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MOTIVATORS AND BARRIERS OF HEALTH BEHAVIORS AND

RELATIONSHIPS WITH BODY COMPOSITION IN AFRICAN AMERICAN WOMEN

by

Teresa M. DePratt

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ABSTRACT

MOTIVATORS AND BARRIERS TO HEALTH BEHAVIORS AND RELATIONSHIPS TO
BODY COMPOSITION IN AFRICAN AMERICAN WOMEN

by

Teresa Marie DePratt

The University of Wisconsin-Milwaukee, 2018
Under the Supervision of Professor Marty Sapp

Women who identify as African American are at particularly high risk of

developing obesity and associated health concerns such as diabetes, heart disease, and

cancers. Eating healthfully and engaging in a minimal amount of physical activity are

known to be both preventative and curative. Based on review of research, this study

investigated potential constructs of Motivators and Barriers to health-supporting

behaviors as they are perceived in African American women. The study also constructed a

novel scale, Motivators and Barriers to Health Behaviors (MBHB), which intended to

capture some constructs of each domain via two surveys. Also of interest was if composite

scores of Motivators and/or Barriers factors may be able to predict Body Mass Index

(BMI) or Waist Circumference (WC) measurements. Lastly, the study intended to gain

insight into the types of beverages and foods that African American women preferred, as

well as what grocery stores and fast food restaurants they frequent, and what types of physical activity they engaged in regularly.

One hundred and twenty-six adult women identifying as African American and residing in the city of Milwaukee, Wisconsin participated in this investigation. Results from an Exploratory Factor Analysis (EFA) indicated five Motivators factors resulting from 21 items. They represented thematic constructs of *Personal Health, Beverage and Food Preferences, Church and Spirituality, and Social Support,* and one unanticipated factor labeled *Physician Input*. Results from a second EFA indicated four Barriers factors resulting from 16 items. They represented thematic constructs of Food Choices, Beverage Choices, Knowledge, and Family and Social Support.

In addressing hypotheses of the study, Multiple Linear Regression (MLR) analyses were conducted. Results demonstrated that Motivators factors significantly predicted BMI and WC. Barriers items did not significantly predict neither BMI nor WC. Descriptive statistics demonstrating the outcome of open-ended questions of food and beverage preference, grocery story and fast food patronage, and physical activity were compiled. Results indicated that sodas were the most frequently cited as a preferred favorite beverage, followed by water. Drinks containing relatively high levels of sugar were cited at a ratio of three-to-one compared to water. Chicken was the most frequently cited preferred food; Pick-N-Save was the most frequented grocery store, and McDonald's the most frequently cited fast food establishment. Finally, the physical activity cited most often was walking. Discussion of findings and implications for future research are addressed.

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ACKNOWLEDGEMENTS AND DEDICATION

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CHAPTER 1: Introduction

Problem Statement

Obesity, or having an excess amount of body fat, is an epidemic in America

(National Prevention, Health Promotion, and Public Health Council, 2010). Body

composition describes the percentage of different elements that comprise a human body,

including water, bone, muscle, and adipose tissue, or fat. Having some amount body fat

is normal and healthy but having too much is undesirable and detrimental to one's

health. Overweight and obesity are both categories describing ranges of weight that are

greater than what is considered healthy for a given height in most people (CDC, 2012).

The terms define ranges of weight that have been shown to increase the likelihood of

certain diseases and other health problems. One way that specifically fat tissue is gauged

is via Body Mass Index, or BMI, a frequently used tool that is an indicator of health,

fitness and potential risk for disease (World Health Organization, 2015). A ratio, BMI can

be calculated by an individual's weight (in kilograms), divided by their height (in meters

squared). A number is derived from the calculation that is then compared to the

standard BMI chart to determine if one has a healthy, overweight, or obese amount of fat

for their personal weight and height.

The condition of obesity (having a BMI of 30 or more) contributes to several of the

top 10 causes of death in adults, including heart disease, multiple cancers, stroke, and

diabetes. African Americans share a disproportionate number of deaths due to those

diseases, and one reason is the high obesity rate in that population (CDC, 2013).

According to 2011-2012 data from the National Health and Nutrition Examination Survey,

while more than one-third (35%) of adults in he United States are carrying significantly extra weight, 48% of African American women aged 20 years or older were obese, compared with 43% of Mexican Americans and 33% of whites. There were not differences found nationally between genders with regard to prevalence, however within the African American community, 57% of women were found to be obese compared with 37% of men (CDC, 2013). African-American women have the highest rates overweight and obesity compared to other groups in the US- in fact about 4 in 5 African-American women are overweight or obese (Office of Minority Health, 2012; Office of Women's Health, 2010).

Compared with all other ethnicity and gender groups, African American women are at the greatest risk for many chronic health conditions. They are more likely to suffer from hypertension, cardiovasucalar disease, osteoarthritis, sleep apnea, high blood pressure, endometrial, breast, and other cancers. A staggering eighty thousand more African American women die each year due to preventable diseases related to obesity than Caucasians (Green et. al., 2003). To accurately interpret the enormity of the loss, consider that there are currently the same number of adult African American women living in the city of Milwaukee.

The African American population in Wisconsin was 348,308 in 2008. At present, there are approximately 238,000 individuals in Milwaukee County, making the city home to 69% of Wisconsin's African American population, and the largest racial minority group in the state (Wisconsin Department of Health Services, 2014). Females make up about half of the total number, with 35% percent of the individuals being under 18 years old, and 65%, or a little less than 80,000 being adult women. When reviewing health statistics

here at home, we find that 65% of African American adults are overweight or obese (Black

Health Coalition of WI, 2014). The death rate in Wisconsin due to diabetes for African

Americans (53 per 100,000) was more than twice the rate for Whites (22 per 100,000)

(BHCW, 2014). Also concerning is that cardiovascular disease (CVD) is a serious problem

for African American women in our state, with the mortality rate 66% higher than for

White women.

Because of the prevalence of overweight and obesity and the of the implications to

national health, the US Department of health and human services considers the

conditions to be among the 10 leading health indicators in Healthy People 2010, the

health objectives for the nation. The potential benefits from effective prevention and

treatment in the reduction of body fat in our citizens are considerable. Learning more

about culturally influenced perceptions of motivators and barriers and their relationship

to health behaviors and obesity could lead to better and more efficient treatment options

for African American women in the city of Milwaukee.

While there is a substantial amount of research that examines correlations and

precursors that contribute to healthy behaviors, most studies have been conducted

entirely or predominantly with Caucasion women (Wilcox, et al. (2011). African American

women are at high risk of developing life-changing and life-threatening physical

conditions, whose etiology is rooted in the preventable and treatable condition of obesity.

Currently there are no available motivations and barriers to behaviors inventories that

look specifically at whether the domains are directly related to obesity in African

American women. Successful culturally-tailored treatments and programs for integrating

a healthier lifestyle especially for African American women are few and inadequate.

Terms & Definitions

Barriers- For the purposes of this study, a circumstance or precursor to behavior

that stands in the way of a healthier opotion.

Body Mass Index (BMI) – One approved way to reasonably estimate body fat in an

individual, utilizing a height/weight ratio. It has been noted that in

muscular, athletic, Asian Americans, and African Americans, the scale

may not be as accurate as with average build Caucasian or European

Americans.

Health Behaviors - an action taken by a person to maintain, attain, or regain good

health and to prevent illness

Culture - Values, beliefs, expectations, and norms of a particular group.

Cultural Influences - Historical, geographical, and familial factors that contribute to a

worldview from which one makes choices and engages in behaviors.

Motivators – defined as a facilitator for the purposes of this study

Normal Weight – Having a BMI of 18.8 – 24.9

Overweight – Having a BMI of 25-29.9

Obesity – Having a BMI of 30+

Resting Metabolism Rate (RMR)- the rate at which an individual human body

burns energy, or calories, just to keep up basic biological process such

as heartrate, breathing, and cell and maintenance and repair of tissues

(Jones et. al., 2010).

Waist Circumference – WC – The measurement in inches or centimeters around an

individual's back, over the top of the hip bones on the side, to the front of

the waist at the belly button. For women, over 35 inches is considered a

risk.

The Purpose of the Study

This study aims to better define culturally-influenced motivations of and barriers

to health-supporting drink, food, and physical activity choices, and to evaluate their

relationship to health behaviors and body composition in African American women in

Milwaukee. Identification and confirmation of underlying factors that reflect empirically-

identified cultural influences, as well as demographic data, will be investigated. In

addition, this work hopes to construct a tailored survey that can potentially be utilized as

one efficient guideline for creating a culturally-adapted weight loss and healthy living

intervention that is salient for African American women in Milwaukee and other urban

locations.

Research Questions

➢ *What may be some of the perceived motivators of health-supporting behaviors in*

African American women living in Milwaukee?

➢ *What may be some of the perceived barriers of health-supporting behaviors in*

African American women living in Milwaukee?

- *Is the Motivators and Barriers to Health Behaviors scale a viable measurement of influences of health-supporting behaviors in African American women living in Milwaukee, and are the results generalizable to the population?*

- *What are some of the food and beverage, grocery store and fast food preferences, of African American women in Milwaukee, and what kind of physical activity do they engage in regularly?*

Theoretical Perspectives

Social Cognitive Theory

The theoretical view from which this study in health psychology operates is based in Social Cognitive Theory (SCT; Bandura, 1986). The theory explains that whether one chooses a health-supporting or health-hindering behavior is due to the interaction between personal and environmental mechanisms (Bandura, 2004). Personal components related to motivations and barriers leading to obesity may include thoughts, beliefs, and values- preferences for which have been influenced by culture. Knowledge specific to nutrition and physical activity requirements, food content and alternate options, and ideas about individual health also fall under personal constructs. Environmental variables relevant to motivations and barriers include household and family, social supports, availabilty of and access to health-supporting foods, space for physical activity, and time constraints. Some of the behavioral variables can be attributed to both personal and environmental influences.

Self-efficacy is often a component of societal and individual health behavior models, which pertains to a sense of control over one's environment and behavior, and is

a concept central to SCT. Health self-efficacy in particular postulates that a personal sense of control facilitates movement towards motivated ends and buffers against barriers in order to facilitate healthier behaviors. For example, the greater self-efficacy an individual has that they may succeed in changing a personal health behavior (for example, "I will be able to add exercise to my weekly routine," or "I can avoid drinking sugar sodas.") impacts how much effort that they will exert in changing that behavior. In addition, someone who is confident in their ability to meet their goals has greater determination to keep moving forward in spite of barriers and setbacks that may undermine motivation and intention. Self-efficacy makes a difference in how people think, feel, and act (Bandura, 1997).

Health Belief Model

The Health Belief Model (HBM, Becker et. al., 1979) is another theoretical approach to consider. One of the earliest theories to examine perceived barriers, the HBM explains how perceptions of both benefits and barriers of an outcome lead to the likelihood of a behavior. Motivations can be described as the process that initiates, guides, and maintains goal-oriented behaviors, or what compels one to take or not take an action (Nevid, 2013). Barriers can be described for this context as internal perceptions or beliefs, and external situations or events that block or impede more beneficial choices. An individual's behavior then is a result of which beliefs and values are more salient, in the context of benefits to be gained or the perceived cost or consequences of the barrier. The current study aims to explore what inspirations and impediments influence the

African American women in our urban community with regard to their health behavior choices.

Study of Culture and Health Disparities Framework

The Model for The Study of Culture and Health Disparities (MSCHD; Flynn & Betancourt, 2013) is the third theoretical approach that guides the current study. The model recognizes that most research up until recently has been conducted with predominantly Anglo-Saxon samples, yet many results are often attempted to be generalized to other another racial, ethnic, or minority group. Especially created for bringing awareness and to medical professionals desiring to address disparities in diverse cultures, the MSCHD implores consideration of values, beliefs, expectations, and norms of marginalized groups. Failure to recognize intra-group diversity has been a problem in the literature (Flynn & Betancourt, 2013). The current investigation presupposes that the African American women in Milwaukee may have similar cultural considerations as those from other cities in the US, but that there may be nuances specific to the people and environment of our area.

Contribution to the Literature

Although there are numerous studies of precursors and correlations to obesity available, many focus predominantly on Caucasian women (Wilcox et al., 2011, Fitzgibbon et. al., 2012), consider primarily socioeconomic status as a primary contributing factor, draw from children and adolescent population (Fitzgibbon et. al., 2012), or only measure one or two factors in relation to body composition. Studies addressing motivations and barriers as related to obesity specifically with African american women are few. In

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addition, most of the research focusing on African American women and weight concerns have been conducted in the Southern states, especially Florida and those states considered the "bible belt" which include the eastern part of Texas, Georgia, Mississippi, Alabama, Kentucky, Tennessee, and Oklahoma. There were no studies found investigating influences of obesity in African American adults in Wisconsin. There is also a need for culturally normed scales for evaluating motivators and barriers at an individual or community level (Carithers, et. al., 2009; Mastin, Campo, & Askelson, 2012). Knowledge of the motivators, barriers and underlying cultural factors that may influence health behaviors in African American women in the Milwaukee area would allow for better understanding and more effective and culturally appropriate interventions.

The etiologies of the obesity are complex and are influenced and caused by the intersection of a multitude of components. For the purpose of the current investigation, factors that may contribute to the rising obesity rates in African American women will be limited to motivators and barriers discussed in the following literature review.

CHAPTER 2: Literature Review

Overview

The fundamental cause of obesity and overweight is known to be an energy imbalance between calories consumed and calories expended (WHO, 2015). However, influences of choices leading to the cumulative condition are complex and at occur at a variety of levels that include economic, environmental, and individual levels (Boggs et. al., 2011). Over the last ten years, progress has been made in identifying some of the culturally relevant influences of obesity in African Americans living in various locations around the United States. Unfortunately, this increase in knowledge from scientific literature has yet to be translated to successful programs for weight loss or sustained healthier choices in African American women in this country (Office of Minority Health, 2014; Wilcox, 2011). Some reasons given for this failure include inadequate consideration of cultural factors and lack of appropriate measurement instruments.

Cultural Contexts

African American women are not genetically predisposed to embody current societal beauty standards which are based on a thin ideal (Monda et. al., 2013). Biological markers have been identified that may predispose African American women in particular to be overweight. Another finding in medical literature is African American women have a lower resting metabolism rate (RMR) than white women of comparable weight, height, age, and lean muscle mass (Jones et. al., 2004). This means that black women may burn less calories overall. Some investigators suggest that a relatively low RMR in African American females may be one inclining risk factor for long-term weight gain and obesity.

Women seem to know intuitively that they were not meant to have a relatively thin frame to be thin, nor do many African American women necessarily want to be smaller if they are relatively larger. One relatively recent study asked black and white women to rate attractiveness of other women. When given a choice between a model with a slender look, medium bottom and breasts or a more ample woman with a larger backside and medium to larger breasts, African American women valued bigger curves vs white women who preferred a slimmer look (Overstreet, 2010). In one recent qualitative study aimed at discovering African Americans' views of their weight and health status, women repeatedly reported overall satisfaction with their body size, that they did not feel the need to lose weight, or that African American women "are supposed to be thick." (Lopez et. al., 2014).

In addition to genetic factors and physical preference, historical & cultural dynamics are known to influence current food habits, choices, and cooking methods (Divine et. al, 1999). Traditions and preferences in food evolved through slavery, persecution, and segregation (James, 2004). Ultimately West African cooking was combined with British, Spanish, Native American, and French techniques to create "soul food" (Kittler & Sucher, 2012). Cooking that reflects these tastes emphasizes fried, roasted, boiled foods; chicken, pork and pork fat, eggs, organ meats, sweet potatoes, corn, and green leafy vegetables; fats and salt (Kittler & Sucher, 2012). One qualitative study asked women about their beliefs and salience to traditional African American cuisine, and found that food is more than just sustenance to many. Devine et. al. (2010) reports that foods are often a reflection of a woman's identity- to herself and to others. African

American women explained that they express important ethnic distinctiveness and meaning via food choice, especially when it involved engagement with extended family, religious gatherings, or celebrated holidays. Lynch & Holmes (2011) found that the way food is prepared has cultural connections as well, with women citing traditional procedures handed down from their own mothers.

One study that examined the influences of food choice, dietary consumption, and attitudes about nutrition among both female and male African Americans found that there was a common perception that healthful eating meant letting go of part of their cultural heritage and conforming to the dominant culture (James, 2004). Also noted was the social and cultural symbolism of certain foods, specifically the meaning given to dishes that have been passed from generation to generation. Considering the depth of meaning that is given to food in the African American community, it is not surprising that it is difficult to change behaviors related to food preference.

Motivators

While there has been a fair amount of research looking at barriers that may be present, motivating components as a determinate of health behaviors and obesity have been much less investigated, especially with regard to ethnic minorities (Glasgow, 2005). However, some facilitators have been found, and include having a support system, affiliation with a church or religion, preferences for eating fruits and vegetables, and knowledge of healthy eating requirements, exercise, and impact on personal health.

Family and Social Support

Research has revealed that families and/or friends and acquaintances can be a positive resource for African American women who are trying to adopt a healthier lifestyle. In 2009 Evans and colleagues looked at determinants of low-fat eating behaviors of middle-aged African American women. It was discovered that although friends were better at providing encouragement, family support was the only of the two that was a predictor of lower-fat food consumption. This finding is important and demonstrates that family and social supports can make a difference in outcomes for women who would like to adopt a healthier lifestyle. Lop and their team (2014) found that when families also understood the implications of behavior and obesity, the participant was better able to solicit support from the household. These findings indicate that involving the household or family members may be more beneficial than working with a client in isolation when it comes to making positive change.

