determine associations between the DV (i.e., BMI) and IVs according to participants’ mean scores obtained on the subscales of the CWC Evaluation Instrument (i.e., cooking techniques and meal preparation self-efficacy, negative cooking attitude, self-efficacy for eating and cooking fruit and vegetables) and HBMSO (i.e., health value, perceived severity, perceived susceptibility, perceived barriers, and perceived benefits). Similarly, I planned to code demographic and weight-related data for each participant into SPSS to further describe the population.

Data screening and cleaning. The main objective for data extrapolation was to accurately transfer the raw data from the participants’ surveys to SPSS for data analysis.

For this research study, I planned to transform textual data into a numerical code, which increased the opportunity for mistakes. Therefore, before analysis, I aimed to screen the data for errors, missing values, invalid values, normality, and outliers by utilizing frequency distributions, histograms, wild codes (i.e., using an 8 in place of a 1 or 0 to make checking for missing data easier), boxplots, and descriptive statistics (Field, 2013; Frankfort-Nachmias & Nachmias, 2008; Groves et al., 2009).

As part of the data cleaning process, I anticipated checking errors against the raw data and planned to compute Mahalanobis distances from the predictor variables' means to identify and transform any significant multivariate outliers and distance critical values over 20.26 for five predictors and 100 events (Communication Research Statistics, 2006; Field, 2013). I also intended to use standardized residuals (i.e., residuals converted to *z*-scores) to transform outlying values versus trimming or deleting (Field, 2013). My plan to code missing data included specifying missing values as discrete in SPSS by assigning a code of 99 and labeling the item as "Failed to Respond," (Field, 2013). Thereafter, I intended to examine missing values for patterns to determine whether the data was missing due to unit (i.e., participant) or item nonresponse (Groves et al., 2009; Schafer & Graham, 2002). Finally, I planned to check residuals to ensure assumptions were met and no bias existed by utilizing the Durbin-Watson (D-W) test to confirm adjacent residuals were independent, checking the Kolmogorov-Smirnov (K-S) test and Shapiro-Wilk's (S-W) test for nonsignificant (i.e., $p > .05$) univariate normality of all variables, and reviewing scatter plots for assumption of linearity and homoscedasticity (Field, 2013).

Research questions. I proposed the following research questions, and null and alternative hypotheses, for this research study:

RQ1: To what extent does self-efficacy as measured by the CWC Evaluation Instrument predict obesity as measured by BMI for American Indians in Maricopa County (Condrasky et al., 2011)?

Alternative Hypothesis: Measuring self-efficacy increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Self-efficacy does not have a relationship with BMI for American Indians in Maricopa County.

RQ2: To what extent do attitudes and beliefs about obesity as a disease as measured by the HBMSO predict obesity as measured by BMI for American Indians in Maricopa County (Dedeli & Fadiloglu, 2011; Janz & Becker, 1984)?

Alternative Hypothesis: Measuring attitudes and beliefs about obesity as a disease increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Attitudes and beliefs about obesity as a disease do not have a relationship with BMI for American Indians in Maricopa County.

Analysis plan. I planned to conduct a multiple regression analysis to examine the relationships of cooking self-efficacy and attitudes and beliefs about obesity as a disease on BMI via the forced entry method wherein all the predictor variables are entered into the regression model simultaneously and fit is assessed using Pearson's correlation coefficient (*r)*, multiple correlation coefficient (*R*), and coefficient of determination (R^2) in addition to the Akaike information criterion (Field, 2013). Then, I planned to evaluate

multicollinearity using the variance inflation factor and tolerance statistic (Field, 2013). Thereafter, I planned to assess bivariate correlations between each pair of variables using the Pearson's correlation coefficient, and also, check the standardized regression coefficients on the analysis of variance (ANOVA) table for significance and effect size to determine if the predictor variables had an impact on BMI (Field, 2013).

Results and interpretation. I proposed interpreting and reporting descriptive statistics using means, standard deviations, standard errors of the means, Kolmogorov-Smirnov *D*, and probability for *D* (Field, 2013). I also anticipated analyzing and reporting main and interaction effects using *F*-ratios, probability values, confidence intervals, Pearson *r* correlation coefficients, and partial eta squared effect sizes (Field, 2013).

Threats to Validity

External validity. Expected threats to external validity for this survey study included research design, sampling method, situational factors, selection bias, and experimenter effects (i.e., Rosenthal and Hawthorne). Specifically, I chose a cross-sectional survey design and nonprobability, convenience sampling method based on ethnicity and age, which meant selection bias would threaten statistical conclusion validity (Creswell, 2009). I also identified selection bias as a threat to external validity because I did not expect a representative sample (i.e., self-selection) and anticipated data collection differences given variations between participants and circumstances (Creswell, 2009). Finally, I expected participants would change their behavior due to inadvertent cues I gave about the expected results (i.e., Rosenthal effects), or in response to observation, also known as the Hawthorne effect (Creswell, 2009). Each of these factors

represented a threat to external validity and thus, a limit to the generalizability of the study's results to larger populations (Creswell, 2009).

Internal validity. Threats to internal validity may confound the variables and create spurious relationships (Campbell & Stanley, 1963). Specifically, I anticipated internal validity threats based on selection bias, changes over time, testing effects, attrition rates, experimenter and response biases, and demand characteristics (Campbell & Stanley, 1963; Groves et al., 2009). By design, participants (i.e., self-selected volunteers) met eligibility and inclusion criteria requirements based on their ethnicity and age (i.e., selection bias). During the study, I anticipated participants would experience events unrelated to the survey (i.e., situational), including psychological or emotional changes (i.e., maturation), which could influence changes in the independent variables and threaten the study's internal validity (Campbell & Stanley, 1963). Nevertheless, the highest threats I projected to internal validity were attrition, fatigue, and response biases, as the survey instruments measured perceptions and required approximately 10 minutes to complete (Campbell & Stanley, 1963; Groves et al., 2009).

Construct or statistical conclusion validity. Operationalization of independent variables should reflect face and content validity as well as predictive and concurrent validity (Trochim, 2006). However, I was unable to determine if either the CWC Evaluation Instrument or the HBMSO distinguished between other theoretically similar operationalizations (Condrasky et al., 2011; Dedeli & Fadiloglu, 2011; Trochim, 2006). Thus, convergent validity was threatened in this study. Regardless, I did not anticipate

operationalization would lead to discriminate validity, or rather, separate related concepts (Trochim, 2006).

In reference to statistical conclusion validity, I was most concerned with threats related to poor sample planning, which could result in Type II errors if the null hypothesis was not rejected (García-Pérez, 2012). I reviewed several authorities to ensure the research proposal had an adequate sample size to yield enough statistical power for analysis, which is necessary to determine the existence of relationships found in the data (Trochim, 2006). I was also concerned about violating statistical test assumptions, which threatens statistical conclusion validity (García-Pérez, 2012), thus I identified alternatives for correction in the data analysis plan (Field, 2013).

Ethical Procedures

Agreements to gain access to participants. Walden University's IRB requires student researchers to apply for approval to collect data for research (Walden University, 2015). The IRB typically approves applications within 6 weeks of receipt, and their authorization to collect data expires on the anniversary date of approval (Walden University, 2015). The IRB application process is initiated after student researchers complete an oral conference to defend their proposal (Walden University, 2015). IRB approval to collect data is not granted until all ethical concerns are satisfied and revisions to the proposal are complete (Walden University, 2015).