Church/Spiritual Association

Greater participation in organizational and non-organizational religious activities has been observed in African American populations and has been suggested to be associated with a history of oppression and mistreatment (Johnson, et. al., 2005). The results of one study suggested that members of marginalized populations were more likely than Caucasians to have a higher degree of religiosity and also placed greater responsibility for their health and illness on God (Johnson et. al., 2005). Church affiliation, and the spiritual and religious communities they serve, have been shown to play a supportive role in increasing motivation and initiating change in living healthier

lifestyles and recruiting for weight loss programs for African American women (Sutherland, 2013; Debnal, et. al., 2012; Robinson & Wicks, 2012; Bopp et. al., 2007).

One project that surveyed over three hundred and fifty respondents in 2 Kansas communities reported overwhelmingly that they would attend health activities, such as lectures, screenings, and workshops if they were offered at their church (Lewis & Green, 2000). More than 80% of the participants believed that the church is a place for learning more about health.

For both counties surveyed, over 90% of respondents believed the pastor would support a health program designed for their community church. Felix, Levine, & Burstin, (2003) found that attendance at church was associated with increased likelihood of positive health care practices by 20% to 80%. The authors found positive correlations with a variety of health screenings and concluded that belonging to a religious community is an important precursor to positive health care practices, especially for the most vulnerable individuals: the uninsured and chronically ill. These results indicate that community- and faith-based organizations present opportunities to improve the health of low-income and minority populations.

Food patterns and preferences

One motivating factor of eating a health-supporting diet has been found to be a preference for the taste of certain foods. A very large study (n = 41, 351) that assessed dietary habits in African American women over a 14 year period identified 2 different types of consumption patterns: vegetables/fruit and meat/fried foods. The women who regularly included produce and maintained that behavior over time gained significantly

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less weight than their meat/fried foods counterparts whose weight gain was substantial (Boggs et. al., 2011). Foods in the former pattern also included fish, legumes, and whole grains, while the latter group pattern consisted of red meat, processed meats, French fries, fried chicken, and added fats like margarine and butter. Other interesting finds from this investigation include that women with the healthier pattern of eating also were more educated, more physically active, and less likely to smoke cigarettes. The less healthy eating pattern was indicative of the opposite behaviors, with the addition of being more likely to drink alcohol regularly. The authors posit in their discussion that Black women who have a preference for a diet high in vegetables and fruits may be better able to achieve long-term weight maintenance. The resulting meaning could indicate that along with other lifestyle factors, the more one gains an affinity for certain healthy foods, they less difficult the struggle with obesity.

Knowledge of Nutrition and Health Recommendations

It seems reasonable that if one is aware of what health practices are in one's best interest, they would be more likely to adhere to recommendations, and that is indeed the case. Several studies have examined the knowledge of African American women on health and/or overweight. Lynch, Holmes, Keim, & Koneman, (2012) looked at concepts of healthful food among low income black women. Utilizing an interview format, women viewed familiar foods pictured and labeled on index cards in order to facilitate perception of those items as either healthy or unhealthy. Women who were familiar with food groups (even if they were labeled differently than the US guidelines, i.e.: starches, junk food) were more likely to report eating those foods.

Personal Health Consequences

Related to nutrient awareness is the knowledge of preventing disease, or alternately, maintaining or promoting one' own health state. A single study that incidentally included motivators in its investigation of inactivity and chronic diseases among African-American women found several positive indicators of health behaviors (Pekmezi et. al., 2013). Working with African American women in the Deep South, the authors found that the desire to maintain current level of health and avoid disease supported beneficial health behaviors. In addition, the desires to feel better physically, avoid pain, and lose weight were all facilitators to better health behaviors.

Barriers

Negative influences, or barriers to health behaviors, have been investigated extensively compared to motivators, and personal and environmental factors have been identified. These circumstances may include personal components such as denial of health concerns by family and friends, societal components such as limited access to healthy and affordable foods in low-income communities, the extensive availability of fast food and sweet drinks like soda, and inadequate park and recreational space, and lack of safe and places for outdoor activities. In addition, the food many African Americans individuals prefer to eat are generally problematic, with an affinity for high-fat and calorie items (Dressler & Smith, 2013); Lynch & Holmes, 2011; Boggs et. al, 2011; Larson et. al., 2009). Unhealthy food choices, combined with other barriers including lack of social support, lack of knowledge regarding healthy food and exercise, healthy food

unavailability, and neighborhood determinates add up to an environment conducive to overweight and obesity.

Food patterns & preferences

Poor eating habits are a major contributor to obesity. The United States' official nutrition guidelines for healthy eating are conveyed via the "Choose My Plate" effort, which describes a healthy diet as one with a focus on vegetables, fruits, fat-free or low-fat milk and milk products, as well as whole grains. The food recommendations encourage lean meat consumption, nuts, eggs, beans, fish, and poultry; and a diet that is low in trans-fats, saturated fats, cholesterol, added sugars and salt (USDA Dietary Guidelines for Americans, 2011).

It is vital to take into account the specific food values and preferences of any particular ethnic population when attempting to evaluate influences of healthful drinking and eating (Kittler, Sucher, & Nahikian-Nelms, 2012). It is also important to keep in mind that there are within-group differences depending upon where in the United States the individuals of interest reside (Flynn & Batoncourt, 2013). What has been termed "Cultural or Lifestyle Eating" refers to food consumption that is characteristic of a particular ethnic group (Sims et. al., 2008). There are several studies that have looked at specifically black women's patterns of food consumption, as well as their perceptions of what constitutes healthful eating (Lynch & Holmes, 2011; Lynch, Holmes, Keim, & Koneman, 2012).

Availability

Neighborhood differences in access to healthy food access are an important component influencing diet and nutritional intake (Larson et. al., 2009). There have been

quite a few studies involving taking inventory of availability of fresh fruits and vegetables in low-income, mostly African American communities. In one project that reviewed access to produce in areas, it was uncovered that most stores in impoverished areas carried fewer than 50% of commonly consumed or culturally specific fruits and vegetables. Findings from this study highlight that limited availability of culturally specific as well as commonly consumed fruits and vegetables in the neighborhood may be a barrier to fruit and vegetable consumption among African Americans (Grigsby-Toussaint, et. al., 2010).

Larson, Story, & Nelson (2009) used a snowball strategy utilizing online medical journal search sites in order to identify disparities in access to healthy foods. Their findings include that those individuals who have more access to full-service grocery stores and less access to convenience stores have healthier diets and lower incidences of obesity. Another study out of Detroit found that African Americans residing in low-income areas have to travel out of their neighborhood in order to be able to purchase higher quality produce, lower fat dairy products, and high fiber or whole grain bread (Hosler et. al., 2006).

Recently, Baruth, Sharpe, Parra-Medina & Wilcox (2014) investigated barriers to healthy eating and exercise with qualitative study reported that they were often faced with a choice between buying healthier, more expensive food, or less expensive but larger quantities of unhealthy food. When living on a low budget, it makes sense that women would want to stretch their funds, especially those households with hungry children. These studies all support the idea that if fresh fruits and vegetables are not available or

are very expensive, African Americans will not be consuming them at a rate conducive to a healthy, low-fat lifestyle.

Nutritional Knowledge

Awareness of nutritious eating and other beneficial health practices have been investigated with African American adults. In one qualitative study conducted with 40 African American women in Florida, participants reported no early education from their families on the prevention of obesity, and even throughout grade, middle, and high school years, education about living a healthy lifestyle was limited (Lopez, et. al., 2014). In the same study, when the women were asked what they thought may assist in helping people in their community live healthier and lose weight, they cited lack of knowledge about how to cook and what to eat, and how to exercise efficiently in the context of real lifestyle change. Baruth and colleagues (2014) conducted a similar qualitative study in order to uncover barriers to healthier eating and heard similar statements from African American women regarding lack of knowledge. Some examples included not knowing what foods would be good for them, or how to put healthy ingredients together to create a satisfying meal for the whole family.

Interestingly, it has been suggested that African American women look upon food items in terms of social dimensions versus nutritional dimensions, making thinking about food in terms of the USDA's MyPyramid [or My Plate] a potential challenge (Lynch & Holmes, 2011). Related to nutritional knowledge are other diet-related guidelines that some African Americans may not fully understand or be aware of, including awareness of portion size and caloric commendations. Shah et al. (2010) explored serving size

knowledge and relationships to obesity. Ninety-five African American women from churches in Texas were surveyed using 17 locally identified popular food items. Results indicated that the women overestimated the serving sizes for 7 of the food items tested, and 4 of the estimates were positively correlated with BMI.

Following her qualitative study conducted with black women in Florida, James (2004) concluded that more frequent exposure and access to basic nutrition topics such as serving sizes and reading food labels would be beneficial for African Americans. Dietary education in African American communities may make a difference in food choice if local patterns are identified and cultural bonds to food addressed (Daroszewski, 2009).

Environmental Influences

Family and Social Support

Families, friends, and co-workers have been found to be potentially negatively influential to African American women. For example, recently Baruth and colleagues (2014) conducted four focus groups with 28 African American women, exploring factors they felt were helpful and hindering of their efforts to eat more healthfully and exercise regularly. Participants, who were recruited from disadvantage areas in Columbia, South Carolina, reported that they were told by friends and family that they did not need to lose weight, and felt pressured into eating more than they wanted to. Friends and relatives were also reported to not be supportive of dietary changes as reported by James (2008). The Baruth et. al. study elaborates further by noting that many of the participants were employed with children to care for, understandably leaving them exhausted and

unmotivated to attempt any physical activity. More than one woman also discussed the importance of not losing their curves, reflecting the physical expectations of black females to maintain an image of a fuller figure.

Neighborhood Level Factors

Several studies have shown that small neighborhood groceries, or corner stores, are often prevalent in low-income urban areas, and have been shown to be influential on the black community (Borradaile, et. al., 2009; Galvez et. al., 2009). Families may access these stores because of convenience, both in proximity to the household for time-saving purposes as well as having less access to transportation in order to shop elsewhere.

One group of researchers trying to gain a better understanding of food environments specifically with regard to prevalence of high-sugar, low-nutrient food sales and availability of fresh fruits and vegetables and low-fat items (Timperio, et. al., (2008). With regard to examined obesity in black communities, the authors discussed the importance of developing prevention programs that address stores directly in cities across America.

Similarly, high concentrations of fast food outlets in neighborhoods, which often appear in areas with higher concentrations of African American residents, may increase consumption of nutritionally poor foods, resulting in obesity (Kwate et al., 2009). Often these establishments sell high fat and calorie food items at inexpensive prices, for example McDonald's Value Menu. These environmental concerns highlight the importance of considering populations at the neighborhood level.

Other neighborhood factors have also been found to influence physical activity among African Americans. Individuals living in low-income communities, especially those that are predominantly African American, report that they do not have access to public parks and recreation areas that are safe for physical activities such as walking and biking (Boyle, Stone-Francisco, and Samuels, 2006). Many cities have areas that are undesirable, and women have reported that they do not feel safe walking in their neighborhood due to drug or gang activity, other street crime, unattended dogs, vandalism and trash accumulation (Casagrande et.al., 2009).

Survey Development

Current literature reveals that few scales have been created that attempt to comprehensively measure motivations of and barriers to health behaviors in adults. From those available, there were multiple limitations such as having too narrow of sample with regard to diversity, age, or population, or omitted cultural considerations. Nicklas and colleagues (2013) studied barriers and facilitators of Americans with regard to adhering to government-recommended nutritional guidelines, but the authors' inquiries were not specific to African Americans nor considered cultural influences. Two scales were found to be reasonable for marginalized populations, specifically African Americans. The first, Motivators and Barriers of a Healthy Lifestyle Scale (MABS), was created by Downes (2008), and was a culturally-relevant survey that utilized a 14-item inquiry identifying motivations and behaviors to a "healthy lifestyle." It was decided that the scale was not as comprehensive as desired for this study, and only included minimal theoretical support for item choice.

The other viable scale found was the Motivations of and Barriers to Health Smart Behaviors Inventory (MB-HSBI), and served as the base from which the current survey was created. Created as part of a research program for families and communities, the authors aimed to identify supports and obstacles to health-promoting behaviors within a culturally sensitive context. The authors began with six focus groups in order to get a preliminary inventory of motivations and barriers that occurred under four health behavior domains (Breakfasts, Snacks/Foods, Healthy Drinks, and Physical Activity) and contained 8 scales. Limitations of the MB-HSBI lead to the conceptualization of the current study's scale design. Issues included that there were a large number of items (127, however pared down from 479) in the final version of the survey, as well as it resulting in a relatively large number (28) of final factors.

The current aim is to have more concision, resulting in a more reasonable number of scales, items, and factors. It is anticipated that factor analyses and internal consistency results may show the existence of multiple subscales measuring both the motivators and barriers scales. The aim of the *Motivators and Barriers to Health Behaviors (MBHB)* scale is to create a useful tool for developing assessment-based, culturally sensitive healthy living programs tailored to the specific motivators and barriers to healthy choices identified in our area and beyond, particularly those communities whose members are mostly African American. One purpose of this study to capture the unique aspects of Milwaukee neighborhood food environments that promote or inhibit healthful eating and consequently weight management in the populations most at risk.

CHAPTER 3: Methods

Overview

This chapter will relay the methods that have been utilized in the current study. First, the research questions and hypotheses investigated will be presented. This will be followed by a description of the general research design and description of the instruments used. Next, the intended sample characteristics and the procedures for recruitment and participation will be stated. Details of the data analysis will be covered next, followed by the statistical procedures used, including their respective assumptions and limitations.

Research Questions

A research question reflects inquiries that an empirical project sets out to answer. Some solutions may require exploring and describing data acquired, while others predict relationships between variables. While both require the researcher to form a question, the methodology and tools used to conduct the research depend upon what is being asked. Ultimately, they may take different forms to answer the questions. For example, a hypothesis translates a research question into a prediction of expected outcomes (Austin, C., 2017).

There were four research questions asked in this study. The first objective was to explore and describe some of the potentially culturally-determined motivators of engaging in health-supporting behaviors. As relayed in the literature review, those thought to be reflected in the Motivators survey included domain variables such as Food Preferences, Personal Health concerns, Church and Spirituality, Knowledge about

nutrition and physical activity recommendations, and Family and Social Support. Therefore, the first research question was: **(R1)** *What may be some of the perceived motivators of health-supporting behaviors in African American women living in Milwaukee?*

The next aim of this study was to investigate possible barriers to health-supporting behaviors. As described, those thought to be reflected in the devised Barriers items included categories of Environment, Food Preferences, Availability of healthy foods and beverages, Family and Social Support, and Knowledge of best nutrition and physical activity practices have been theoretically supported. Accordingly, the second research question is: **(R2)** *What may be some of the perceived barriers of health-supporting behaviors in African American women living in Milwaukee?*

This investigation also intended to construct and evaluate a scale that may capture some of the motivators and barriers to health-supporting behaviors of African American women living in the city. In that case, the third research question asks: **(R3)** *Is the Motivators and Barriers to Health Behaviors scale a viable measurement of influences to health-supporting behaviors in African American women living in Milwaukee and are the results generalizable to the population?*

Lastly, and descriptive in nature, this study hopes to identify and report some the types of foods and beverages preferred by African American women living in Milwaukee, as well the grocery stores and fast-food restaurants frequented and the kinds of physical movement they engage in regularly. Knowing this information could again assist in designing a health program for women in which multiple specific contexts are addressed.

Due to its encompassing nature, the fourth research question has five parts and asks the following:

(R₄-A) *What are some of the food preferences of African American women living in Milwaukee?*

(R₄-B*) What are some of the beverage preferences of African American women living in Milwaukee?*

(R₄-C) *Where do African American women living in Milwaukee most-often shop for groceries?*

(R₄-D) *Which fast-food restaurants do African American women living in Milwaukee choose to patronize?*

(R₄-E) *What types of physical activity to African American women living in Milwaukee participate in regularly?*

Hypotheses

In addition to gaining greater understanding of what African American women in Milwaukee perceive as motivators and barriers of health-supporting behaviors and creating a survey that may capture some of the latent factors thought to contribute to those domains, this investigation further explores if any of those underlying factors found may predict BMI and/or WC. They encompass exploration regarding whether an individuals' BMI or WC can be predicted by their overall score on each the Motivators and Barriers surveys, or by scores from identified underlying factors of either domain. If any findings are significant, we could address these specific influences in a health enhancement program for women.

In order to assist in answering the research questions proposed, four hypotheses were developed. They each refer to potential relationships among independent variables of Motivators and Barriers factors and the dependent variables of BMI and WC. All null hypotheses assume that multiple correlation coefficient is equal to zero ($R = 0$; Weisberg, 2014), or that there is no relationship between predictors and outcome variables. For the purposes of the current study, the alternative hypotheses then, are as follows:

The first hypotheses is:

(H_1) *There will be statistically significant prediction of BMI by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.*

The second hypothesis states:

($H2$) *There will be statistically significant prediction of WC by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.*

The third hypothesis is as follows:

($H3$) *There will be statistically significant prediction of BMI by an overall Barriers factor score generated by all Barriers items contributing to the final retained factors of the Barriers domain survey of the MBHB scale.*

The fourth hypothesis is:

($H4$) *There will be statistically significant prediction of WC by an overall Barriers factor scores generated by the Barriers domain portion of the MBHB survey.*

Research Design

This study aims to initially evaluate the efficiency of a new scale, Motivators and Barriers to Health Behaviors, and is descriptive and correlational. It was conducted with African American women who were currently living in the city of Milwaukee, Wisconsin. In addition, this study aims to identify and describe some of the possible underlying contributing factors of each of the domains of motivators and barriers. Relationships among variables were explored, including the potential predictive capacity of each domain overall as well as all latent factors found on BMI and WC. Descriptive data relayed will include demographic variables, food and beverage preferences cited, grocery stores and fast food locations most-often visited, and types of activities women engage in.

Measurement Instruments

Demographics and Food Preferences Questionnaire

A Demographics and Food Preferences questionnaire (Appendix A) was used to collect self-report information that described the participants. The first part of the survey inquired about their age, years of Milwaukee residence, level of education and income, number of people in the household, whether they had access to transportation, if they were the primary food purchaser and/or preparer, if they currently engaged in regular physical activity, and whether they desired to increase their health via diet or exercise.

The second part of the survey (also found in Appendix A) supported testing of the fourth research question (R4), as it included five open-ended questions that were designed to gauge women's preferences for foods, beverages, grocery stores, and fast-food, as well as to discover what physical activity they typically engage in. This

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information will provide further insight into current patterns of women's health-supporting behaviors overall, as well which could be addressed as beneficial or detrimental in a health-enhancing program for overall physical health or weight-loss.

Motivators and Barriers to Health Behaviors Scale (MBHB)

Survey Construction

The survey created for this study, the Motivators & Barriers of Health Behaviors (MBHB) is similar in structure to earlier-described scales (including the MB-HSB) and utilizes some of the motivation and barrier sentiments of items contained within that questionnaire. However, for the current investigation, each survey domain is supported by 5 theoretically-derived constructs, each represented with 5 statements (referred to as items) each, devised by the author. They are intended to be more efficient and comprehensive compared to questionnaires with similar aims and based on the empirical support discussed earlier in this paper. The MBHB scale is divided into two domains, Motivators and Barriers. The MBHB included 25 items per domain. All items were scored on a forced choice four-point Likert scale of agreement: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. The mean of each item reflecting discovered factors will be found to indicate level of agreement. The total score range available for each item is 25. If all items were answered, the total possible score was 25-100 on each the Motivators and Barriers domains.

In order to address this study's research questions and be able to quantifiably evaluate proposed hypotheses, The Motivators and Barriers to Health Behaviors survey was constructed as follows. There were two domain scales created for this health-

supporting investigation: 1.) Motivators and 2.) Barriers, each intended to assess five

potential influences on health-supporting behaviors. For each category of Motivators,

items were developed to assess those areas, or constructs, that have been shown to

positively influence especially African American women. Barrier items were developed to

assess those areas that have been shown to contribute to hindering health-supporting

behaviors.

Motivators:

The five theoretically associated Motivators categories included Food and Beverage

Preferences, Personal Health, Church and Spirituality, Knowledge of health supporting

behaviors, and Family and Social Support. Each of these categories was supported by five

survey questions, resulting in 25 Motivator items. Listed below are the items, grouped

into each of the categories of theoretically associated Motivators. Provided are the

Motivators survey question number, the representative statistical code, and the

corresponding statement. The statistical code represents the domain, the construct

intended to be measured by the item, and the order the question appears in the survey

related to the other items in that category. For example, the first item of the category

Food and Beverage Preferences of the Motivators domain "I like the taste of many or most

fruits and vegetables" was the first question on the survey. It was represented in statistical

analyses with the code "MFP1". The second item of the category Food and Beverage

Preferences of the Motivators domain was the third question on the survey, etc...The

survey as it was presented to participants is in Appendix B.

Initial Motivators' Categories and Associated Items

Food and Beverage Preferences

1. (MFP1) I like the taste of many or most fruits and vegetables.

3. (MFP2) I prefer whole wheat or grain bread over white bread.

18. (MFP3) I enjoy drinking water.

20. (MFP4) I do not drink soda.

25. (MFP5) I avoid deep fried foods, high fat dairy, meats, and/or saturated/trans fats.

Personal Health considerations

2. (MPH1) Eating healthy foods and snacks helps keep my body in shape.

7. (MPH2) My doctor has told me I have to lose weight to better my health

9. (MPH3) Eating healthy foods and snacks helps me feel good.

11. (MPH4) I can avoid health problems by eating healthfully and getting regular physical activity.

15. (MPH5) I do not want to have drinks with a lot of sugar in them because it's bad for my health.

Church and Spirituality

4. (MCS1) I would look to God for support in making healthier lifestyle choices.

12. (MCS2) My friends at church would be a great support for a healthier lifestyle.

16. (MCS3) I would join a group for healthier living (eating, exercise) if it was offered at my church.

19. (MCS4) I belong to a church and attend services regularly.

23. (MCS5) I believe God wants me to take care of my body by making healthy choices.

Knowledge

5. (MKN1) Someone has shown me what healthy eating looks like.

13. (MKN2) When I choose what to drink or eat, I think about whether it is healthy.

15. (MKN3) I regularly read nutrition labels on foods that I eat.

21. (MKN4) I read nutrition labels on drink containers to see how many calories are in it before I drink it.

24. (MKN5) Someone has taught me why healthy eating is important.

Family and Social Support

6. (MFSS1) I have an exercise partner that I walk or work out with.

8. (MFSS2) My friends drink mostly water and other healthy drinks.

10. (MFSS3) My doctor encourages me to drink water and eat a low-fat diet.

17. (MFSS4) My household would or does support me in healthy living choices ie: food/exercise.

22. (MFSS5) My coworkers are or would be supportive in my leading a healthy lifestyle.

Barriers

The five theoretically-associated Barriers categories included Environment, Food and Beverage Preferences, Availability, Family and Social Support, and Knowledge of health supporting behaviors. Each of these categories was supported by five survey

questions, resulting in 25 Barrier items. Listed below are the items, grouped into each of the categories of theoretically associated Barriers. Provided are the Barriers survey question number, the representative statistical code, and the corresponding statement. The MBHB scale in its entirety, with statistical codes and in the order presented to participants can be found in Appendix C.

Initial Barriers' Categories and Associated Items

Environment

1. (BEN1) We usually have regular soda (not diet) in the refrigerator at home/where I stay.

6. (BEN2) I would feel embarrassed walking or biking for exercise near my house or in my neighborhood.

9. (BEN3) I do not feel safe walking or biking in my neighborhood.

17. (BEN4) There is a playground or park near my home (within 6 blocks).

21. (BEN5) I often buy food or drinks from gas stations.

Food and Beverage Preferences

2. (BFP1) Drinking sugary drinks (soda, fruit juice, Kool-Aid) is a habit for me.

10. (BFP2) I usually eat red meat at least once per day or about 5 days per week.

13. (BFP3) When choosing what to drink or eat, I think about whether it is healthy.

18. (BFP4) I think tap water tastes terrible/not good OR am concerned about the water quality so do not drink it.

24. (BFP5) Deep fried foods are often part of my family's favorite meals.

Availability

3. (BAV1) There are not many healthy drink choices where I purchase them.

11. (BAV2) I often buy food at corner stores or small neighborhood stores.

15. (BAV3) There are very few healthy choices where I shop for food.

20. (BAV4) I cannot buy fresh fruits or vegetables near my home.

23. (BAV5) I buy less healthy food because you get more for your money.

Family and Social Support

4. (BFSS1) Eating healthy foods and snacks helps keep my body in shape.

8. (BFSS2) My doctor has told me I have to lose weight to better my health

14. (BFSS3) Eating healthy foods and snacks helps me feel good.

19. (BFSS4) I can avoid health problems by eating healthfully and getting regular physical activity.

25. (BFSS5) I do not want to have drinks with a lot of sugar in them because it's bad for my health.

Knowledge

5. (BKN1) I do not understand why drinking water is healthy.

7. (BKN2) I do not know how to read nutrition labels.

12. (BKN3) I do not know how to make a healthy meal that tastes great.

16. (BKN4) I'm not sure how to make a healthy meal for myself or my family.

22. (BKN5) My and/or my family's favorite foods cannot be made in a healthful way.

Body Weight

BMI, as measured by a weight/height ratio, was calculated by hand using a virtual BMI Calculator provided by the Centers for Disease Control and Prevention (CDC, 2017) post-survey, is the first dependent variable. Weight shall be determined by a step-on digital scale, and height will be measured utilizing a wall measure, both activities being overseen by a research assistant. The measure will be considered as a continuous variable. A step-on digital bathroom scale (Etekcity Digital Body Weight Scale) was used to obtain all body weights.

Waist Circumference

While BMI is recommended by the World Health Organization (WHO) and is a reasonable measure of body fat for most individuals, Boggs and colleagues (2011) found that waist circumference, or the distance around one's midsection at the bellybutton, was a more accurate indicator of abdominal obesity and body-fat distribution in African American women. The researchers also established that BMI and WC were both strongly correlated with an increased risk of death by cardiovascular disease (CVD) and diabetes, two of the conditions recognized to be aggravated and accelerated by excess body fat. In addition, self-reported weight is often underestimated in obese women of a variety of backgrounds (Ambwani & Chmielewski, 2013) and also specifically in African American women (Lopez, et. al., 2014). Because of these factors, WC of participants will be obtained by researchers as described below and used as the second dependent variable. A professional grade tape-style measure (Singer 96" Tape Measure) was used to measure waist circumference.

Sample Size and Participants

Sample Size

There are several ways to decide the appropriate sample size needed a priori (Hall & Lavrakas, 2013). Suggested sample sizes required to complete a factor analysis of a group of items vary in the literature and range from 3-20 individuals per item included in the survey (Williams, Brown, & Onsman, 2012; Sapp, 2006). With 25 items in each survey, the range of participants needed to be suitable for generalizing any statistical findings of a factor analysis would be 75-500. The minimum required sample size for a multiple regression study given the desired probability level (.05), the number of predictors expected in the model (10), the anticipated effect size (0.15), and the desired statistical power level (.80) is 118 (Soper, D., 2015). For the intended scope of the current study, the sample size acquired of 126 total participants whose surveys were appropriate for analysis was reasonable considering time, accessibility, and funding constraints. This study is also being used to further understand trends in behavior regarding types of foods and beverages preferred, places of grocery and fast-food purchasing, and types of physical activities that women are engaged in. For these later descriptions, there is no minimum number that contributes to the body of knowledge available about the Black women in our community. Finally, this study is considered only a beginning of the research that is truly needed in better understanding how women of color perceive motivators and barriers of health behaviors.

Participants

The target sample in the current study were self-identified, African American women who resided in the city of Milwaukee at the time they participated. Names were not recorded, and there was no exclusion criteria. A total of 129 surveys were collected; three surveys were not utilized for reasons of non-residency and having greater than twenty percent missing information. The 126 remaining were retained, and each contained 80% or more of answered questions. Participants from seventeen zip codes participated in this study, with 75% of this sample residing in the top 8 zip codes in Milwaukee that have been identified as at least 50% African American. Zip codes represented are listed in Table 1 below.

TABLE 1

Percentage of African Americans and Participants Living in Milwaukee Zip Codes

Rank	Milwaukee Zip Code	% African American Living in Zip Code	% Study Participants from Zip Code
1	53206	96.10 %	11%
2	53205	86.74 %	6%
3	53216	75.82 %	15%
4	53210	70.36 %	10%
5	53212	62.95 %	2%
6	53209	62.78 %	10%
7	53218	58.88 %	15%
8	53208	50.78 %	5%
9	Other		25%
	Total		100%

Data Collection Procedures

Recruitment Sites

Chung et. al. (2009) researched the efficacy of obtaining data and gaining access to African American opinions at community locations and events. Due to this empirical support,

the current study took place at two locations in the city of Milwaukee that have been traditionally utilized by the African American community of Milwaukee. One day was spent at the Social Development Commission of Milwaukee (SDC), which is located on North 17th Street and North Avenue in Milwaukee. The building houses offices and professionals that provide community services such as Education, Job Training, Financial Literacy, Senior and Youth Services, and Tax Assistance.

An additional two days of data gathering were spent at Lena's Midtown Food Market, which is an African-American-owned grocery store in the central city of Milwaukee, and located in a zip code with 75.82% of its residents identifying as African American.

Data Collection

At each location, the Primary Student Investigator, the author of this study, was present and located near a table with collection materials. A poster advertised the study nearby, offering a "$10 Gift Card for Taking Survey and Allowing Weight & Waist Measurement." The data collection materials, which consisted of a Demographic and Food Preferences survey (which included a space for the researcher to record weight, height, and waist circumference), and an MBHB Scale consisting of both the Motivators and Barriers surveys were given to African American women interested and willing to fill out the forms.

After completing the surveys, participants were asked to step on the digital bathroom scale to obtain weight, which was the same scale used for all subjects at both locations (Etekcity Digital Body Weight Scale). A professional grade tape measure (Singer 96" Tape Measure) was used to measure waist circumference. A researcher asked permission to bring the tape around their middle or if they would like to do it themselves. The tape was brought behind their back and back together at belly button height for acquisititon of waist circumference in inches. The

participant was asked for their height in inches and recorded. Compensation in the amount of one

$10.00 gift card to either Lena's, Walmart, or Walgreens was given to each participant that

completed the 2 surveys and provided weight, height, and waist measurements.

Statistical Procedures

Statistical Program

All statistical analyses of the results were conducted via the Statistical Package for Social

Sciences software (SPSS), version 24.0. Over time, there were two updates to this

program, both of which were allowed to be installed.

Descriptive Statistics I

Demographic Information

Demographic data will be analyzed and reported in order to describe the sample. Means

and standard deviations will be given for age, years of Milwaukee residence, and number of

individuals in the household. Frequencies in the form of percentages or actual number will be

given for zip codes, levels of education, income level, access to transportation, primary food

purchaser and preparer statuses, if an individual was currently participating in regular physical

activity, and whether the person wished to better their health via diet or exercise.

Assumptions

Common data assumptions for descriptive statistics include random sampling,

independence, normality, equal variance, and stability (Stone, B., 2017). In descriptive statistics,

other assumptions may include that participants are being truthful when answering questions,

including both meeting inclusion criteria and in their individual item responses, and have only

completed the survey one time.

Factor Analysis

   Rationale and Overview

     One purpose of this study was to assess the psychometric properties of a newly created instrument, the MBHB, a 50-item, double domain (25-items in each), Likert-type self-report instrument used to detect perceived motivators and barriers to health-supporting behaviors in African American women. Content validity of the devised scales was considered to be supported based on the findings of previous studies discussed, as well as by observations and input of two content experts. Factor analyses allows for bringing intercorrelated variables together under more general factors, reducing dimensionality, and using relevant output found in the form of components in subsequent analyses (Field, 2000, Rietveld & Van Hout, 1993). This study intends to use the resulting factors in observing relationships between variables via multiple regression analyses.

     There are several major decisions that are made in conducting factor analysis (Gaskin, & Happell, 2014). They include choosing between factor analysis and principal components analysis, selecting a method of data extraction, determining the number of factors to retain, and deciding upon the method of factor rotation. This study also examined the construct validity and reliability of the MBHB instrument. The psychometric properties of the MBHB Scale, including item analysis, factor analysis, and reliability measures, were assessed. Bartlett's sphericity test (1950) as well as Kaiser-Meyer-Olkin (KMO) measure of adequacy and showed that the samples met the criteria for factor analysis. We also are interested in confidence intervals for the ultimate factor loadings, in order to get an impression about the accuracy of the solution (Manly, 2005).

   Factor Analysis vs. Principal Component Analysis

In psychology, Factor Analysis (FA) and Principal Component Analysis (PCA) are two techniques are often applied in the construction of multi-scale tests to determine which items load on which components. They have been shown empirically to typically yield similar substantive conclusions (Comrey, 1988). PCA involves extracting factors of observed variables for the intention of simply reducing correlated observed variables to a smaller set of important independent composite variables (Thompson, 2004). FA on the other hand, is based on model, predicting observed variables from theoretically latent factors *as well as* a multivariate method used for data reduction purposes (Manly, 2005). There are two options for FA: Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA is the measurement of choice when a researcher wants to examine a survey for potential underlying constructs, as well as to decrease the number of overall items but still capture the same information. CFA is a later step on survey construction, after exploratory inquiries have been investigated and there are pre-established, strong theoretical reasons for anticipating all resulting components. Due to the purposes of this study including identifying underlying factors as well as potentially reducing the overall number of items needed to observe these factors, EFA was the a priori procedure chosen.

Exploratory Factor Analysis (EFA)

In order to answer this study's first three research questions (R1-R3) and test the study's hypotheses, EFA was run for each the Motivators and Barriers items separately. R1 is regarding the overall and underlying factors of Motivators. R2 reflects our interest in overall and underlying Barriers. The focus of R3 and H3 is to observe and discover how underlying dimensions of each survey form the domains of each serve the Motivators and Barriers domains respectively.