Treatment of human participants. Pursuant to IRB approval requirements, I obtained a certificate of Human Research Protection training (certificate number 2046721) on April 2, 2016 from the National Institute of Health (Walden University,

2015). The certificate is valid for 5 years. Training covers the fundamental guidelines of the American Psychological Association Ethical Principles of Psychologists and Code of Conduct (Ethics Code), particularly Standards 3.10 and 8.02(a) and (b), Informed Consent and Informed Consent to Research, and the Belmont Report principles of justice (i.e., equal distribution of burden and benefit), beneficence (i.e., above all do no harm, and maximize possible benefits while minimizing possible harms), and respect for persons (American Psychological Association, 2010; Health, Education, and Welfare, 1979). Mainly, potential participants are entitled to understand the research process and their part as a volunteer, so they can make an informed decision whether to participate (American Psychological Association, 2010; HEW, 1979).

My proposed consent form included information about the research study and the purpose, which was to research cooking and nutrition in relation to BMI (American Psychological Association, 2010; HEW, 1979). On the consent form, I informed volunteers that participation involved the risk of minor discomforts encountered in daily life, such as fatigue and stress, but they may experience benefits related to the perceived social value of cooking at home (American Psychological Association, 2010; HEW, 1979). I also intended to inform participants and stakeholders that they could opt-in to receive a summary of the research results (American Psychological Association, 2010; HEW, 1979), which was later removed on the IRB's recommendation. Instead, study results were disseminated to the community partner for dissemination.

Institutional permissions. Walden IRB approved this study on November 11, 2019, and the approval number was 05-08-18-0494388.

Ethical concerns related to recruitment materials and processes. This research study did not include plans for a coercive recruitment strategy, although I planned to recruit in a public place and ask volunteers to complete a screening test to determine their eligibility for inclusion in the study.

Ethical concerns related to data collection activities. I was most concerned about attrition. Specifically, the surveys took approximately 10 minutes to complete, and I anticipated some volunteers would choose to stop and return incomplete assessments. However, pursuant to the informed consent form, participation in the study was voluntary, participants could withdraw at any time without penalty, and the participant's decision to withdraw would be respected without negative impact (American Psychological Association, 2010; HEW, 1979).

Treatment of Data

I did not disclose participants' confidential information, and I did not use information collected outside the research study's purpose (American Psychological Association, 2010; HEW, 1979). Furthermore, I did not foresee disclosing identifying information in study reports or documentation (American Psychological Association, 2010; HEW, 1979). I did collect identifying data or link identifying information to completed questionnaires or surveys, and I planned to store all raw data in paper format in my home office for 5 years in a locked, fire proof safe with all electronic media data encrypted and password protected as required by Walden University (American Psychological Association, 2010; HEW, 1979). I will dispose all data collected before January 1, 2025, which is within 30 days after the anniversary of meeting the 5-year

minimum requirement to keep raw data. Thereafter, I will shred all raw data in paper form and delete all sources of electronic media.

Summary

In conclusion, the purpose of this quantitative, cross-sectional survey study was to ascertain the impact of cooking self-efficacy and attitudes and beliefs about obesity as a disease on American Indian BMI via a demographic questionnaire, the CWC Evaluation Instrument, and the HBMSO (Babbitt, 2016; Condrasky et al., 2011; Dedeli & Fadiloglu, 2011). I planned a nonprobability, convenience sampling method to recruit volunteers and a screening test to determine eligibility to participate in the study. The target population was adult American Indians between the ages of 18 and 65 years old. I planned to evaluate the data using multiple regression analysis.

Chapter 4 contains the results of study including data collection details, descriptive statistics, and analysis of statistical tests conducted.

Chapter 4: Results

Introduction

The purpose of this study was to predict BMI based on self-efficacy and attitudes and beliefs about obesity as a disease for American Indians in Maricopa County, Arizona, as outlined in the following research questions:

RQ1: To what extent does self-efficacy as measured by the CWC Evaluation Instrument predict obesity as measured by BMI for American Indians in Maricopa County (Condrasky et al., 2011)?

Alternative Hypothesis: Measuring self-efficacy increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Self-efficacy does not have a relationship with BMI for American Indians in Maricopa County.

RQ2: To what extent do attitudes and beliefs about obesity as a disease as measured by the HBMSO predict obesity as measured by BMI for American Indians in Maricopa County (Dedeli & Fadiloglu, 2011; Janz & Becker, 1984)?

Alternative Hypothesis: Measuring attitudes and beliefs about obesity as a disease increases the ability to predict BMI for American Indians in Maricopa County.

Null Hypothesis: Attitudes and beliefs about obesity as a disease do not have a relationship with BMI for American Indians in Maricopa County.

The measurement of self-efficacy was ascertained with scores on the CWC Evaluation Instrument subscales (i.e., cooking techniques and meal preparation self-efficacy, self-efficacy for eating and cooking with fruits and vegetables, and negative

cooking attitude). Scores of 5 on the CWC Evaluation Instrument represent high confidence and positive cooking attitudes. Attitudes and beliefs about obesity as a disease were ascertained with scores on the HBMSO subscales (i.e., health value, and perceived susceptibility, severity, barriers, and benefits). Scores of 5 on the HBMSO indicate a high level of attitudes and beliefs about obesity as a disease. Accordingly, I hypothesized an overall combined effect of cooking self-efficacy and attitudes and beliefs about obesity as a disease predictor of American Indian BMI, and in this chapter, I outlined the data collection details and results of the study.

Data Collection

Time Frame, Recruitment, and Response Rates

After Walden's IRB approved my application to conduct the study, I contacted my community partner to schedule time for data collection. Over the course of 3 weeks, I set up a table with a sign to promote my "Student Research Study" outside a local food pantry. Interested participants self-selected to take part in the study and completed a written eligibility screening. Eligibility criteria were (just) two: between the ages of 18 and 65 years old and American Indian ethnicity. Eligible participants provided implied informed consent by completing the surveys and demographic questionnaire. Each participant received a copy of the consent form for their records. Out of 125 surveys and questionnaires, data were obtained from 92 American Indians ($N = 92$), resulting in a 74% response rate.

Data Collection Discrepancies

In Chapter 3, I anticipated recruiting volunteers from various public places throughout Maricopa County, such as convenience and grocery stores, health clinics, and community events. However, Walden University's IRB required I obtain a community partner, which took approximately 3 months to secure. A local food pantry agreed to serve as the community partner, and I scheduled data collection dates to begin upon final IRB approval to conduct the study.

In response to the IRB's ethical concerns, I changed my consent form to reflect that completion of the surveys and demographic questionnaire established implied consent for participation, and thus, I removed the requirement to obtain participant signatures. I also changed how I planned to disseminate the study's results to participants and stakeholders. Specifically, I agreed to provide the community partner a summary of the results, which they agreed to post and include in their electronic newsletter.

Other data collection discrepancies pertained to attrition. The surveys did not include effort- or attention-check items, and therefore, I was unable to determine participant effort and attention to survey questions. Item nonresponse was minimal and sporadic throughout the dataset, some participants returned partially completed surveys and blank questionnaires. Consequently, units missing more than five items were not included in analysis. Still, two units were each missing four consecutive items on two different subscales of the CWC Evaluation Instrument. In Statistical Package for the Social Sciences (SPSS), I opted to substitute the mean for these missing values rather than exclude the units. Additionally, a preliminary review of data boxplots, histograms,

and scatter plots for HBMSO scores revealed two outliers, which were removed from the dataset and reduced the sample size (n = 90).