Suitability of EFA

   Assumptions

      First, EFA implies that the data used is interval is at least interval in nature, or

approximates it, such as with Likert-type data (Jones & Bartlett Publishers, 2013). It

assumes that there is at least one dependent, or outcome variable, and multiple

independent, or predictor variables. Sample adequacy is the second assumption, and as

discussed previously generally aims for 3-20 cases per variable. Next, normality in the

distribution of data is required, and was assessed by viewing the skewness and kurtosis of

the items, as well as the Shapiro-Wilk test (1965). Kim (2013) indicated that an absolute z-

value over 3.29 for medium sample sizes in EFA (50 < n < 300) is evidence for non-

normality. Using principal axis factoring however, does not require a normal distribution

(Costello & Osborne, 2005). Because factor analysis is based on correlation coefficients,

the assumption is that relationships between variables are linear. Due to factor analysis

being sensitive to them, the next assumption states that there are not any outliers.

Factorability is the last assumption, and reflects that data is suitable for data reduction.

This can be found when using Bartlett's test of sphericity in SPSS, the statistical program

used for this study.

   Correlation Matrix

      The first step in EFA requires obtaining a correlation matrix. These show

covariance between each of the variables, or the Pearson correlation between all pairs of

questions. Patterns of relationships will be reviewed and inspected for variables for which

the majority of values are greater than .05. If any of these are greater than 0.9, singularity

in the data could be a problem. All questions should correlate somewhat but not too highly. Individual items may be eliminated at this point if there are exceptionally high or low correlations.

KMO and Bartlett's Tests

Prior to the extraction of factors, multiple tests should be used to gauge the appropriateness of EFA for the data at hand. In order to test the assumption of sampling adequacy for the current survey, the Kaiser-Meyer-Olkin (KMO) statistic was evaluated. Some authors ascribe that this number is especially important to evaluate when cases to variable ration is less than 1:5 (Williams, Onsman, & Brown, 2010). Kaiser (1974) recommends a minimal KMO value of .5. Other authors have stated the acceptability categories as follows: values of .5 to .7 are 'mediocre', values between .7 and .8 are 'good', values that fall between .8 and .9 are 'great', and values that fall at .9 or above are considered 'exceptional' (Hutcheson and Sofroniou, 1999).

Procedures

In order to ultimately reduce the overall survey length and still capture pertinent information when utilizing a more efficient version of the MBHB survey in the future, EFA was conducted separately with each the Motivators and Barriers Survey scales. EFA is often used to to identify items in the instrument that most closely represent underlying constructs while identifying and allowing for removal of others that appear irrelevant or do not fit with the intended construct. During each step, items may be eliminated for reasons that may be justified by the researcher, with this occurrence more frequent in the early stages of scale construction (DeVellis, 2012).

Factor Extraction

The next step in an EFA is to decide the method with which to extract an initial set of factors. The statistical program used in this study, SPSS, defaults to PCA as the factor extraction method, which as discussed previously, is not appropriate in this case. Therefore, the alternate suggested by multiple authors is *principal axis factoring* (PAF; Laerd, 2018, Field, 2000, & Downes, 2008). This method is appropriate when attempting to identify latent constructs, rather than only narrowing the data (Manly, 2005). As indicated in our research question and hypotheses, we are interested in the potential factors behind the variables, and so PAF was utilized.

In a study that looked at options for dealing with missing data in EFA, it was found that deletion methods do not extract the correct number of factors and tend to have biased factor loadings, even when data is missing randomly (McNeish, 2016). Predictive mean matching was cited as the best method overall when desiring to identify the correct number of factors and estimating factor loadings without bias. Missing values therefore, were replaced in this manner, which does not change the correlation matrix but ensures that we do not over penalize missing values (Laerd, 2018). Small coefficients (less than .4) were suppressed so that factor loading tables could be more easily reviewed, as suggested by Field (2000).

Communalities

The communalities table of SPSS factor analysis output details the communalities before and after extraction for each variable. The amount of variance in each variable that can be explained by the retained factors is listed in the communalities "after extraction"

column. One way to consider these values is in terms of the proportion of variance explained by the underlying factors.

Factor Loadings

Factor loadings indicate which items loaded together. By inspecting the columns under this heading, we can view the factors that have been extracted before and after rotation, as well as the amount of variance they account for out of the total. The values listed in are based on the common variance, which is always smaller than the total variance.

Eigenvalues/Kaiser Criterion

Next, the number of factors to be retained must be selected. The purpose of EFA is to account for as much of the variance as possible with as few factors as possible. In order to assist in deciding how many factors to extract, eigenvalues will be inspected. The eigenvalue-one criterion, also referred to as the Kaiser criterion, is one of the most popular methods for establishing how many components to retain in a factor analysis (Kaiser, 1960), and is also the default option in SPSS. The Kaiser criterion states that the optimal number of factors can be found by examining the eigenvalues associated with the data plotted on a graph. This strategy refers to the number of eigenvalues of the correlation matrix that are greater than one. A component with an eigenvalue less than one indicates that it explains less variance that a variable would and should not be retained (Kaiser, 1960; Field, 2005). The advantage of utilizing this criterion is that it is simple, as a researcher need only inspect which factors have a value of 1.0 or higher. A

disadvantage is that it is not accurate enough to be used alone, but rather as one of

several guideline to be used to make factor choices.

Scree Plot

Another consideration in deciding how many factors to extract is by viewing the

Scree plot output (Kaiser, 1960). The scree plot is a graph of the eigenvalues against the

factor number, and is useful for determining how many factors to retain. The point that is

pertinent is where the curve starts to flatten. Important are the demonstrated values that

occur prior to the last drop in magnitude. The curve may be difficult to interpret because

the curve often tails off after just a couple of factors, making the leveling-off point

subjective. Because of that fact, as well as not having a recommended sample size of 200

for EFA, all strategies mentioned were utilized in determining the appropriate number of

factors to retain.

Rotation

After the initial extraction of factors, the components may still be difficult to

decipher, making interpretation questionable or more vulnerable to errors (Manly, 2005).

One solution to this problem is to rotate the factors to a final solution. Rotation

maximizes the variable loadings on one of the extracted factors while minimizing the

loadings on all other factors. The term is called "rotation" because both historically and

conceptually, the axes are being rotated so that the clusters of items fall as closely as

possible to them (Thompson, 2004). By doing so, the interpretability of factors can be

improved. Rotation methods fall into two broad categories: orthogonal and oblique, and

they are each used to aid in more coherently loading the variables for explanatory

purposes. These descriptions are referring to the angle maintained between the X and Y axes of item values. Orthogonal rotations produce factors that are uncorrelated (i.e., maintain a 90 degree angle between axes); oblique methods allow the factors to correlate (i.e., allow the X and Y axes to assume a different angle than 90 degrees). Oblique rotation output is only slightly more complex than orthogonal rotation output, and should yield either identical or superior results to that of orthogonal rotations (Osborne, 2015).

It is up to the researcher to choose which method is most appropriate for the data at hand. In the current study, oblique rotation (*Oblimin*) was used to generate a final model, due to there being no reason to assume that factors relating to motivators or barriers of health behaviors respectively should not be correlated. Orthogonal rotation (using the *Varimax* procedure) was also explored, but this provided a similar solution while artificially preventing the factors from correlating.

Pattern Matrix

The pattern matrix is a convenient table put out by SPSS when conducting an Oblimin rotation. It contains the rotated factor loadings which represent both how the variables are weighted for each f actor but also the correlation between the variables and the factor. Due to them being correlations, the possible values range from -1 to +1. These are the factors that analysts are most interested in and will likely lead to investigating groups of items from the survey for thematic content.

Factor Retention

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The previous steps are followed by observing rotated factor loadings the pattern matrix. Following the evaluation of each of the previous steps, the content of the questions associated with each factor are inspected for common themes, and theoretical constructs proposed are considered. The final factor structures of each the Motivators and Barriers survey items will then be determined, based on their factor loadings, Eigenvalues, and scree plot, as well as on theoretical and logical fit. Items remaining in each factor will then be checked for reliability.

Internal Consistency

In order to maximize the reliability of factors found, an alpha statistic was used. The internal consistency of the final factors or subscales' items found for each of the survey domains of Motivators and Barriers was evaluated. Internal consistency is important to examine the degree to which the items defining the final factor are sufficient (Clark & Watson, 1995; Manly, 2005). Utilizing Cronbach's coefficient alpha, reliability was assessed with items for each factor found. A scale cannot be homogenous if all of its items are not inherently related, so some degree of correlation between factors is necessary.

According to Kline (1998), internal consistency of 0.90 and above is excellent, 0.70–0.90 is good, 0.60–0.70 is acceptable, 0.50–0.60 is poor and below 0.50 is unacceptable. However, when a scale is designed to measures several domains, the acceptable value of 0.50 for exploratory work has been deemed acceptable (Costa and McCrae 1992). In addition, when a scale aims to measure multiple domains, the acceptable value of 0.50 is deemed fit (Costa and McCrae 1992). Field, (2005) also

recognized that reliability is affected by number of items in the domain, and leaves

judgement up to the researcher in the earliest stages of scale development.

Composite Scores

In order to subsequently utilize any underlying factors discovered in the EFA in

statistical analyses, composite scores will be created from the corresponding items.

According to Hair (2013), there are several valid methods to do so. They include

multiplying factor scores computed by a statistical program by individual scores; totaling

all corresponding item scores; or by totaling the item means which correspond with each

factor. The latter, component scoring, will be the value of choice. The descriptive

summary of each domain Motivators and Barriers will be displayed.

Multiple Linear Regression (MLR)

Rationale

An MLR is utilized when considering whether there are multiple independent

variables (X) influencing an effect on a dependent (Y) variable. The purpose of a multiple

regression is to find an equation that best predicts the *Y* variable as a linear function of

the *X* variables. Multiple regression also allows for determination of the overall fit

(variance explained) of a model and the relative contribution of each of the predictors to

the total variance explained. The point is to explore whether independent variables

(factors of Motivators and Barriers) have any relationship or predictable power with

regard to BMI or WC. We do this by conducting an MLR; several will be conducted in

order to determine if each of the null hypotheses may be rejected.

Variables Defined

Independent Variables

Independent variables in the regression analyses will be the total factor scores for each of the Motivators and Barriers surveys respectively. A priori, those constructs that may contribute to Motivators of health-supporting behaviors were anticipated to be Food Preferences, Personal Health, Church and Spirituality, Knowledge, and Social Support. Those constructs that were anticipated to contribute to Barriers of health-supporting behaviors included Environment, Food Preferences, Availability, Family and Social Support, and Knowledge.

Dependent Variables

The study included two dependent variables. The first dependent variable was participants' BMI scores. These scores were calculated utilizing each participant's observed weight and stated height. The second dependent variable was participants' WC measurements, which were measured with a standard vinyl tape measure, taken at the circumference of the waist at the belly button level.

BMI will be considered one of the dependent, or outcome variables in multiple regression analyses. BMI is a person's weight in kilograms divided by the square of height in meters. While BMI does not measure body fat directly, research has shown that BMI score is moderately correlated with some direct measures of body fat obtained from skinfold thickness measurements and underwater weighing (Han et. al., 2012). In addition, BMI was found to be significantly correlated with various metabolic and disease outcomes, and are more direct measures of body fatness (Freedman, Horlick, & Berenson, 2013). As a general method, BMI is an inexpensive and easy-to-calculate strategy for

evaluating weight group differences, for example underweight, normal or healthy weight, overweight, and obesity.

WC will be considered the second dependent, or outcome variable in multiple regression analyses. WC describes the length around an individual's waist, taken at the height of the belly button. A high waist circumference is associated with an increased risk for obesity, type 2 diabetes, hypertension, and cardiovascular disease when individuals BMI ranged between 25 and 34.9 kg (Chan, 1994). Monitoring changes in waist circumference over time may be helpful, in addition to measuring BMI, since it can provide an estimate of increased abdominal fat even in the absence of a change in BMI. In addition, patients that had obesity with metabolic complications changes demonstrated that in waist circumference was useful as a predictor of changes in cardiovascular risk factors (Lemieux et. al., 1996).

Assumptions

There are eight total assumptions of multiple linear regression. They are important base from which information can be given on prediction accuracy, how well a model fits the data, and how much variation the dependent variable can be explained by independent variables (Stevens, 2002). The first two assumptions are regarding the research design. The first states that the data should include a continuous dependent variable. In this case they are BMI and WC, both measured on continuous scales of whole numbers and inches respectively. The second is that there are two or more independent variables, which can be either continuous or categorical. In this research they are of the latter variety due to the 4-point Likert Scale used on the MBHB questionnaire.

The other six assumptions follow. The first assumes a linear relationship between the predictor variables and the dependent variable(s). This means the average of the dependent variables is a line-type combination made up of regression coefficients (R-squared) and the independent variables, resulting in a scatterplot graphic in which linearity may be visually observed.

The second assumption is that there is homoscedasticity of residuals, which refers to dependent variables having the same error variance, or that the columns and rows of a correlation matrix are equal (Sapp, 2018). If there is homoscedasticity, the spread of the residuals will not increase or decrease as one views across the predicted values. If the points of the plot show no pattern and are relatively approximately constantly spread, the homoscedasticity assumption will have been met. However, residuals are not evenly distributed, but differ greatly in height (for example a 'funnel' shape), the assumption of homoscedasticity is interpreted to not be met.

The third assumption is that that there should be independence of residuals (errors). Because there is reason to believe that the underlying factors could be related due to all being supportive of health behaviors, it is not imperative to check for this assumption in this case (Manly, 2015). However, the Durbin-Watson statistic is produced in the output and the statistic will be reviewed. The statistic can range from 0 to 4, but a value of approximately 2 is required to indicate that there is no correlation between residuals.

The fourth assumption indicates that there should not be multicollinearity among independent variables, meaning they should not be perfectly correlated with other

independent variables. Multicollinearity occurs when there are two or more independent variables that are highly correlated with each other. This has the potential to create misunderstanding regarding which variable contributes to the variances explained. In order to identify multicollinearity, inspection of correlation coefficients and Tolerance/VIF values is necessary. With regard to correlation coefficients, none of the independent variables may have correlations greater than 0.7 or multicollinearity may be a problem with the presented data set. With regard to Tolerance and VIF (simply the reciprocal of the former), If the Tolerance value is less than 0.1 (or a VIF of greater than 10), a collinearity problem may be present (Weisberg, 2014).

The fifth directs that there be no significant outliers, or extreme scores that may skew results. These potential data points could be detrimental to the fit or generalization of the regression equation (Draper & Smith, 1998). Can be viewed to see if there are any data points 2 or more standard deviations away from the mean.

Finally, the sixth assumption posits that residuals (errors) should be close to normally distributed. This criteria is followed in order to make valid inferences from the results of the regression. We can evaluate this assumption by examining the normal Predicted Probability (P-P) plots.

Procedures

In order to determine whether the multiple regression models produced are a good fit for the data, several statistics will be evaluated if the initial assumptions are met. These include the multiple correlation coefficient, which is abbreviated *R*. It represents the Pearson correlation coefficient between the scores predicted by the regression model.

R is a measure of the strength of the linear association between these two variables and can give an indication as to the goodness of the model fit with a value that can range from 0 to 1, with higher values indicating a stronger linear association (Weisberg, 2014).

Also reviewed is the percentage of variance explained, known as R^2 (or the 'coefficient of determination'). It is a measure of the proportion of variance in the dependent variable that is explained by the independent variables (above the mean model). The R^2 model's variability will naturally be lower than the mean model's due to a reduction in variability caused by addition of the independent variables. It assesses overall model fit. Because R^2 is considered a positively-biased estimate of the proportion of variance of the dependent variable accounted for by the regression model (due to being based on sample itself rather than the population), many researchers still consider it to be a good starting point to understanding regression results (Draper & Smith, 1998). However, another statistic, the Adjusted R^2, which is also an estimate of effect size, compensates for that bias to some extent and will also be noted and reported for all analyses.

Significance testing

The significance of the overall models defined can then be assessed, which is determined by the p value in the produced ANOVA output. It will be determined whether the independent variables will lead to a model that is significantly better at predicting the dependent variable, as well as is a statistically better fit, than the mean model (Laerd, 2018). Finally, if there are significant results, there is a regression equation produced that may then be used to calculate predicted values of BMI and/or WC with a

given set or single value of each Motivators and Barriers factors defined. Four separate MLRs were run to analyze the relationships between overall Motivators and Barriers scores with BMI and/or WC respectively.

Hypotheses for MLRs

H_1: In order to test the first hypotheses of whether measurement of BMI could be significantly predicted by agreement with the combined total of final Motivators factors, a multiple regression analysis was conducted. Motivators' factor scores transformed into composite scores derived from the previously conducted EFA, which included five discovered Motivators factors of Personal Health, Beverage and Food Choices, Church and Spirituality, Social Support, and Physician Input will be the independent variables in this statistical procedure. BMI will be considered the outcome, or dependent variable.

H_2: In order to test the second hypotheses to reveal if WC could be significantly predicted by agreement with the combined total of final Motivators factors retained, an additional multiple regression analysis was run. Motivators' factor scores derived from the previously conducted EFA, which included five discovered Motivators factors of Personal Health, Beverage and Food Choices, Church and Spirituality, Social Support, and Physician Input will be the independent variables in this statistical procedure. BMI will be considered the outcome, or dependent variable.

H_3: In order to test the third hypotheses to reveal if BMI could be significantly predicted by agreement with the combined total of final Barriers factors retained, a multiple regression analyses was again conducted. Motivators' factor scores derived from the previously conducted EFA, which included four discovered Barriers factors of Food

Choice, Beverage Choice, Knowledge, and Family and Social Support will be the independent variables in this statistical procedure. BMI will be considered the outcome, or depend considered the outcome, or dependent variable.