Finally, most of the demographic questionnaires collected were missing items on two questions, which did not provide a "zero" response option. Specifically, the items requested the number of children living in the home under the age of 18, and number of adults living in the home over the age of 55. Response options for each of these items were: (a) 1, (b) 2, (c) 3, (d) 4 or more, and (5) prefer not to answer. Most items were unanswered; however, some respondents wrote "zero" next to the response choices. As a result, I excluded both items from data analysis due to the excessive number of missing or incomplete responses. All other missing items were coded as "No Response," without consistency.

Baseline Descriptive and Demographic Characteristics

Gender, age, and marital status. Table 1 provides a summary of the sample's demographic characteristics according to BMI category. In the sample (n = 90), 70 participants were female (78%) and 20 were male (22%). The majority (n = 31) were between 35 and 44 years old. Age was almost equally distributed among the remaining age categories, except for participants between the ages of 18 to 24 (n = 5). Most (41%) of the sample were married (n = 37), and the remaining participants were single (n = 28), divorced or separated (n = 15), in a domestic partnership (n =7), or widowed (n = 5).

Education, employment, income, and household descriptive. While 41% of participants (n = 37) had a high school diploma or equivalent, almost a quarter (n = 22) selected "other," which represented an education category between a high school diploma

and a bachelor's degree. Seventeen (19%) participants reported having a bachelor's degree and three (3%) stated they had a master's degree. Only 11 (12%) participants reported having less than a high school education. However, the majority, 43% (n = 39) were unemployed, compared to 40% who were employed full time (n = 20), part time (n = 9), or self-employed (n = 7). The remaining 15 (17%) participants were retired (n =9), students (n = 2), or preferred not to respond (n = 4).

The annual income for 51% of the participants (n = 46) was between $10,000.00 and $50,000.00. Participants (n = 26) who earned less than $10,000.00 per year accounted for 28% of the sample, whereas 8% (n = 7) reported an annual income between $50,000.00 and $100,000.00, and 1% ($n$ = 1) was over that threshold. Out of 90 participants, 13 (14%) reported living alone, while the remaining reported living with two (n = 12), three (n = 19), four (n = 21), or five or more (n = 24) people in their household.

Body mass index and perceived weight status. BMI was the outcome variable, and it was computed by entering each participant's self-reported height and weight data into the National Institute of Health (NIH) BMI calculator online (NIH, n.d.; NIH, 2013). The sample (n = 90) ranged in height from 58 to 76 inches (M = 65.41, SD = 3.67) and weight from 115 to 435 pounds (M = 195.94, SD = 52.05). BMI ranged from 20 to 57 (M = 32.40, SD = 7.71). According to the NIH, over half of the participants (n = 54) were classified as obese with a mean BMI of 30 or greater. The remaining sample was split between two BMI categories: Healthy weight, 18.5 to 24.9 (n = 16), and overweight, 25 to 29.9 (n = 20). Although no participant's BMI was categorized as "underweight," a few participants (n = 3) perceived their weight status as such.

Table 1

Frequency Distribution of BMI Category by Demographic Characteristics

Selected characteristic	Healthy weight (BMI 18.5-24.9)	Overweight (BMI 25-29.9)	Obese (BMI ≥ 30)	Total
Age				
18-24	--	1	4	5
25-34	3	2	12	17
35-44	7	7	17	31
45-55	5	7	8	20
55-65	1	3	13	17
Gender				
Female	12	14	44	70
Male	4	6	10	20
Marital Status				
Single	9	3	14	26
Married	3	10	24	37
In a Domestic Partnership	--	--	7	7
Divorced or Separated	3	5	7	15
Widowed	1	2	2	5
Education Level				
Less than a HS Diploma	2	1	8	11
HS Diploma or Equivalent	5	7	25	37
Bachelor's Degree	4	4	9	17
Master's Degree	--	1	2	3
Other	5	7	10	22
Employment Status				
Employed Full Time	3	6	11	20
Employed Part Time	1	1	7	9
Self-Employed	2	1	4	7
Unemployed	8	9	22	39
Student	--	--	2	2
Retired	--	2	7	9
No Response	2	1	1	4
Annual Income Level				
Less than $10,000	9	4	13	26
$10,000 to $50,000	4	10	32	46
$50,000 to $100,000	1	1	5	7
$100,000 or more	--	1	--	1
Prefer not to Answer	2	4	4	10

Selected characteristic	Healthy weight (BMI 18.5-24.9)	Overweight (BMI 25-29.9)	Obese (BMI ≥ 30)	Total
Total People in Household				
1	5	4	4	13
2	5	4	3	12
3	5	3	11	19
4	--	1	20	21
5 or more	1	8	15	24
Perceived Weight Status[a]				
Underweight	2	--	1	3
Normal Weight	10	5	2	17
Overweight by 5-10	3	9	5	17
Overweight by 11-20	--	3	9	12
Overweight 20 pounds or	1	3	36	40

[a]n = 89.

Perceived weight status also included response items for normal weight (*n* = 19), overweight by 5 to 10 pounds (*n* = 17), overweight by 11 to 20 pounds (*n* = 12), and overweight by more than 20 pounds (*n* = 40). One unit missed this item.

Proportionality. In this sample (*n* = 90), over half (60%) of the participants were categorized as obese (i.e., BMI 30 or greater) according to NIH obesity guidelines (NIH, 2013). The sample's rate of obese participants was 12% higher than the national American Indian population rate (i.e., 48%) as reported by the Centers of Disease Control (CDC, 2018) and 18% lower than Arizona's obese AI/AN population rate (i.e., 77.5%) as determined by the Kaiser Family Foundation analysis of the 2017 national Behavioral Risk Factor Surveillance System (BRFSS) survey (Kaiser, 2017). A one sample *t*-test concluded there was a significant difference in the sample's mean BMI (*M* = 32.40, *SD* = 7.71) and the overall population using the minimum BMI (i.e., 30) to categorize obesity, $t(89) = 2.95$, $p = .004$, 95% CI [.78, 4.01]. Thus, the mean difference in BMI (2.40) was higher in the nonprobable sample and not proportional to the overall

population applying a minimum BMI of 30; however, the difference represented a medium sized effect, $r = .30$. Additionally, there was a 23.87% percent decrease between the sample (59%) and Arizona's obese AI/AN population (77.5%), which depicts a greater, although positive, proportional difference between the groups.

Results

Based on the research questions and use of multiple predictor variables, a standard multiple regression analysis was conducted to assess the combined and relative effects of cooking techniques and meal preparation self-efficacy (CTMP), negative cooking attitude (NCA), self-efficacy for eating and cooking fruits and vegetables (SEF&V), health value (HV), perceived severity (Severity) and susceptibility (Susceptibility), and perceived barriers (Barriers) and benefits (Benefits) in predicting BMI for adult American Indians ($n = 90$) in Maricopa County. The preliminary regression model was $BMI = \beta_0 + \beta_1 CTMP_i + \beta_2 NCA_i + \beta_3 SEF\&V_i + \beta_4 HV_i + \beta_5 Severity_i + \beta_6 Susceptibility_i + \beta_7 Barriers_i + \beta_8 Benefits_i$.

Descriptive Statistics

Data were collected from 92 adult American Indians in Maricopa County. Two outliers were identified in HBMSO scores and removed from the dataset, which reduced the sample ($n = 90$). Data analysis was conducted using SPSS 25 software. BMI was delineated according to NIH (2013) weight guidelines (i.e., underweight < 18.5; healthy weight 18.5 to 24.9; overweight 25 to 29.9; and obese greater than 30), and Figure 1 shows 60% ($n = 54$) of the sample were obese.