H_4: In order to test the fourth hypotheses to reveal if WC could be significantly predicted by agreement with the combined total of final Barriers factors retained, a multiple regression analyses was again conducted. Motivators' factor scores derived from the previously conducted EFA, which included four discovered Barriers factors of Food Choice, Beverage Choice, Knowledge, and Family and Social Support will be the independent variables in this statistical procedure. WC will be considered the outcome, or dependent variable.

Descriptive Statistics II

Food, Beverage, Grocery Shopping, Fast Food Preferences & Current Physical Activity

In order to answer research question number four (R_4A-R_4D), data collected from the second half of the Demographic and Food Preferences survey will be recorded, organized, and counted. These five open-ended questions asked participants to identify their and their family's preferred foods/meals and beverages, the grocery stores and fast food establishments they frequent, and the types of physical activity engaged in regularly. The data will be summarized for each inquiry, including item totals and identification of the most frequently cited items. Figures or charts will be utilized if visual representation of information may be helpful. In addition, all cited answers will be available in the appendices of this study.

CHAPTER 4: Results

Overview

In order to answer the research questions posed and evaluate the hypotheses presented, statistical analyses were conducted. Descriptive statistics of the participant sample will be relayed first. Following will be evaluation of the devised MBHB scale, in which the multiple steps of Exploratory Factor Analysis (EFA) were conducted with each the Motivators and Barriers surveys. Next, procedures and outcomes of Multiple Regression Analyses (MRE) with the factors found and body composition measures will be shared. Descriptive statistics describing preferences of beverages, foods, grocery stores, and fast food establishments and regular physical activity cited will conclude the findings.

Descriptive Statistics I

Sample Demographics

The 126 women that contributed to this data analysis ranged in age from 18 to 77 years old (M=49.53, SD=14.79; see Table 2 for demographic summary.) The average length of time identified as a Milwaukee resident was 34.25 years. The average education level reported was half-way between having a high school diploma and having attained some college credits (M=3.51 SD=1.27). Participants income levels ranged from $9900 or less to greater than $50,000 (M=2.47, SD=1.57). The number of people making up a household ranged from 1 to 10 (M=2.78, SD=1.67).

Seventy percent of the sample marked that they had regular access to transportation. Approximately 89% of the women identified themselves as both the primary food purchaser and food preparer in their household. About sixty percent cited

participating in regular exercise, and 90% percent of participants indicated that they

currently desired to increase their health via diet and/or exercise.

Table 2
Sample Demographics - Summary

Variable	N	Mean	SD	Range	Mode
Age	124	49.53	14.79	18-77	55
Years Resident	119	34.25	18.47	.25-71	20
Education	126	3.51	1.27	1-8	3
Income	121	2.47	1.57	2.47	1
# Household	126	2.78	1.67	1-10	2
Variable	N	Mean	SD	% Yes	% No
Transportation	125	1.3	.46	70.4	29.6
Food Purchaser	126	1.1	.32	88.9	11.1
Food Preparer	126	1.1	.32	88.9	11.1
Reg Exercise	126	1.4	.49	59.5	40.5
Be Healthier	125	1.1	.30	90.4	9.6

Exploratory Factor Analyses

This study had multiple aims, but the over-arching purpose was to provide insight

into what motivators and barriers are perceived by African American women living in the

Milwaukee area influence their engagement (or lack thereof) in health-supporting

behaviors. The first goal was to evaluate the efficiency of a newly created scale,

Motivators and Barriers to Health Behaviors (MBHB), which intended to capture some of

the factors that have been empirically shown to increase or decrease participation in

nutritious eating and beverage consumption and/or physical activity. With regard to

Motivators, it was anticipated that underlying factors identified may be Food Preferences,

Personal Health, Church and Spirituality, Knowledge, and Family and Social Support.

Each of the factors was intended to be supported by five items on the first survey.

Regarding Barriers, again five factors were considered, including Environment, Food Preferences, Availability, Family and Social Support, and Knowledge. Again, each of those potential subscales were intended to be represented by five items on the corresponding survey. Exploratory Factor Analysis (EFA) was run on each the Motivators and the Barriers 25-item scales that make up the MBHB. The suitability of EFA was assessed on each survey domain prior to analysis. Procedures, rationale, and psychometrics are presented.

Motivators

Preliminary analysis

To investigate which items on the Motivators survey of the MBHB survey may support latent variables, all 25 items were originally entered in to the factor analysis. Using Principal Axis Factoring with Oblimin rotation, 5 components were identified on the factor matrix (please see Appendix E). Four items did not load on any component using a cutoff criterion of .4 (see Appendix F), and therefore the decision was made to remove them from the item pot one by one. In addition, because the sixth component loaded with just one correlation of ≥.4, and the number of factors to interpret is left to the researcher, the decision was made to re-run the analysis forcing extraction of 5 factors. The following analyses reflect these choices.

Final Analyses

To investigate the latent barriers on the Motivators domain of the MBHB survey, the remaining 21 items were again entered in to a factor analysis. Using Principal Axis Factoring with Oblimin rotation and a forced-5 extraction selection, five components

were identified on the factor matrix (see Table 5). It indicated that the five components found accounted for 51.6% of the total variance. All components had at least two items of load on each factor, and it was decided to retain all remaining 21 items and move forward with the statistical analyses.

Suitability of EFA

Correlation Coefficients

Prior to the extraction of factors, multiple tests should be used to gauge the appropriateness of EFA for the data at hand. The first step is to review the correlation matrix output. It is important that all variables have at least one correlation coefficient greater than .3. The correlation matrix produced by the final Motivators (this table was considered too extensive to include here) was reviewed to make sure that pairs of items did not correlate too little ($\leq$ .3) or too perfectly ($\geq$ .9). In summary, all test items appeared to correlate reasonably well with all others and no coefficients were excessively large. Any variables that did not correlate with any others would have no implications on the results, and therefore could have be eliminated, but in this case there were no such instances and so all items were included.

KMO and Bartlett's Tests

In order to test the assumption of sampling adequacy for the current survey, the Kaiser-Meyer-Olkin (KMO) statistic was evaluated. Some authors ascribe that this number is especially important to evaluate when cases to variable ration is less than 1:5 (Williams, Onsman, & Brown, 2010). Kaiser (1974) recommends a minimal KMO value of .5. Other authors have stated the acceptability categories as follows: values of .5 to .7 are

'mediocre', values between .7 and .8 are 'good', values that fall between .8 and .9 are 'great', and values that fall at .9 or above are considered 'exceptional' (Hutcheson and Sofroniou, 1999).

The KMO index is displayed in the EFA output of SPSS (see Table 3) and was found to be .855 for all initial Motivators items, which corresponds to the 'great' range. Therefore, it can be reasonably assumed that sample size was adequate for this factor analysis. Bartlett's Test of Sphericity (see Table 3), which tests the null hypothesis that the original correlation matrix is an identity matrix (all correlation coefficients equal zero), also indicated suitability of the data, being statistically significant ($p < .001$). This result also suggests that the data generated from the survey was likely factorizable (Kaiser, 1974; Williams, Onsman, & Brown, 2010).

Table 3
Sampling Adequacy and Sphericity – Motivators Items

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	1307.344
	Df	300
	Sig.	.000

In addition to evaluating the overall KMO value, it is an important next step in evaluating data for analysis to look at the diagonal elements of the statistic, found in the anti-image correlation matrices (Williams, Onsman, & Brown, 2010). These values also have a lowest-acceptable limit of .5 for all variables, and if any values are found lower than this, it would be appropriate to exclude the corresponding variable. For the current

data however, all but two values were ≥.77. The two lower values were still acceptable at .64 (Item MFP4) and .59 (Item MPH2).

Factor Rotation

A consideration when deciding how many factors to retain includes whether variables may relate to more than one factor (Williams, Onsman, & Brown, 2010). Oblique rotation produces factors that may be to some extent be correlated, which when human behaviors are involved or a priori assumptions are not met, may produce more accurate results (Costello & Osborne, 2005). This study is investigating influences of health behaviors and may raise questions of sampling adequacy, so oblique rotation in the form of the Oblimin procedure was considered appropriate. The ultimate goal of rotation is to allow for easier interpretation and increased parsimony of results (Kieffer, 1999). Loadings less than .4 were suppressed, as suggested by Stevens (2002) logic that those at that level or greater are considered substantial for interpretive purposes.

Factor Loadings

In the Total Variance Explained output obtained by SPSS for Motivators items, eigenvalues associated with each component are listed before and after extraction and after rotation (see Table 5). There are as many eigenvectors as variables, and the first column reflects this, with 21 factors representing the remaining retained items on the survey. All factors with an eigenvalue of ≥1 have been extracted and are displayed in the second column. Five components (factors) were found to explain 51.6 % of the total variance. The first component represents 32.8% of the total variance, followed by the second at 8.1%. The third component accounted for an additional 4.6 % of the variance,

the fourth 3.2%, and the last component explained approximately 2.9% of the total

variance.

Table 4
Final Analysis: Motivators Factor Loadings

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.341	34.959	34.959	6.887	32.794	32.794	4.931
2	2.155	10.263	45.222	1.710	8.142	40.937	3.782
3	1.474	7.021	52.243	.967	4.603	45.540	3.830
4	1.212	5.770	58.013	.674	3.208	48.747	2.803
5	1.130	5.379	63.392	.604	2.877	51.624	.871
6	.912	4.343	67.735				
7	.809	3.851	71.586				
8	.724	3.447	75.033				
9	.655	3.121	78.154				
10	.623	2.967	81.121				
11	.593	2.825	83.946				
12	.514	2.449	86.395				
13	.463	2.203	88.599				
14	.429	2.044	90.643				
15	.405	1.929	92.572				
16	.399	1.902	94.474				
17	.289	1.376	95.850				
18	.265	1.263	97.112				
19	.223	1.064	98.176				
20	.201	.957	99.133				
21	.182	.867	100.000				
Extraction Method: Principal Axis Factoring.							
a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.							

Scree Plot

Another consideration in deciding how many factors to extract is by viewing the

Scree plot output. The scree plot is a graph of the eigenvalues, useful for determining

how many factors to retain. The point that is pertinent is where the curve starts to flatten.

In the case of this analysis of Motivators items, it shows that the curve begins to flatten

between factors 5 and 6 (See Figure 1). Factors 6 onwards have an eigenvalue of less than

1, so this is support for retaining five factors.

Figure 1
Scree Plot – Motivators Factors
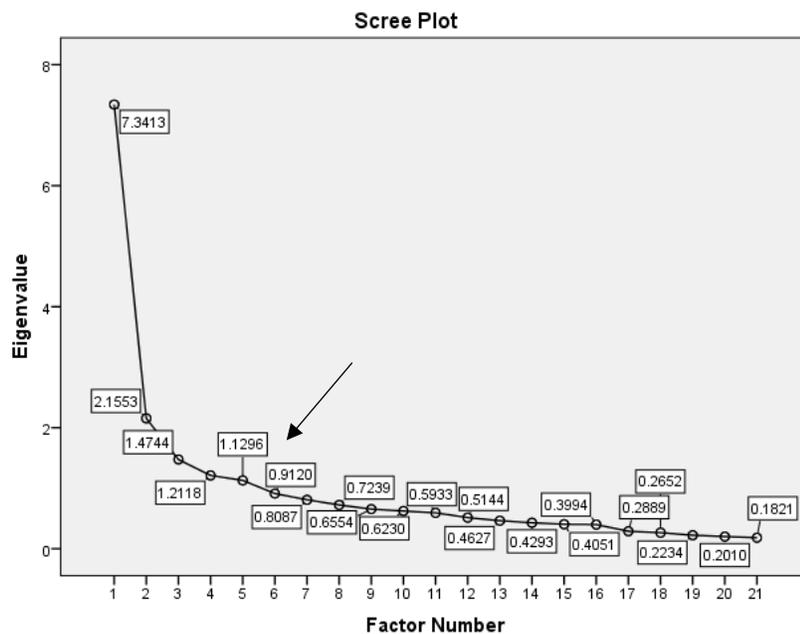
Communalities

The communalities output in SPSS indicates the proportion of each variable's

variance that is accounted for by the components in the analysis. It explains the variance

of each variable if all items were left in the solution. Small values may be indications that

items may not fit well with the factor solution and dropping the corresponding item(s)

from the analysis is one solution. Almost all the extraction communalities for the final

Motivators items solution are acceptable at ≤ 4.0. Three of the items may not fit as well as

the rest, having one value less than that cutoff (MFP4, MCS4, and MFSS2), but the option

of eliminating the items was not taken at this step.

Table 5

Communalities – Motivators Items

Communalities		
	Initial	Extraction
MPH1	.592	.592
MPH3	.538	.555
MPH4	.685	.700
MKN1	.567	.551
MCS5	.578	.535
MCS1	.528	.502
MKN4	.589	.715
MFP5	.477	.479
MKN3	.537	.480
MFP2	.509	.475
MFP4	.411	.376
MKN2	.672	.635
MPH5	.653	.623
MCS4	.390	.462
MCS2	.511	.536
MCS3	.481	.413
MFSS3	.592	.621
MPH2	.409	.442
MFSS1	.396	.437
MFSS2	.430	.487
MFSS5	.468	.480
Extraction Method: Principal Axis Factoring.		

Pattern Matrix

When an oblique rotation is conducted utilizing SPSS, two matrices are produced.

One is a pattern matrix, which contains factor loadings and can be compared to the factor

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matrix in orthogonal rotation (Graham et. Al., 2003), and is most often interpreted by

researchers due to its simplistic nature (Thompson, 2004). It is important to note that

rotation of a factor structure doesn't change the overall variance accounted for after

extraction; it simply redistributes it among the factors. In the pattern matrix produced for

the Motivators data, five factors emerged, four of which parallel the a priori rationale for

discovering latent variables (see Table 6 for rotated and organized factor loadings).

Table 6

Pattern Matrix – Final Motivators Factors

Pattern Matrix[a]					
	Factor				
	1	2	3	4	5
MPH4	.702				
MPH3	.650				
MPH1	.623				
MPH5	.544				
MKN1	.467				
MKN4		.816			
MFP5		.628			
MKN3		.567			
MFP2		.497			
MFP4		.459			
MKN2		.437			
MCS4			.675		
MCS5			.504		
MCS2			.453		
MCS1			.448		
MCS3			.429		
MFSS1				.603	
MFSS2				.544	
MFSS5				.406	
MFSS3					.671
MPH2					.619

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| Extraction Method: Principal Axis Factoring. |
| Rotation Method: Oblimin with Kaiser Normalization. |
| a. Rotation converged in 19 iterations. |

Factor Retention and Rationale

Five components appeared to suit these statistical results as demonstrated by inspection of the factor loadings and scree plot, as well as being relatively consistent with a priori theoretical rationale. In inspecting the associated items for each factor, it appeared that the first group of items described choice-making with regard to control over one's own physical health considerations. It contains four of the five original intended questions that were intended to support this construct. The fifth item comes from the a priori Knowledge questions and reflects one's personal knowledge of what healthy eating may look like for that individual. Because of that fact, the first Motivators factor was labeled *'Personal Health'*.

Half, or three of the six items that loaded on the second factor were derived from the hypothesized questions designed to capture the construct of Food Preferences, and three reflected the intended construct of Knowledge that one may have about making these consumption choices. In inspecting the individual items, it was concluded that these six items satisfactorily represented beverage and food choice considerations. It was consequently labeled "*Beverage & Food Choices*".

The third factor, composed of 5 items, were all reflective of those intended to measure the construct of Church and Spirituality. Accordingly, *'Church & Spirituality'* was the given factor name. The fourth factor was composed of 3 items that all appeared to

support an underlying construct of support accounted for by family and friends. All three items originated from the Family and Social Support a priori intended representative questions. However, the items themselves were not inclusive of any suggestions of family involvement for this factor. Accordingly, the fourth Motivators factor was labeled "*Social Support*", without mention of familial influence.

The fifth and final factor was supported by just two items, one from the original questions intended to measure Family & Social Support, and the other from the original questions intended to measure Personal Health. In analyzing the content of the items, it was clear that both items contained reference to advice from a medical doctor, and hence was labeled "*Physician Input*". This was not one of the intended five factors. This number is often considered to be below the cutoff of three items per construct when designing a survey. However, several researchers point out that including two items may be acceptable in supporting a factor, particularly in early stages of scale development (Manly, 2014) and when there are multiple factors extracted (Field, 2005). Because this study reflects the first attempt at evaluating the MBHB Motivators questionnaire, and there were only two items available on the survey that reflected a doctor's input, it was decided to keep this factor in, and it was labeled *Physician Input.* The final representative Motivators items were therefore grouped into corresponding factors and retained as follows:

Factor 1: Personal Health

MPH4   *I can avoid health problems by eating healthfully and getting regular physical activity.*

MPH3   *Eating healthy foods and snacks helps me feel good.*

MPH1   *Eating healthy foods and snacks helps keep my body in shape.*

MPH5   *I do not want to have drinks with a lot of sugar in them because it's bad for*

       my health.

MKN1   *Someone has shown me what healthy eating looks like.*

Factor 2: Beverage and Food Choices

MKN4   *I read nutrition labels on drink containers to see how many calories are in*

       it before I drink it.