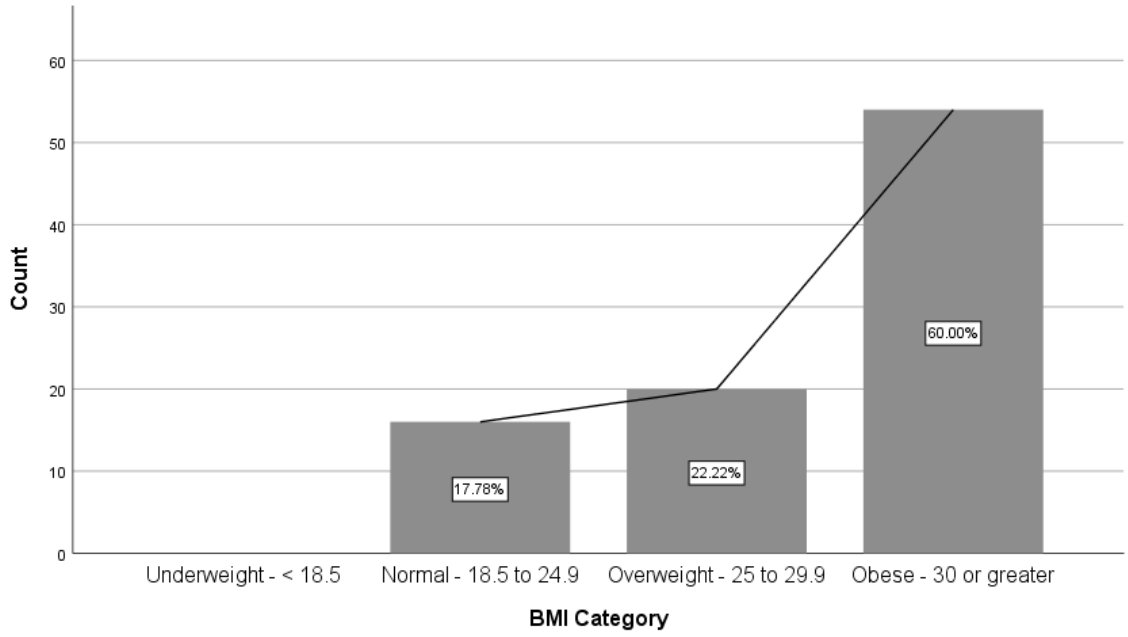

Figure 1. Percentage of obese participants (n = 90).

The sample's mean BMI was 32.40 (*SD* = 7.705). Participants' mean scores on the CWC Evaluation Instrument for CTMP (*M* = 3.98, *SD* = .776) indicated a high level of self-confidence as did mean scores for SEF&V (*M* = 3.74, *SD* = .894). However, the mean score for NCA (*M* = 2.26, *SD* = 1.135) reflected an overall negative attitude toward cooking, as higher scores signify positive cooking attitudes. On the HBMSO, the mean score for HV (*M* = 2.76, *SD* = .729) and Barriers (*M* = 2.62, *SD* = .738) to action were each slightly above the midpoint. Nevertheless, mean scores were high on Severity (*M* = 4.19, *SD* .616), Susceptibility (*M* = 3.64, *SD* = .663), and Benefits (*M* = 3.98, *SD* = .661), indicating an overall predisposition to obesity as a serious disease wherein benefits of action outweighed barriers. Table 2 provides a summary of the means and standard deviations of the outcome (i.e., BMI) and predictor variables.

Table 2

Means and Standard Deviations of BMI and Predictor Variables

Measure	*Mean*	*SD*
BMI	32.40	7.705
CTMP	3.98	.776
NCA	2.26	1.135
SEF&V	3.74	.894
HV	2.76	.729
Severity	4.19	.616
Susceptibility	3.64	.663
Barriers	2.62	.738
Benefits	3.99	.661

Statistical Assumptions and Analysis

The study's reduced sample size (n = 90) was enough to test the overall regression model and detect a medium to large effect (R^2 = .24). There was a linear relationship between the predictors and outcome variables, which was verified through a review of the scatter plot in Figure 2. The assumption of independent errors was tested using the Durbin-Watson statistic, and the resulting value of 1.996 suggests the assumption was met, ensuring the confidence intervals and significance tests will be valid, as the residuals (i.e., differences between the model predictions and observed data) were not correlated (Field, 2013).

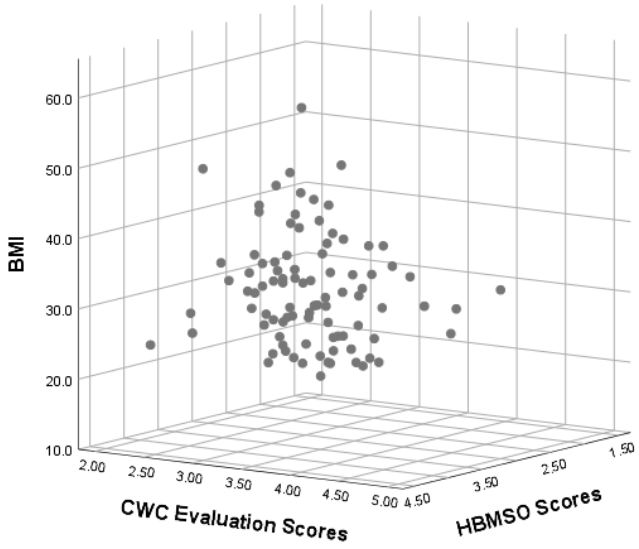

Figure 2. Scatter plot of linear relationship between BMI and scores on the CWC Evaluation Instrument and HBMSO.

However, a review of the casewise diagnostics revealed 3 cases exceeded the standardized residual limit of ±2 (Field, 2013). With a sample of 90 participants, it is reasonable to expect 5%, or a minimum of 4 cases, with standardized residuals ±2 (Field, 2013). Still, an examination of Cook's distances from the regression did not reveal any values greater than 1, and thus none of the identified cases had an undue influence on the model (Field, 2013).

An exploratory data analysis employing the Kolmogorov-Smirnov (K-S) test of normality for BMI scores, $D(90) = .067$, $p = .20$, and CWC Evaluation Instrument scores, $D(90) = .078$, $p = .20$, did not deviate significantly from normal. Also, the histogram of standardized residuals in Figure 3 indicated that data were approximately normally distributed, and a review of the normal P-P plot of standardized residuals in Figure 4

revealed data points were on or near the line. However, HBMSO scores, $D(90) = .095$, $p = .04$, were significantly non-normal, and a review of the histogram of standardized residuals revealed a negatively skewed distribution, with a skewness of -.031 (*SE* = .25) and kurtosis of -.376 (*SE* = .50). Subsequent exploratory data analysis of the Shapiro-Wilk (S-W) test, however, confirmed HBMSO scores, $D(90) = .985$, $p = .37$, were non-significant and normally distributed. HBMSO scores were converted to z-scores, which did not alter the tests of normality, but normalized distribution according to the histogram of standardized residuals. Additional review of the Q-Q plot for HBMSO z-scores also confirmed approximate normality with points of data on or near the line.