MKN3   *I regularly read nutrition labels on foods that I eat.*

MFP2   *I prefer whole wheat or grain bread over white bread.*

MFP5   *I avoid deep fried foods, high fat dairy, meats, and/or saturated/trans fats.*

MFP4   *I do not drink soda.*

MKN2   *When I choose what to drink or eat, I think about whether it is healthy.*

Factor 3: Church and Spirituality

MCS4   *I belong to a church and attend services regularly.*

MCS5   *I believe God wants me to take care of my body by making healthy*

       choices.

MCS2   *My friends at church would be a great support for a healthier lifestyle.*

MCS1   *I would look to God for support in making healthier lifestyle choices.*

MCS3   *I would join a group for healthier living (eating, exercise) if it was offered at*

       my church.

Factor 4: Social Support

MFSS1   *I have an exercise partner that I walk or work out with.*

MFSS2   *My friends drink mostly water and other healthy drinks.*

MFSS5   *My coworkers are or would be supportive in my leading a healthy lifestyle*.

Factor 5: Physician Input

MFSS3   *My doctor encourages me to drink water and eat a low-fat diet*.

MPH2   *My doctor has told me I have to lose weight to better my health.*

Internal consistency

In order to gauge the reliability of the five Motivators factors identified, a Cronbach's Alpha statistic was found for each. As a reminder for gauging results, recall internal consistency of 0.90 and above is excellent, 0.70–0.90 is good, 0.60–0.70 is acceptable, 0.50–0.60 is poor and below 0.50 is unacceptable (Kline, 1998). However, when a scale is designed to measures several domains, the acceptable value of 0.50 for exploratory work has been deemed acceptable (Costa and McCrae 1992). In addition, when a scale aims to measure multiple domains, the acceptable value of 0.50 is deemed fit (Costa and McCrae 1992). More recently, Field, (2005) also recognized that reliability is affected by number of items in the domain, and suggested a cut-off of .70 for CFA (Confirmatory Factor Analysis); however, mentioning values of ≥ 6.0 for earlier stages of scale construction.

The first Motivators factor, 'Personal Health', consisted of five statements. The scale had a high level of reliability, as determined by an alpha of approximately .86 (Motivators subscales' alpha levels are listed in table 12). The output indicated that no other solution

would result in a higher alpha level (see Item-total statistics for all Motivators factors in Appendix G).

All items found to support the second factor, *Beverage and Food Preferences*, were originally entered into the reliability analysis for that subscale. Results of the item-total statistic table for this analysis however, indicated that if the fourth item (BFP4; '*I think tap water tastes terrible/not good OR I am concerned about the water quality so do not drink it*') were deleted, the reliability would increase. In addition, that particular item loaded lower than others on the Communalities table (.309 and 0.230 before and after extraction respectively). For those reasons, as well as desiring to decrease the total number of items that make up the final scale, the item was removed. Subsequently, the three remaining items were re-analyzed for internal consistency. These results showed an alpha of about .79, solidly acceptable for scale construction.

The third subscale, made up of three of the original representative items that hung together from the Motivators survey, was *Church Membership*. The reliability analysis reflected an alpha level for the group at (.78). Results showed that deleting any items would not increase the reliability of the construct's scale.

Table 7

Reliability via Cronbach's Alpha – Motivators Factors

Factor	N	Subscale Label	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	# of Items
1	117	Personal Health	.858	.860	5
2	117	Bev/Food Prefs	.786	.791	6
3	112	Church Affiliation	.783	.787	5
4	117	Soc Support	.611	.617	3
5	121	Physician Input	.554	.559	2

The fourth factor comprised of 3 items, and appeared to parallel the a priori theme anticipated, ultimately labeled *Social Support*, and produced a lower but still acceptable exploratory alpha ($\alpha = .61$).

The final factor was comprised of just two items, both reflecting advice having been given from a physician. This number is often considered to be below the cutoff of three items per construct when designing a survey. However as discussed, several researchers point out that including two items may be acceptable in supporting a factor, particularly in early stages of scale development (Manly, 2014) and when there are multiple factors extracted (Field, 2005). Because this study reflects the first attempt at evaluating the MBHB Motivators questionnaire, and there were only two items available on the survey that reflected a doctor's input, it was decided to keep this factor in, and it was labeled *Physician Input* ($\alpha = .55$).

Motivators Factor Scores

In order to subsequently utilize the factors defined in multiple regression analyses, composite scores were created based on the final results of the EFA. According to Hair (2013), there are several valid methods to do so. This includes multiplying factor scores computed by a statistical program by individual scores; totaling all corresponding item scores; or by totaling the item means which correspond with each factor. The latter route, called component scoring, was chosen, and the scores transformed into individual variables. The mean and standard deviations for each of the Motivators factors were as follows: Personal Health (M = 19.35, SD 3.63); Beverage and food Choices (M = 16.01, SD = 2.67); Church and Spirituality (M = 15.43, SD = 2.81); Social Support (M = 8.14, SD = 1.87),

and Physician Input (M = 5.73, SD = 1.51). The descriptive summary of the Motivators factors can be found in Table 8.

Table 8
Motivators Factors – Descriptive Summary

Descriptives – Motivators Factors			
	Mean	Std. Deviation	N
M_PersHealth	19.3478	3.63107	126
M_BevFoodChoices	16.0088	2.67281	126
M_ChurchSpirituality	15.4312	2.81245	126
M_FamSocSupport	8.1404	1.87137	126
M_PhysicianInput	5.7265	1.50532	126

Barriers

Initial Analysis

To investigate which items on the Barriers survey of the MBHB may support latent variables, all 25 items were originally entered in to the factor analysis. Using Principal Axis Factoring with Oblimin rotation, five components were produced on the factor matrix. It indicated that together the five potential factors accounted for 50.4% of the total variance. Because one factor had been supported by just two items whose loadings did not reach the .4 cutoff, the decision was made to eliminate those items one at a time. Doing so ultimately resulted in a 4-component solution as described in the next procedures. This step did not support the a-priori propositions that there were 5 latent factors among the barriers items.

Final Analyses

To investigate any latent factors in the Barriers domain of the MBHB survey, the

remaining 16 items were again entered in to a factor analysis. Using Principal Axis

Factoring with Oblimin rotation and a forced-4 extraction selection, four components

were identified on the factor matrix (see Table 11). It indicated that the four components

found accounted for 50.4% of the total variance. All components had at least two items of

load on each factor, and it was decided to retain all remaining 16 items and move forward

with the statistical analyses.

Suitability of EFA

Correlation Coefficients

The correlation matrix produced by the EFA indicates all pairs of items (This data

was considered too extensive to include here). Patterns of relationships were reviewed to

make sure items did not correlate too little ($\leq$ .3) or too perfectly ($\geq$ .9). In summary, all

test items appeared to correlate reasonably well with all others and no coefficients were

excessively large. Any variables that did not correlate with any others would have no

implications on the results, and therefore could have be eliminated, but in this case there

were no such instances and so all items were included.

KMO and Bartlett's Tests

First, the assumptions of the test were evaluated. In order to again test the

assumption of sampling adequacy, the overall Kaiser-Meyer-Olkin (KMO) statistic was

evaluated (see Table 9) and was found to be .872 for all Barriers items in the survey,

which again falls into the 'great' range of .8 to .9 (Hutcheson and Sofroniou, 1999).

Therefore, this test supports that the sample size was adequate for this factor analysis.

Table 9
Sampling Adequacy and Sphericity – Barriers Items

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.872
Bartlett's Test of Sphericity	Approx. Chi-Square	1408.390
	Df	300
	Sig.	.000

In order to further investigate the appropriateness of the Barriers survey for analysis, individual values of the KMO via the diagonal elements of the anti-image correlation matrices were inspected. These values were congruent with the overall KMO, all but one value was ≥.73. The single lower values was still acceptable at .61 (Item BFP4). Bartlett's tests of sphericity was again statistically significant ($p < .001$), suggesting that the data generated from the survey was likely factorizable.

In addition to evaluating the overall KMO value, it is an important next step in evaluating data for analysis to look at the diagonal elements of the statistic, found in the anti-image correlation matrices (Williams, Onsman, & Brown, 2010). These values also have a lowest-acceptable limit of .5 for all variables, and if any values are found lower than this, it would be appropriate to exclude the corresponding variable. For the current data however, all but two values were ≥.77. The two values lower were still acceptable at .64 (Item MFP4) and .59 (Item MPH2).

Factor Rotation

The point of rotating factors is to simplify a group of items' factor structure, or how the items line up to form groups. Making the loadings more easily readable, they are listed in order of strength of correlation under each component. Again, Oblimin rotation

was chosen due to assuming there may be some correlation among factors due to their all being related to participation in health behaviors.

Factor Loadings

One purpose of EFA is to explain as much of the variance in variables as possible using as few components as possible. In this case, In the Total Variance Explained output obtained by SPSS for Barriers items, eigenvalues associated with each component are listed before and after extraction and after rotation (see Table 10). There are as many eigenvectors as variables, and the first column reflects this, with 21 factors representing the remaining retained items on the survey. All factors with an eigenvalue of ≥1 have been extracted and are displayed in the second column. Four components (factors) were found to explain 52.1 % of the total variance. The first component represents 37% of the total variance, followed by the second at 6.9%. The third component accounted for an additional 4.5%, and the last component explained approximately 3.7% of the total variance.

Table 10
Final Analysis: Barriers Factor Loadings

Total Variance Explained – Final Barriers Items						
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.381	39.879	39.879	5.924	37.023	37.023	5.097
2	1.547	9.671	49.550	1.099	6.866	43.889	2.665
3	1.162	7.260	56.810	.720	4.499	48.388	.908
4	1.025	6.404	63.214	.594	3.715	52.103	4.075
5	.926	5.789	69.003				
6	.881	5.508	74.511				

7	.654	4.088	78.599				
8	.562	3.512	82.111				
9	.532	3.323	85.434				
10	.434	2.714	88.148				
11	.410	2.562	90.710				
12	.394	2.462	93.173				
13	.351	2.193	95.366				
14	.297	1.858	97.224				
15	.240	1.502	98.726				
16	.204	1.274	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Scree Plot

The scree plot graphs eigenvalues, which are helpful in determining factor

retention by reviewing the point where the curve starts to flatten out. Analysis of

Figure 2
Scree Plot – Barriers Components

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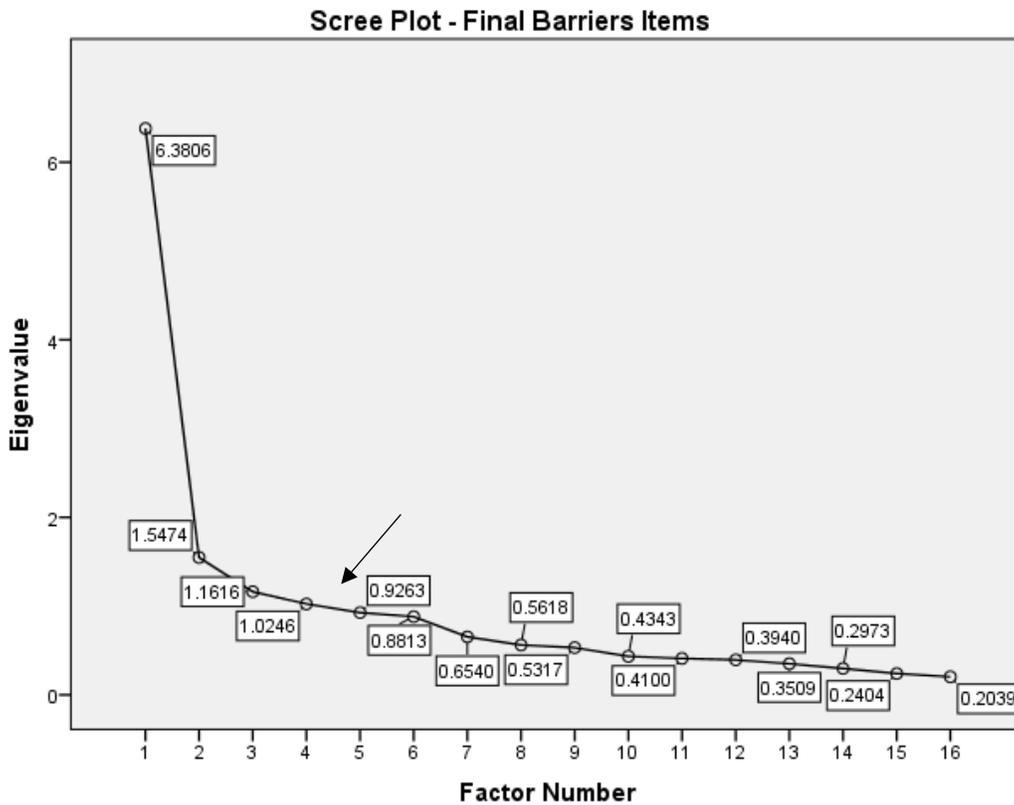
Barriers items demonstrates that the curve does this between factors 4 and 5 (see Figure

2). Factors 5 onwards have an eigenvalue of less than 1, and so this fact provides

additional support for retaining four factors.

Communalities

The communalities values indicateo the portion of each item's variance that is

accounted for by the components in the analysis (see Table 11). It explains the variance of

each variable if all items were left in the solution. Small values may be indications that

items may not fit well with the factor solution and dropping the corresponding item(s)

from the analysis is one solution. All of the extraction communalities for the final

Motivators items solution were found to be acceptable at ≤ 4.0, and therefore no items

were eliminated

Table 11
Communalities – Barriers Factors

Communalities – Barriers		
	Initial	Extraction
BEN5	.583	.507
BFP2	.548	.559
BFP3	.517	.582
BAV2	.656	.624
BEN1	.439	.552
BFP1	.496	.656
BFP4	.403	.419
BAV1	.420	.436
BAV5	.578	.612
BKN2	.522	.515
BKN3	.538	.545
BKN4	.532	.553
BKN5	.538	.667
BFSS4	.591	.605
BFSS2	.538	.479

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BFSS5	.486	.428
Extraction Method: Principal Axis Factoring.		

Pattern Matrix

In reviewing the pattern matrix output of the Oblimin rotation of the Barriers data, four factors emerged (see Table 12). They were partially representative of the a priori suggested loadings. Investigating the items themselves clarified themes.

Table 12
Pattern Matrix – Barriers Factors

Pattern Matrix[a]				
	Factor			
	1	2	3	4
BFP2	.669			
BFP3	.655			
BAV2	.503			
BEN5	.460			
BFP1		.776		
BEN1		.687		
BAV1		.582		
BFP4		.541		
BKN5			.815	
BAV5			.682	
BKN4			.628	
BKN2			.582	
BKN3			.492	
BFSS4				.595
BFSS5				.520
BFSS2				.470
Extraction Method: Principal Axis Factoring.				
Rotation Method: Oblimin with Kaiser Normalization.[a]				
a. Rotation converged in 21 iterations.				

Factor Retention and Rationale

Four components appeared to suit these statistical results as demonstrated by inspection of the factor loadings, scree plot, and pattern matrix, as well as being relatively consistent with a priori theoretical rationale. In inspecting the associated items of Factor 1, it was noted that the factor contains two of the five original intended questions that were intended to support the a prior construct of Food Preferences. The other two items originated one each from what were intended to be the a priori Knowledge and Environment questions. Although it had combined theoretical items, it appeared that the first group of four items described choice-making with regard to food preferences and decisions. Because of that fact, the first Barriers factor was labeled '*Food Choices*'.

Four items loaded on the second factor. Two items reflected what had been intended to be Food Preferences, while the other two were each derived from a different original hypothesized latent construct, both Environment and Availability. In inspecting all of the items, they seem to capture individual's choices with regard to choosing beverages. For this reason, the second factor was labeled "Beverage Choices".

The third factor contained five items, four of which originated from the a priori category of Knowledge. The fifth item came from the questions intending to measure the Availability.

The fourth factor was composed of 3 items that all appeared to support an underlying construct of support accounted for by family and friends. All three items originated from the Barriers Family and Social Support a priori representative questions. Accordingly, the fourth Motivators factor was labeled "*Family and Social Support*". The final representative

Motivators items were therefore grouped into corresponding thematic factors and retained as follows:

Factor 1: Food Choices

BFP2   *I usually eat red meat at least once per day or about 5 days per week.*

BFP 3   *I eat some type of junk food every day.*

BAV2   *I often buy food at corner stores/small neighborhood stores.*

BEN5   *I often buy food or drinks from gas stations.*

Factor 2: Beverage Choices

BFP1   *Drinking sugary drinks (soda, fruit juice, Kool-Aid) is a habit for me.*

BEN1   *We usually have regular soda (not diet) in the refrigerator at home/where I stay.*

BAV1   *There are not many healthy drink choices where I purchase them.*

*BFP4   *I think tap water tastes terrible/not good OR I am concerned about the water quality so do not drink it.*

Factor 3: Knowledge

BKN5   *My and/or my family's favorite foods cannot be made in a healthy way.*

BAV5   *I buy less healthy food because you get more for your money.*

BKN4   *I'm not sure how to make a healthy meal for myself and my family.*

BKN2   *I do not know how to read nutrition labels.*

BKN3   *I do not know how to make a healthy meal that tastes great.*

Factor 4: Family and Social Support (Family and Social Support)

BFSS4   *When I go out to eat with friends they often choose unhealthy foods.*

BFSS5   *I do not have a friend/family member would be interested in being a workout*

buddy.