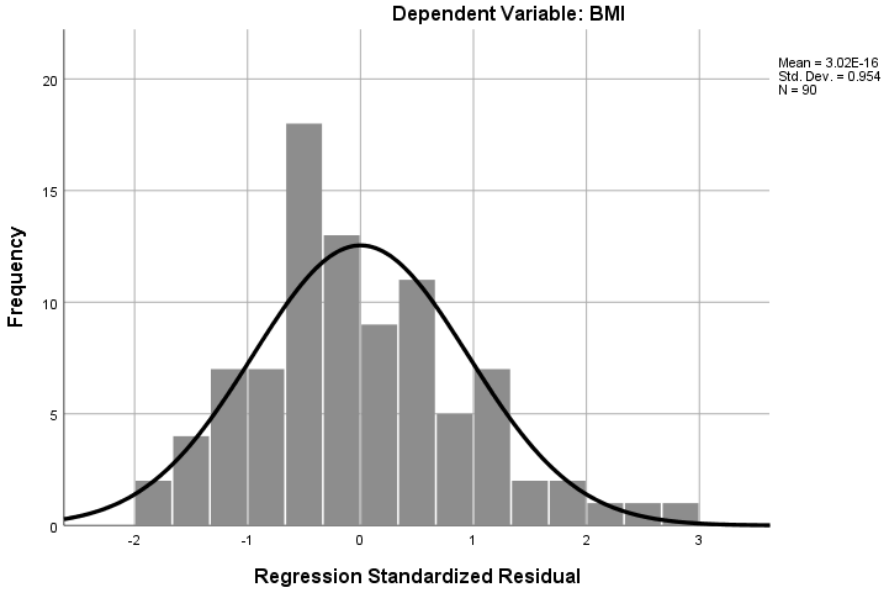

Figure 3. Histogram of normally distributed standardized residuals for BMI.

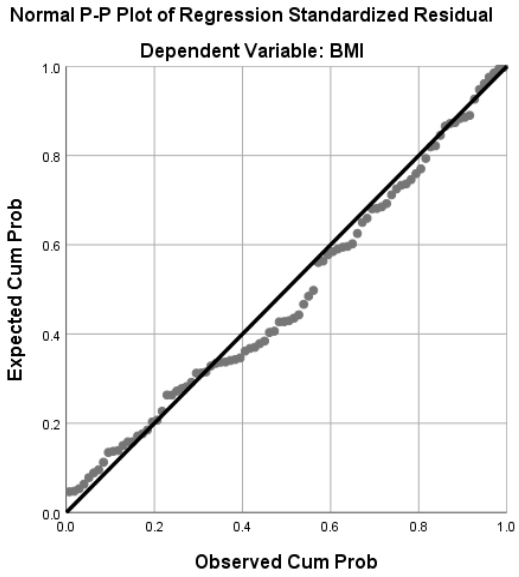

Figure 4. P-P plot of normally distributed residuals for BMI.

Homoscedasticity was also verified through examination of the scatter plot of standardized residuals and standardized predicted BMI values presented in Figure 5.

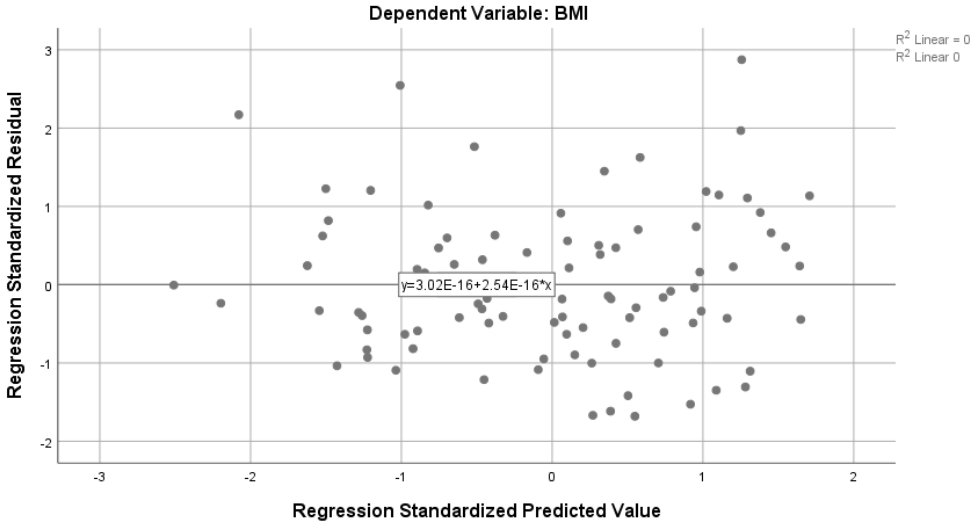

Figure 5. Scatter plot of standardized predicted BMI and standardized residual BMI.

Standardized residual scores were evenly distributed over predicted standardized BMI values denoting the residuals were uncorrelated. In addition, a preliminary review of Pearson's correlations indicated no multicollinearity between predictor variables ($r < .49$), as all correlations were well below .80 as recommended (Field, 2013). Finally, review of the variance inflation factor (VIF < 1.56) and Tolerance statistic ($T > .64$) confirmed predictor variables were not highly correlated.

Major Findings

Table 3 presents a summary of the bivariate correlations for the outcome and predictor variables, which were computed using Pearson's *r* correlations.

Table 3

Bivariate Correlations for BMI and Predictor Variables

Variable	BMI	1	2	3	4	5	6	7	8
BMI		.23*	-.18*	-.004	-.27*	.12	.07	-.14	.24*
1. CTMP			-.18*	.49**	.18*	.35**	.12	-.20*	.09
2. NCA				-.25*	-.03	.06	.02	-.02	-.17
3. SEF&V					.34**	.18*	.18*	-.02	.09
4. HV						.25*	.12	-.23*	-.09
5. Severity							.34**	-.31**	.25*
6. Susceptibility		`						.01	.30*
7. Barriers									.04
8. Benefits									

* $p < .05$
** $p < .001$

Based on the correlations, HV, $r(81) = -.27$, $p = .004$ one-tailed, and NCA, $r(81) = -.18$, $p < .05$ one-tailed, had significant, inverse correlations with BMI, indicating that low HV and NCA scores each correlate with an increase in BMI, though the effect sizes were small to medium ($r = -.27$, and $r = -.18$, respectively). Additionally, Benefits,

$r(81) = .24$, $p = .01$ one-tailed, and CTMP, $r(81) = .23$, $p < .05$ one-tailed, each had positive, statistically significant correlations with BMI, suggesting as perceived benefits of action and self-efficacy for cooking techniques and meal preparation increased, BMI also increased. Again, these correlations had small effect sizes ($r = .24$, and $r = .23$, respectively). Therefore, based on Pearson's correlations, HV had the highest statistically significant correlation with BMI, so it is likely this variable is the best predictor of BMI. Figure 6 is a visual representation of the means for HV, NCA, Benefits, and CTMP according to BMI category.

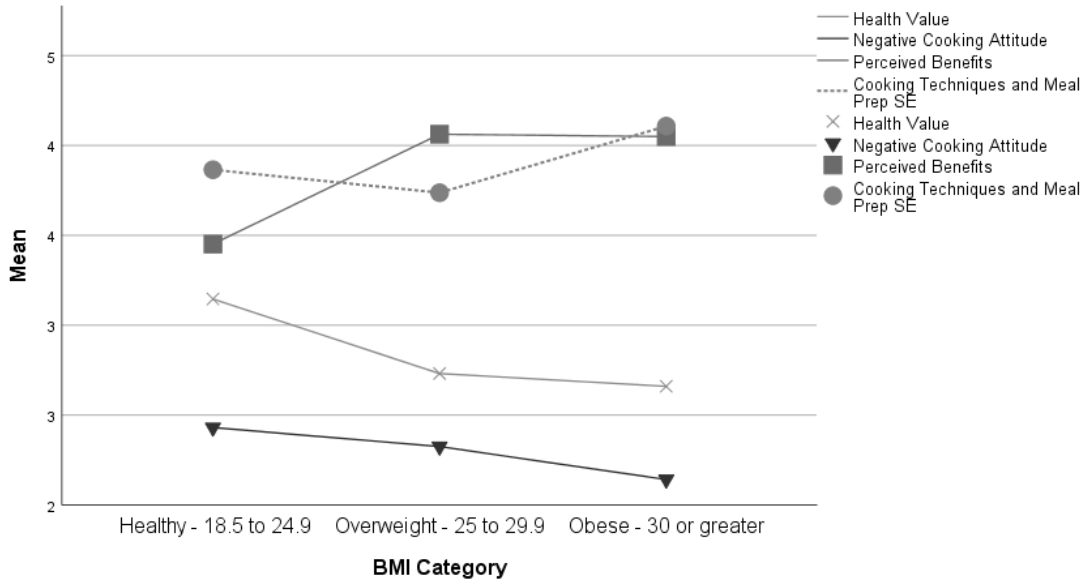

Figure 6. Significant bivariate correlations between outcome and predictor variables.

Predictor intercorrelations. The highest positive intercorrelation, controlling for BMI and other predictors, was between CTMP and SEF&V, $r(81) = .49$, $p < .001$ one-tailed, which had a large effect size and was significant at the .001 level. Three other

intercorrelations were also positive and statistically significant and had medium effect sizes: SEF&V and HV, $r(81)= .34$, $p = .001$ one-tailed, Severity and Susceptibility, $r(81) = .34$, $p = .001$ one-tailed, and CTMP and Severity $r(81) = .33$, $p = .001$ one-tailed. Finally, positive, statistically significant intercorrelations were found between Susceptibility and Benefits, $r(81) = .30$, $p = .002$ one-tailed, HV and Severity, $r(81) = .25$, $p < .01$ one-tailed, Severity and Benefits $r(81) = .25$, $p < .01$ one-tailed, CTMP and HV, $r(81) = .18$, $p < .05$ one-tailed, SEF&V and Severity, $r(81) = .18$, $p < .05$ one-tailed, and SEF&V and Susceptibility, $r(81) = .18$, $p < .05$ one-tailed. These correlations had small to medium effect sizes that ranged from $r = .18$ to $r = .30$. Significant inverse intercorrelations were found between NCA and SEF&V ($r = -.25$, $p = .01$), HV and Barriers ($r = -.23$, $p < .05$), CTMP and Barriers ($r = -.20$, $p < .05$), and CTMP and NCA ($r = -.18$, $p < .05$). Likewise, the inverse correlations had small to medium effect sizes ranging from $r = -.25$ to $r = -.18$.

Regression analysis. To further explore the effects of the predictor variables on BMI, a multiple regression analysis was conducted. Rather than the forced entry method, the predictor variables were entered into the regression hierarchically, with self-efficacy predictors (i.e., CTMP, NCA, and SEF&V) entered first followed by predictors for attitudes and beliefs about obesity as a disease (i.e., HV, Severity, Susceptibility, Barriers, and Benefits). Both models significantly improved the ability to predict BMI compared to not fitting the model. The self-efficacy predictors, CTMP, NCA, and SEF&V, were statistically significant at the .05 level, $F(3, 86) = 3.16$, $p = .03$, $R = .32$, $\Delta R^2 = .07$, with a medium effect ($R^2 = .10$) that accounted for 10% of the variance in

BMI. However, including predictors for attitudes and beliefs about obesity as a disease improved the model, which was statistically significant at the .01 level, $F(8, 81) = 3.13$, $p = .004$, $R = .49$, $\Delta R^2 = .16$, increased the effect size to large ($R^2 = .24$), and explained 23.6% of the variance in BMI. Therefore, the null hypotheses that self-efficacy and attitudes and beliefs about obesity as a disease do not have a relationship with BMI was rejected. Still, the value of adjusted R^2 (.161) was less than R^2 (.236), which revealed shrinkage. This suggests the regression model may not generalize well from the sample to the population and would account for approximately 7.5% less variance in the outcome (Field, 2013). Nevertheless, Table 4 is a summary of the analysis of variance (ANOVA) for the regression model including all variables, which was statistically significant for predicting BMI greater than error, $F(8, 81) = 3.13$, $p > 01$, and had a large effect size ($R^2 = .24$).

Table 4

ANOVA Table for the Regression Model

	SS	*df*	*MS*	*F*	R^2	*p*
Regression						
Model 1 – Self-Efficacy	524.50	3	174.83	3.16	.10	.029[a]
Residual	4760.29	86	55.35			
Total	5284.79	89				
Regression						
Model 2 – Self-Efficacy and Obesity Attitudes and Beliefs	1248.88	8	156.11	3.13	.24	.004[b]
Residual	4035.91	81	49.83			
Total	5284.79	89				

Note. Dependent Variable: BMI

a. Predictors: (Constant), SE for Eating/Cooking Fruit and Vegetables, Negative Cooking Attitude, Cooking Techniques and Meal Prep SE

b. Predictors: (Constant), SE for Eating/Cooking Fruit and Vegetables, Negative Cooking Attitude, Cooking Techniques and Meal Prep SE, Perceived Benefits, Perceived Barriers, Perceived Susceptibility, Health Value, Perceived Severity

An examination of the regression weights appearing in Table 5 indicated that CTMP (β = .238, sr^2 = .07) had a small to medium effect on BMI, followed by Benefits (β = .153, sr^2 = .02), Susceptibility (β = .045, sr^2 = .002), Severity (β = .036, sr^2 = .001), SEF&V (β = -.078, sr^2 = -.004), Barriers (β = -.170, sr^2 = -.02), NCA (β = -.145, sr^2 = -.02), and HV (β = -.327, sr^2 = -.08). According to the standardized beta (β) values, HV (β = -.327) was negatively correlated with BMI. Suitably, as HV increased by one standard deviation (.729), BMI decreased by -.327 standard deviations. The standard deviation for BMI is 7.706, which constituted a change of -2.52 in BMI. Therefore, with every .729 increase in HV, BMI decreased -2.52. This holds true only if the effects of the other variables are held constant. However, CTMP (β = .238) was positively correlated with BMI. As CTMP increased by one standard deviation (.776), BMI also increased by .238 standard deviations resulting in a change of 1.83 in BMI. Therefore, for every .776 increase in CTMP mean, BMI increased 1.83, provided the effects of all the other variables are held constant. Perceived barriers (β = -.170), or obstacles to change, negatively correlated with BMI. Consequently, each increase in perceived barriers (.738) decreased BMI (-.131). The self-efficacy predictor NCA (β = -.145) was also negatively correlated with BMI, and each increase (1.135), which depicts a positive cooking attitude, decreased BMI (-1.16). Regardless, the effect sizes for Barriers (sr^2 = -.02) and NCA (sr^2 = -.02) on BMI were equally small. Continuing this calculation with each predictor, the following regression model is now BMI = 7.706 + .776(CTMP) - 1.135(NCA) - .894(SEF&V) - .729(HV) + .616(Severity) + .663(Susceptibility) - .738(Barriers) +

.661(Benefits). This equation can be used to predict BMI using specific values for each predictor.