BFFS2 *Comments from family and friends would make it difficult to stick to a healthy*

lifestyle.

*Item ultimately removed to increase internal reliability of subscale

Reliability Assessment

In order to gauge the internal consistency of the four factors identified, a

Cronbach's Alpha statistic was found for each ((alpha levels for all Barriers factors can be

found in Table 13). The first factor, '*Food Choice'*, consisted of four items and had a high

level of reliability as determined by an alpha of approximately .83). The output indicated

that no other solution would result in a higher alpha level (item total statistics for all

Barriers factors can be found in Appendix I).

Table 13
Reliability Statistics – Barriers Factors

Factor	N	Factor	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	# of Items
1	114	Food Choices	.828	.830	4
2	115	Beverage Choices	.750	.742	3
3	114	*Knowledge	.839	.839	5
4	113	Family & Social Support	.678	.678	3

All four items found to support the second factor, '*Beverage Choices'*, were

originally entered into the second reliability analysis. Results of the Item Total Statistic

table however, indicated that if the fourth item (BFP4; '*I think tap water tastes terrible/not*

good OR I am concerned about the water quality so do not drink it') were to be deleted

from the scale, the reliability would increase. For that reason, as well as desiring to

decrease the total number of items that make up the scale, it was removed. Subsequently,

the three remaining items were re-analyzed for internal consistency. These results

showed an alpha of .75 for the second factor, again acceptable for scale construction.

The third Barrier factor found, '*Knowledge*', consisted of five items, and all were

entered into the Cronbach's alpha analyses. Results showed a relatively high level of

internal reliability (α = .84). The item analysis indicated that removal of any one item

would not increase reliability of this subscale.

The fourth and final Barriers factor, '*Family & Social Support*', was structured by

three items and analyzed via the Cronbach alpha statistic. Alpha was found to be

approximately .68 for this factor, more than acceptable, especially in the early stages of

scale construction (Field, 2005, Kline, 1998).

Barriers Factor Scores

In order to subsequently utilize the factors defined in multiple regression

analyses, composite scores were created. Consistent with the process taken with

Motivators factors, component scores were again chosen. A descriptive summary of the

Barriers factors can be found in Table 14.

Table 14
Barriers Factors – Descriptive Summary

Descriptive Statistics – Barriers Factors			
	Mean	Std. Deviation	N
B_FoodChoice	9.3947	2.77883	126
B_BevChoice	7.7009	1.65537	126
B_Knowledge	10.4035	3.47038	126
B_FamSocSupp	8.5268	1.74338	126

The mean and standard deviations for each of the Motivators factors were as follows:

Food Choices (M = 9.39, SD 2.78); Beverage Choices (M = 7.7, SD = 1.66); Knowledge (M =

15.43, SD = 2.81); and Social Support (M = 8.14, SD = 1.87).

Multiple Regression Analyses

In order to explore relationships between underlying constructs of the motivators

and barriers to health behavior and body composition, multiple regression analyses were

conducted. The first two hypotheses are exploring Motivators factors and their ability to

predict BMI and/or WC, while the second two investigate Barriers factors and their ability

to predict BMI and/or WC.

Hypothesis 1

(H1) There will be statistically significant prediction of BMI by Motivators factor scores

generated by the final retained factors of the Motivators domain survey of the MBHB scale.

The first hypotheses examined whether BMI could be predicted by the overall

and/or individual Motivators factor variables found in the previously conducted EFA.

The first statistical analysis utilized the transformed scores of all Motivators factors

(component scores) as predictor variables, and BMI was considered the outcome variable.

A multiple regression was carried out to investigate whether the Motivators factors of

Personal Health, Beverage and Food Choices, Church and Spirituality, Social Support, and

Physician Input could significantly predict participants BMI.

Assumptions

There was linearity as assessed by partial regression plots and a plot of studentized

residuals against the predicted values. There was independence of residuals, as assessed

by a Durbin-Watson statistic of 1.919 (see Table 15). There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance was above 1. The assumption of normality was met, as assessed by a Q-Q Plot.

Table 15
All Motivators predicting BMI - Model Summary

Model Summary[b] – All 5 Motivators Factors					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.474[a]	.225	.193	7.52594	1.919
a. Predictors: (Constant), M_PhysicianInput, M_ChurchSpirituality, M_SocSupport, M_BevFoodChoices, M_PersHealth					
b. Dependent Variable: BMI					

Results

The results indicated that the model explained 22.5% of the total variance (R^2 = .225). Results also demonstrated that the model was a significant predictor of BMI, $F (5,120) = .697$, $p < .001$ (see Table 16). Social Support and Physician Input were both significant contributors to the model ($p < .005$ and $p < .001$ respectively).

Table 16
ANOVA: BMI by All Motivators Factors

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1973.026	5	394.605	6.967	.000[b]
	Residual	6796.775	120	56.640		
	Total	8769.800	125			
a. Dependent Variable: BMI						

b. Predictors: (Constant), M_PhysicianInput, M_ChurchSpirituality, M_SocSupport, M_BevFoodChoices, M_PersHealth

The resulting final equation that represents this finding is: BMI = 24.69 - (0.04 x PersHealth) - (0.04 x BevFoodChoices) - (0.44 x ChurchSpirituality) - (1.5 x SocSupport) + (2.39 x PhysicianInput). Coefficients of the Motivators model are listed in Table 17. This means that a 1-point increase in score on the Motivators Personal Health and Beverage & Food Choices factors are associated with a decrease in BMI of 0.04; a 1-point increase in score on the Church & Spirituality factor is associated with an decrease in BMI of .44; that an increase in 1-point on the Social Support scale indicates a decrease in BMI of 1.5; and finally, an increase in one point on the Physician Input factor score is associated with an increase in BMI of 2.39.

Table 17
Coefficients – Motivators & BMI

Model		Unstandardized Coefficients		Standardized Coefficients		T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta				Lower Bound	Upper Bound
1	(Constant)	24.685	4.792			5.151	.000	15.197	34.172
	M_PersHealth	-.037	.261	-.016		-.142	.888	-.480	.554
	M_BevFoodChoices	-.043	.297	-.014		-.143	.886	-.546	.631
	M_ChurchSpirituality	-.444	.312	-.149		-1.423	.157	-.174	1.061
	M_SocSupport	-1.499	.434	-.335		-3.452	.001	-2.359	-.639
	M_PhysicianInput	2.386	.514	.429		4.640	.000	1.368	3.404

a. Dependent Variable: BMI

Hypotheses 2

(H2) There will be statistically significant prediction of WC by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.

The second hypotheses examined whether WC could be predicted by the overall and/or individual Motivators factor variables found in the previously conducted EFA. The first statistical analysis utilized the transformed scores of all Motivators factors (component scores) as predictor variables, and WC was considered the outcome variable. A multiple regression was carried out to investigate whether the Motivators factors of Personal Health, Beverage and Food Choices, Church and Spirituality, Social Support, and Physician Input could significantly predict participants WC.

Assumptions

There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.06 (see Table 18). There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance was above 1. The assumption of normality was met, as assessed by a Q-Q Plot.

Table 18
All Motivators predicting WC - Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.366[a]	.154	.098	5.8330	2.061
a. Predictors: (Constant), M_PhysicianInput, M_ChurchSpirituality, M_FamSocSupport, M_BevFoodChoices, M_PersHealth					
b. Dependent Variable: WC					

Results

The results indicated that the model explained about 15% of the total variance, and that the model was a significant predictor of WC, $F(5,120) = 3.707$, $p < .005$. Social Support and Physician Input were both significant contributors to the model ($p < .05$ and $p < .001$ respectively).

Table 19
ANOVA: WC by All Motivators Factors

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	630.653	5	126.131	3.707	.004[b]
	Residual	4082.857	120	34.024		
	Total	4713.510	125			
a. Dependent Variable: WC						
b. Predictors: (Constant), M_PhysicianInput, M_ChurchSpirituality, M_FamSocSupport, M_BevFoodChoices, M_PersHealth						

Coefficients and standard errors of the model Motivators by WC by are listed in Table 22. The resulting final equation that represents this finding is: WC = 38.22 - (0.06 x PersHealth) - (0.05 x BevFoodChoices) - (0.17 x ChurchSpirituality) - (0.88 x SocSupport) + (1.43 x PhysicianInput). This means that a 1-point increase in score on the Motivators Personal Health is associated with a decrease in WC of Beverage & Food Choices factors are associated with a decrease in WC of 0.05; a 1-point increase in score on the Church & Spirituality factor is associated with an decrease in WC of 0.17; that an increase in 1-point on the Social Support scale indicates a decrease in WC of 0.88; and finally, an increase in one point on the Physician Input factor score is associated with an increase in WC of 1.43.

Table 20
Coefficients – Motivators and WC

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
1	(Constant)	38.221	3.714		10.291	.000	30.868	45.574
	M_PersHealth	-.064	.202	.038	.315	.754	-.464	.337
	M_BevFoodChoices	-.053	.230	.023	.230	.819	-.403	.509
	M_ChurchSpirituality	-.170	.242	.078	.704	.483	-.308	.649
	M_SocSupport	-.875	.337	-.267	-2.599	.011	-1.541	-.208
	M_PhysicianInput	1.432	.399	.351	3.593	.000	.643	2.222
a. Dependent Variable: WC								

Barriers

The 3rd and 4th hypotheses evaluate whether BMI or WC can be predicted by factor

scores of the Barriers domain subscale of the MBHB scale.

Hypothesis 3

 (H03) *There will be a statistically significant prediction of BMI by overall Barriers factor*

scores generated by the final retained factors of the Barriers domain survey of the MBHB

scale.

The third hypothesis examined whether BMI could be significantly predicted by

the four Barriers Factor Scores found in the previous exploratory analyses conducted with

the final Barriers survey items of the MBHB scale. The final four Barriers factors were

utilized as predictor variables, and BMI was considered the outcome variable.

A multiple regression was carried out to investigate whether the Barriers factors

of Food Choices, Beverage Choices, Church and Spirituality, and Family and Social

Support could significantly predict participants BMI.

Assumptions

There was linearity as assessed by partial regression plots and a plot of studentized

residuals against the predicted values. There was independence of residuals, as assessed

by a Durbin-Watson statistic of 1.77 (see Table 21). There was homoscedasticity, as

assessed by visual inspection of a plot of studentized residuals versus unstandardized

predicted values. There was no evidence of multicollinearity, as assessed by tolerance

values greater than 0.1. There were no studentized deleted residuals greater than ±3

standard deviations, no leverage values greater than 0.2, and values for Cook's distance

was above 1. The assumption of normality was met, as assessed by a Q-Q Plot.

Table 21
All Barriers Factors predicting BMI - Model Summary and ANOVA

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.157[a]	.025	-.007	8.40714	1.769
a. Predictors: (Constant), B_FamSocSupp, B_FoodChoice, B_Beverage Choices, B_Knowledge					
b. Dependent Variable: BMI					

Results

The results indicated that the model explained just 2.5% of the total variance

found, and that the model was not a significant predictor of BMI, $F_{(5,120)} = .769$, $p = .547$

(see Table 22). Therefore, within the context of the current study, sufficient evidence has

not been found to reject the null hypothesis.

Table 22

All Barriers Factors Predicting BMI – Model Summary

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	217.525	4	54.381	.769	.547[b]
	Residual	8552.276	121	70.680		
	Total	8769.800	125			
a. Dependent Variable: BMI						
b. Predictors: (Constant), B_FamSocSupp, B_FoodChoice, B_Beverage Choices, B_Knowledge						

The BMI by Barriers factors coefficients table containing coefficients and standard errors

can be found below in Table 23.

Table 23

Coefficients & Standard errors – BMI by Barriers Factors

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
1	(Constant)	37.368	4.825		7.745	.000	27.817	46.920
	B_FoodChoices	.004	.384	.001	.009	.993	-.757	.764
	B_BevChoices	-.371	.590	-.073	-.629	.531	-1.540	.798
	B_Knowledge	.309	.321	.128	.963	.338	-.327	.945
	B_FamSocSupp	-.395	.478	-.082	-.828	.409	-1.341	.550
a. Dependent Variable: BMI								

Hypothesis 4

(H_04) *There will be a significant prediction of WC by Barriers factor scores generated by the*

Barriers domain portion of the MBHB survey.

In order to evaluate the fourth hypotheses, an additional multiple regression

analysis was again conducted. The total factor scores of all items that were included in

the final four Barriers factors were utilized as predictor variables, and WC was considered

the outcome variable.

A multiple regression was carried out to investigate whether the Barriers factors of

Food Choices, Beverage Choices, Church and Spirituality, and Family and Social Support

could significantly predict participants WC.

Assumptions

There was linearity as assessed by partial regression plots and a plot of studentized

residuals against the predicted values. There was independence of residuals, as assessed

by a Durbin-Watson statistic of approximately 1.97 (see Table 24). There was

homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus

unstandardized predicted values. There was no evidence of multicollinearity, as assessed

by tolerance values greater than 0.1. There were no studentized deleted residuals greater

than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's

distance was above 1. The assumption of normality was met, as assessed by a Q-Q Plot.

Table 24
All Barriers Factors predicting WC – Model Summary and ANOVA

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.213[a]	.045	.014	6.0983	1.967
a. Predictors: (Constant), B_FamSocSupp, B_FoodChoice, B_Beverage Choices, B_Knowledge					
b. Dependent Variable: WC					

Results

The results of the regression indicated that the model explained about 5% of the total variance found, and that the model was not a significant predictor of WC, $F_{(5,120)}$ = 1.44, p = .226 (see Table 25). Therefore, within the context of the current study, sufficient evidence has not been found to reject the null hypothesis.

Table 25
ANOVA: WC by Barriers Factors

ANOVAª						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	213.584	4	53.396	1.436	.226ᵇ
	Residual	4499.926	121	37.189		
	Total	4713.510	125			
a. Dependent Variable: WC						
b. Predictors: (Constant), B_FamSocSupp, B_FoodChoice, B_Beverage Choices, B_Knowledge						

The WC by Barriers factors coefficients table containing coefficients and standard errors can be found in Table 26.

Table 26
Coefficients – WC by Barriers Factors

Coefficientsª								
		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
1	(Constant)	44.779	3.500		12.795	.000	37.850	51.707
	B_FoodChoice	-.335	.279	-.152	-1.201	.232	-.887	.217
	B_Beverage Choices	-.328	.428	-.089	-.767	.445	-1.176	.519
	B_Knowledge	.459	.233	.259	1.970	.051	-.002	.920
	B_FamSocSupp	-.274	.346	-.078	-.790	.431	-.960	.412
a. Dependent Variable: WC								

Descriptive Statistics II

In order to answer the fourth and final research question, which is comprised of 5 parts, all open-ended question answers by participants were recorded and tallied. In order to identify and report some the types of foods and beverages preferred by African American women living in Milwaukee, as well the grocery stores, fast-food restaurants frequented, and the types of physical movement women engage in regularly. Percentages of the highest 10 items cited in each of the preference categories will be shown here, and the lists of entries in their entirety can be found in Appendix J-N. The first part of the 4th research question asks:

(R4-A) *What are some of the food preferences of African American women in Milwaukee have?*

All answers from the first open-ended inquiry on the Food Preferences Questionnaire "Please list you and/or your family's favorite foods/meals:" was recorded and counted. There were 311 total items cited. The foods and meals that were listed with the most frequency are shown in Figure 3. *Chicken* was the most cited food/meal, followed by *Red Meats*, *Vegetables*, *Fish*, *Starches*, and *Pastas* (all food and meal items cited by any participant are available to be viewed in Appendix K). The *Chicken* category was devised of any type of chicken cited, including "Chicken", Baked chicken, Fried chicken, Grilled chicken, Chicken breast, and Chicken salad.

The next highest cited favorite food or meal was *Red Meats.* This category was comprised of items including Steak, Meatloaf, Pork chops, Ribs, Ground beef, Meatballs, Meats, Bacon, Roast beef, Ham, Ham hocks, and Corned beef. Next in frequency cited were *Vegetables* (Including Vegetables, Greens, Green beans, Broccoli, Okra, Corn,

Carrots, and Salad). *Fish* (Including Fish, Seafood, Baked fish, Fried fish, Shrimp, Catfish, Buffalo fish, Crab legs, Salmon, and Tuna) followed in number of times cited, followed by *Starches* (Potatoes, Rice, Garlic and Corn Breads), and *Pastas* (Pasta, spaghetti, and lasagna).