Table 5

Summary of Regression Analysis for Variables Predicting BMI

Measure	*b*	*SE B*	β	*t*	95% CI	sr^2	*p*
Step 1							
Constant	29.53	5.12	--	5.77	[19.35, 39.70]	--	.001**
CTMP	2.93	1.17	.295	2.50	[.60, 5.25]	.066	.014*
NCA	-1.17	.72	-.172	-1.63	[-2.60, .26]	-.029	.107
SEF&V	-.164	1.03	-.191	-1.59	[-3.69, .41]	-.027	.115
Step 2							
Constant	31.03	8.69	--	3.57	[13.75, 48.31]	--	.001**
CTMP	2.36	1.17	.238	2.01	[.024, 4.70]	.038	.048*
NCA	-.99	.70	-.145	-1.41	[-2.38, .41]	-.019	.163
SEF&V	-.67	1.05	-.078	-.64	[-2.75, 1.41]	-.004	.523
HV	-3.45	1.16	-.327	-2.99	[-5.75, -1.15]	-.084	.004**
Severity	.45	1.48	.036	.31	[-2.49, 3.40]	.001	.761
Susceptibility	.52	1.26	.045	.41	[-1.98, 3.02]	.002	.681
Barriers	-1.78	1.11	-.170	-1.60	[-3.98, .43]	-.024	.113
Benefits	1.78	1.26	.153	1.42	[-.72, 4.29]	.019	.160

Note. CI = confidence interval for *B*; sr^2 = semipartial correlation squared (aka, part correlation).
*$p < .05$
**$p < .01$

Further analysis of these coefficients revealed HV, $t(89) = -2.99$, $p = .004$, 95% CI from -5.75 to -1.15, and CTMP, $t(89) = 2.01$, $p < .05$, 95% CI from .02 to 4.70, were both statistically significant, and thus, different from zero. The other predictor variables were not statistically significant. Although, their confidence intervals all crossed zero, which

may indicate a positive and a negative relationship in the population (Field, 2013). Based on these results, the predictors HV and CTMP each had statistically significant small effects (sr^2 = -.08 and sr^2 = .04, respectively) on BMI in the regression model.

Summary

The model containing the predictors for self-efficacy (i.e., CTMP, NCA, and SEF&V) was statistically significant with a medium effect that accounted for 10% of the variance in the outcome variable (i.e., BMI). However, including predictors to assess attitudes and beliefs about obesity as a disease (i.e., HV, Severity, Susceptibility, Barriers, and Benefits) substantially improved the model, which was significant at the .01 level, increased the effect size to large, and explained 23.6% of the variance in BMI. In the regression model, the predictors HV and CTMP each had statistically significant small effects on BMI. As a result, the null hypothesis that self-efficacy and attitudes and beliefs about obesity as a disease do not have a relationship with BMI for American Indians in Maricopa County, was rejected. Chapter 5 contains an interpretation of the findings, limitations of the study, recommendations and implications.

Chapter 5: Discussion, Implications, and Recommendations

Introduction

The purpose of this cross-sectional survey study was to determine the relationships between BMI, self-efficacy, and attitudes and beliefs about obesity as a disease for American Indians in Maricopa County, Arizona. Through the Cooking with a Chef (CWC) Evaluation Instrument and the Health Belief Model Scale in Obesity (HBMSO), this study explored several factors influencing the obesity rate. The model containing all predictors for self-efficacy and attitudes and beliefs about obesity as a disease was significant and had a large effect that explained nearly a quarter of the variance in BMI. While health value (HV) and cooking techniques and meal preparation self-efficacy (CTMP) were each significant predictors of BMI, Pearson correlations also revealed statistically significant relationships between BMI and perceived benefits (Benefits) and negative cooking attitude (NCA).

Interpretation of the Findings

In Chapter 2, I examined the impact of Rosenstock et al.'s (1988) decision to add self-efficacy as a modifying variable to assess readiness to change negative health-related behaviors to the HBM. The HBMSO does not measure readiness to change, rather perceptions of predisposition to obesity as a serious disease, when considering barriers and benefits of action to reduce risk. Perceptions are multifaceted and based on SSDEC elements that influence socio-psychological factors of the self-system, including self-efficacy, affective states, attitudes, and beliefs (Becker et al., 1977; CDC, 2016; Dedeli & Fadiloglu, 2011; DPI, 2014; Janz & Becker, 1984; Oski, 2010; Prestwich et al., 2014, p.

270; Rekhy & McConchie, 2014; Rosenstock et al., 1988). Therefore, parallel with the purpose of this study to measure the extent of cooking self-efficacy in relation to perceptions of obesity as a disease on BMI, interpretation of the findings requires understanding how extraneous variables may explain residual variance.

Recall, self-efficacy is a dynamic measurement of agentic power and confidence to successfully perform tasks (Bandura, 1997, 1999, 2001) may have positive or negative influences on behavior (Rosenstock et al., 1988). People are particularly likely to repeat behaviors with positive outcomes, and cease behaviors with negative outcomes (Bandura 1997, 1999; Rosenstock et al., 1988). However, in this study, perceived benefits (Benefits), which represents the belief that a new behavior will have a positive outcome to reduce the risk of disease, and CTMP were each positively correlated with BMI, signifying that simply recognizing the benefit of an action or having confidence to perform a task does not necessarily reduce risk of disease. Effectively, reducing risk requires action. This finding supports the idea that national and territorial interventions, such as menu labeling and junk food taxation, may increase food knowledge, but are ineffective strategies (i.e., cues to action) for reducing calorie consumption and obesity in ethnic minority populations (Babbitt, 2016; Becker et al., 1977; Chen et al., 2015; Ellison et al., 2013; Kiszko et al., 2014; Novak & Brownell, 2011; Powell et al., 2013; Prestwich et al., 2014; Rekhy & McConchie 2014; Rosenstock et al., 1988; Swartz et al., 2011; Warren et al., 2015).

HV and NCA also each had significant, although inverse, small to medium correlations with BMI. This finding implies participants' BMI was lower when they

highly valued their health and had a positive attitude toward cooking. In Chapter 3, I reviewed how HV is measured according to the HBMSO. Specifically, the subscale has eight items including "I am careful about the things I eat and drink every day and I try not to skip meals," "I do activities such as exercise, walking, cycling and running regularly," "I have a fixed sleep pattern," and "I drink 1.5-2 liters of water everyday" (Dedeli & Fadiloglu). Responses on this subscale ranged from 1 (*never*) to 5 (*always*) with higher scores indicating a greater value of health and consciousness of weight (Dedeli & Fadiloglu, 2011). However, NCA is a reverse scored subscale of the CWC Evaluation Instrument that measures cooking attitudes according to statements such as "I do not like to cook because it takes too much time," "Cooking is frustrating," "It is too much work to cook," and "I find cooking tiring" (Condrasky et al., 2011). Responses on this subscale ranged from 1 (*strongly agree*) to 5 (*strongly disagree*). Higher scores on the NCA subscale indicate positive attitudes toward cooking. Therefore, based on this study's findings, the underlying assumption that everyone values their health was true for American Indians in this study (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Simons-Morton et al., 2012). Additionally, this conclusion supports Szabo's (2012) research demonstrating the impact of affective states on health when cooking is viewed as an enjoyable leisure activity versus work.

Limitations of the Study

Generalization of this study's findings are limited based on the use of a nonprobability convenience sample and correlational research design. The consequences of using a convenience sample were evident when the regression model revealed

shrinkage, which may translate into less variance in the outcome and suggest the sample was not representative of the population (Field, 2013). However, in contrast to an experimental design, wherein variables are controlled or manipulated to increase internal validity, correlational designs do not allow researchers to determine cause and effect relationships, which further limits the findings of this study (Field, 2013). While attrition was not a significant problem, I assumed participants read, understood, and answered questions honestly despite the lack of effort- or attention-check items in the surveys. Finally, I distributed and collected the surveys, which may limit generalizability of the findings due to response and experimenter biases (Campbell & Stanley, 1963).

Recommendations

Most participants in this study were classified as obese, female, married, had a high school education or equivalent, and were unemployed, with a household income less than $50,000.00 per year, which is approximately $12,000.00 less than the median family income for all ethnicities reported in low income tracts across Maricopa County (USDA ERS, 2017). Additionally, study participants were recruited at a local food pantry. Based on these sociodemographic characteristics, food insecurity may correlate with BMI for American Indians in Maricopa County. Although, food security was not a variable measured in this study, Pardilla et al. (2014) determined common factors of food insecurity for Navajo American Indians living on the Navajo Nation reservation, were lower rates of full time employment, less education, and lower scores on food knowledge and healthy eating self-efficacy. Moreover, food insecurity and low income are known factors influencing obesity rates within minority groups (Babbitt, 2016; Brown, 2013;

Coleman-Jensen et al., 2014; DPI, 2014; Pan et al., 2012; Seligman et al., 2007). Consequently, I recommend measuring food insecurity as a modifying variable of health beliefs and attitudes.

Additionally, participants' perceptions of severity (Severity) and susceptibility (Susceptibility) were not significant factors of BMI in this study, even though overall scores on the HBMSO suggest most participants recognized vulnerability to obesity as a serious disease and perceived the benefits to action outweigh the barriers. Still, the HBMSO does not measure readiness or motivation to change obesogenic behaviors to reduce risk. Specifically, readiness and motivation to change negative behaviors typically occurs under threat or through cues to action (Becker et al., 1977; Janz & Becker, 1984; Rosenstock et al., 1988; Simons-Morton et al., 2012). Readiness and motivation are two separate constructs that I would recommend measuring as modifying variables in future studies.

Culture is another modifying variable that is not measured by the HBMSO but may contribute to understanding the findings in this study. While the food pantry is a source of food for people in need, it does not cater to cultural preferences such as type of food or method of delivery. Specifically, wild game and fresh fruits and vegetables typically hunted or grown and harvested within native communities are not staple items provided by food pantries. Unfortunately, native cultures have been forced to rely on food banks and government food assistance programs as a result of low income and employment rates, which contradicts their values about food sovereignty and self-sufficiency (DPI, 2014; NNOPVP, 2016; Oski, 2010). Thus, the role of culture on

obesogenic perceptions, beliefs, and attitudes would add to this study's findings and bridge gaps in the literature.

Implications

This study's results reveal BMI is predictable based on the measurement of cooking self-efficacy and health beliefs and attitudes concerning obesity as a disease within American Indian communities. Clinicians, physicians, tribal authorities, and researchers may utilize these findings to develop behavioral based initiatives focused on increasing perceptions of health value and consciousness of weight as well as cultivating positive attitudes toward cooking that encourage the custom of sharing generational cultural knowledge of traditional foods and cooking methods and promote food sovereignty and self-sufficiency. Overall, government interventions aimed toward reducing the obesity rate may act as a barrier for changing food consumption behaviors and may even increase health disparities between majority and minority groups. Whereas, positive social change is possible through cognitive, community-based approaches focused on leveraging SSDEC factors to reduce BMI, improve health, and subsequently reduce disproportional diabetes and death rates in this population.

Conclusion

In this chapter, I interpreted the findings, recognized limitations, and offered recommendations and implications for the cross-sectional study I conducted to examine eight independent variables measuring cooking self-efficacy and attitudes and beliefs about obesity as a disease on BMI for 92 American Indians in Maricopa County. The statistical model containing all predictors had a significant and large effect on BMI

prediction. Future researchers can build on these findings to develop community, behavioral based initiatives that leverage cultural dynamics and encourage perceptions of health value to minimize disparities within minority groups.

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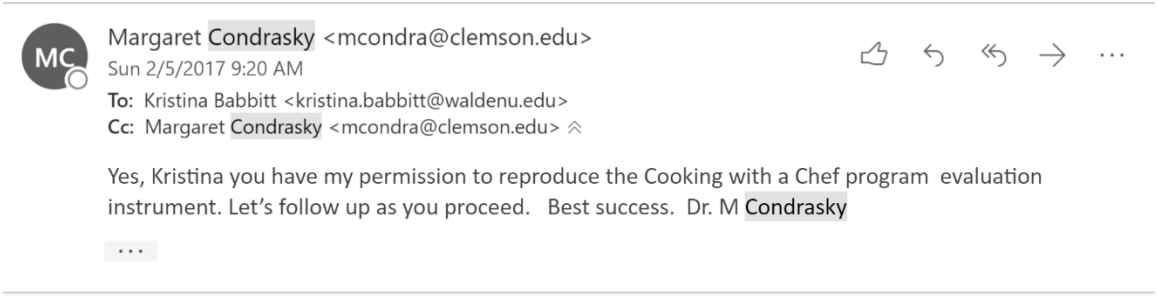
Appendix A: Permission to use the Cooking with a Chef Evaluation Instrument



Margaret Condrasky <mcondra@clemson.edu>
Sun 2/5/2017 9:20 AM
To: Kristina Babbitt <kristina.babbitt@waldenu.edu>
Cc: Margaret Condrasky <mcondra@clemson.edu>

Yes, Kristina you have my permission to reproduce the Cooking with a Chef program evaluation instrument. Let's follow up as you proceed. Best success. Dr. M Condrasky

Kristina Babbitt
Wed 1/18/2017 8:28 AM
Margaret Condrasky <mcondra@clemson.edu>; Rhonda Bohs <rhonda.bohs@waldenu.edu>

Good morning Dr. Condrasky:

Yesterday, I passed my proposal oral defense! As such, I am now able to submit the Walden University Institutional Review Board (IRB) application. This is my third attempt to obtain your explicit permission to reproduce the Cooking With a Chef Program Evaluation Instrument in my dissertation, which is required by the IRB.

I would like to submit my IRB application on January 25, and would also like your approval for reproduction of the instrument.

Could you please take a moment to return this email with your approval?

Again, if you have any questions regarding this request, please feel free to contact me, or Dr. Rhonda Bohs, who has been copied on this email.

Also, thank you in advance for your attention to this request, and I hope to hear from you soon!

Sincerely,

Kristina Babbitt

Appendix B: Permission to use the Health Belief Model Scale in Obesity

Ozden Dedeli Caydam to you May 29, 2016

Dear Babbitt,
I'm so glad for your interest. Of course, you can use my scale in your study.
Good luck for your research.
Sincerely.

Ozden DEDELI, Asst. Prof.
Department of Internal Medicine
Celal Bayar University School of Health, Manisa,Turkey.

Kristina Babbitt Jun 1, 2016

Dr. Dedeli,

Thank you for your approval, and quick response. Unfortunately, I do not have access to a finalized scale, only the article describing it and your process of development. While I am capable of constructing the instrument from your article, it is more appropriate to contact you for a copy. Therefore, do you have an internet link where I may download the scale, or a PDF version you might send? Your help in this endeavor is sincerely appreciated!

Thank you, again.

Kristina Babbitt

Ozden Dedeli Caydam to you Jun 7, 2016

Dear Babbitt,
I send the scale and the article via this mail.
Good luck for your research.
Sincerely

Ozden DEDELI Asst. Prof.
Celal Bayar University School of Health, Manisa,Turkey

THE HEALTH BELIEF MODEL SCALE IN OBESITY.docx

HBMOS.pdf

Kristina Babbitt Jun 7, 2016

Dear Dr. Dedeli:

Thank you very much!

Kristina Babbitt