Figure 3
Most Frequently Cited Foods/Meals
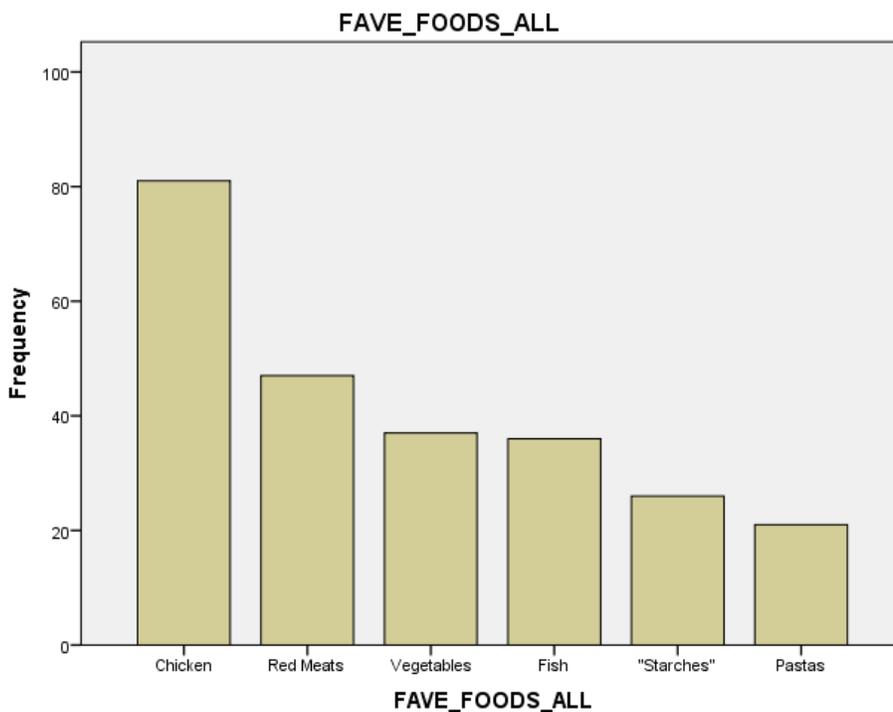
The second part of research question number four queries about beverage preferences, and is as follows:

(R4-B*) What are some of the beverage preferences of African American women in Milwaukee?*

All answers from the second open-ended request on the "Please list you and/or your family's favorite beverages/drinks:" were recorded and counted. There were a total of 281 beverages and drinks cited. The beverages and drinks that were cited with the most frequency are shown in Figure 4.

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Figure 4
Most Frequently Cited Beverages/Drinks
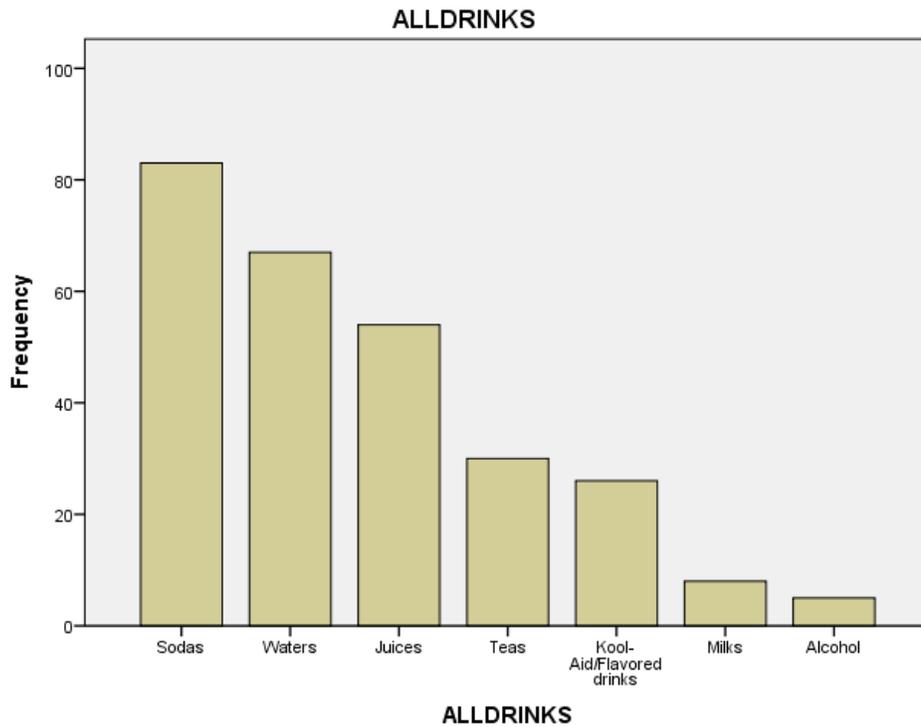
Carbonated Sodas that contain sugar and calories, or "soft drinks" as they are

sometimes called, were the most cited beverage/drinks. The category was devised of both

popularly recognized products such as Pepsi, Mountain Dew, and Root Beer, as well as

any entry that contained a descriptor of "soda" within the name, such as "grape soda".

(All beverage/drink items cited by any participant are available to be viewed in Appendix

K). These were followed in frequency by *Waters, Fruit Juices, Flavored Drinks, Teas,* and

Alcohol. Interestingly, when all beverages cited that are known to contain high sugar

levels were compared to water cited, it was noted that the ratio was close to 3:1 (see Figure

5). Essentially drinks that were high in sugar were cited three times more than water.

Figure 5
Frequency of Sugar Beverages Cited vs Frequency of Water Cited
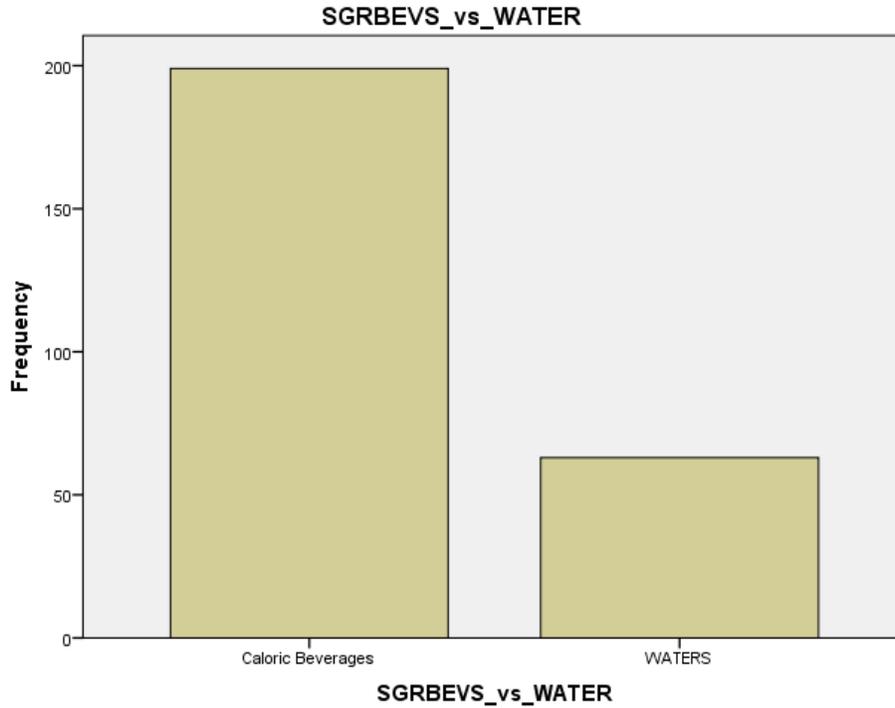
 (R4-C) *Where do African American women living in Milwaukee most-often shop for groceries?*

All answers from the third open-ended query, "Please list the stores/locations you most often purchase food:" were recorded and counted. There was a total of 269 grocery stores cited. The grocery stores that were cited with the *most frequency are shown in Figure 6. The stores in the order of frequency cited were: Pick N Save, Lena's, Walmart, Woodman's, Aldi's, Sav-A-Lot, Sam's Club, Meijer's,* and *Piggly Wiggly*. All fast food restaurants cited by any participant are available to be viewed in Appendix L.

Figure 6
Most Frequently Cited Grocery Stores
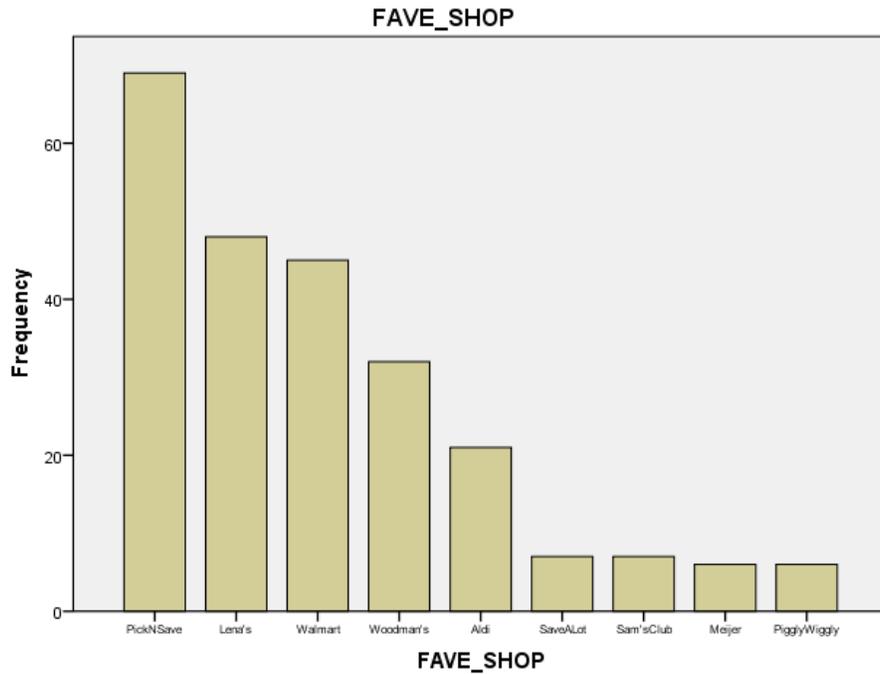
(R4-D) *Which fast-food restaurants do African American women living in Milwaukee choose to patronize?*

All answers from the fourth open-ended question, "Please list the names of fast food restaurants you/your family visits most often:" were recorded and counted. There were a total of 216 food establishments cited. The restaurants that were cited with the most frequency are shown in Figure 7. The fast food restaurants that participants cited most often was McDonald's, followed in order of frequency named by "None", Wendy's Burger King, Popeye's, Checkers, Subway, Taco Bell, Culver's, and Applebee's. All fast food establishments cited by any participant are available to be viewed in Appendix M.

Figure 7

Most Frequently Cited Fast Food Restaurants
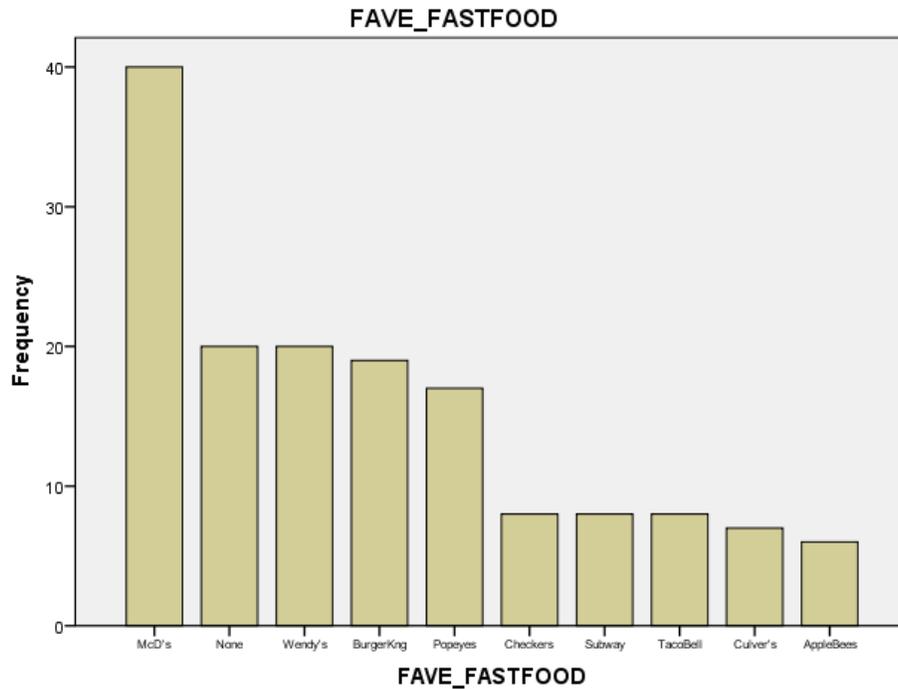
(R4-E) *What types of physical activity to African American women in Milwaukee participate in regularly?*

All answers from the fifth and last open-ended inquiry "Please list the ways in which you get physical movement/exercise each week (if you do):" were recorded and counted. There was a total of 169 activities listed. The activities that were cited with the most frequency are shown in Figure 8. All physical activities cited by any participant are available to be viewed in Appendix N. In order of frequency, they were as follows: Walking (Walking, Walking the dog, and Walking kids to school); Work-related activities (Going to work, Walking at work, Stairs at work, Standing at work, and Shoveling at

Figure 8
Most Frequently Cited Physical Activities
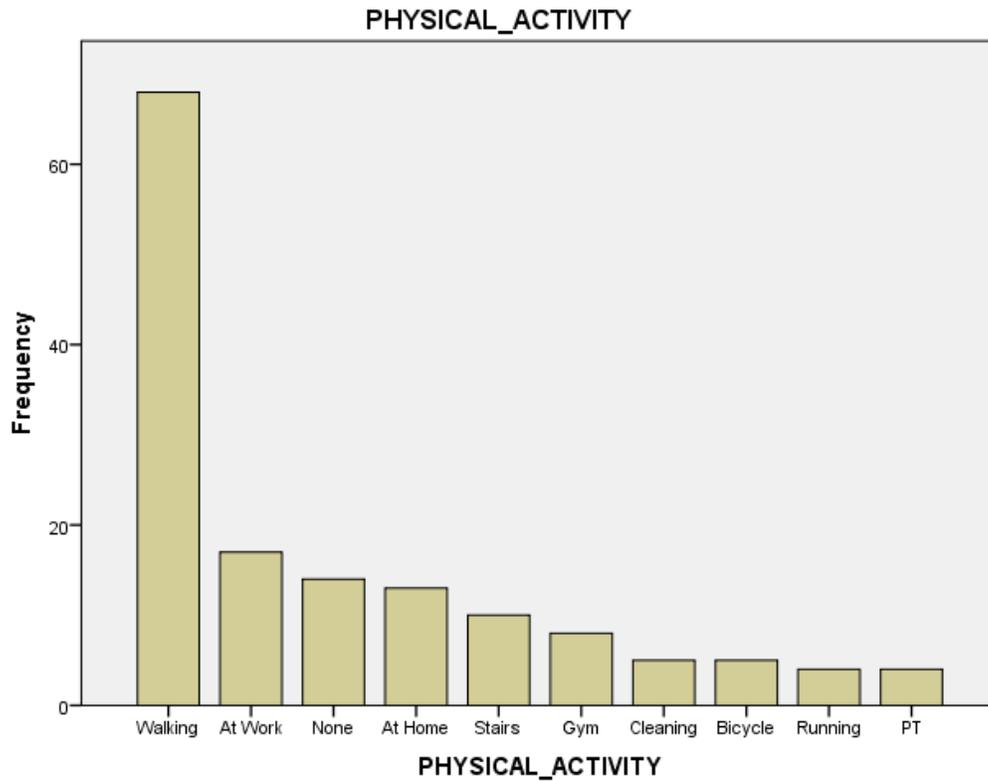
work); None; Exercise at Home (including Exercise at home, Sit-ups, Stepper at home, Sit and Be Fit; Workout videos, Stretch bands, and Dumbbells); Stairs, Gym/Health Club; Cleaning; Bicycling; Running; and Physical Therapy.

This concludes the results portion of the current study. A discussion of these results, implications, limitations, and suggestions for furthering knowledge in this area follows in the pages ahead.

Chapter 5: Discussion and Conclusion

This study was designed help understand what some of the perceived motivations and barriers to engaging in health-supporting behaviors may be in African American women who reside in the city of Milwaukee. In addition, the construction of a new 2-part survey, the Motivators and Barriers to Health Behaviors scale, was attempted. It was anticipated that several constructs of each of the domains may offer insight into determining what types of prevention and intervention may be appropriate and best-suited to assist African American women in engaging in a health-enhancing program or workshop. The current study also hoped to see if any of the motivators or barriers factors found would have predictive power with regard to BMI and WC measurements. Finally, insight was sought with regard to the types of beverages and foods preferred by African American women, as well as where they most-often prefer to shop for groceries, and which fast food restaurants they tend to patronize.

Food is the sustenance of life and yet consuming in the form of calories or consuming too much of the engaging in physical activity is necessary for human functioning and privileges. Yet too many calories and too little exercise can each contribute to preventable diseases, one of those which has been empirically identified as obesity (CDC, 2015). This physical condition is one result of many, multi-faceted components that reflect personal, emotional, societal and cultural values. Most-often those factors are contributed to by an individual consuming too many calories and making less-healthy food and beverage choices.

Summary of Results

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Demographics: Description of Study Participants

The first information that was obtained in this study relayed that the women who participated represented 126 African American women that were living in Milwaukee at the time they completed the questionnaires. They represented perspectives of those ages 18 to 77 years old, most who had resided in Milwaukee for much of their lives at an average of 34.25 years. The average education level reported was between earning a high school diploma and having attained some college credits. Participants' income levels ranged from $9900 or less to greater than $50,000, with the average being around $20,000. The number of individuals reported per household was about 3 but ranged from 1 to 10 members.

Seventy percent of the sample marked that they had regular access to transportation. Approximately 89% of the women identified themselves as both the primary food purchaser and food preparer in their household. About sixty percent cited participating in regular exercise, and 90% percent of participants indicated that they currently desired to increase their health via diet and/or exercise.

EFA: Motivators Factors

In conducting an EFA with each the MBHB survey domains of Motivators, there were 5 Motivators factors found in a final pool of twenty-one total items. The labels representing each theme of these factors were Personal Health (5 items), Beverage and Food Choices (6 items), Church and Spirituality (5 items), Social Support (3 items), and an unanticipated factor, Physician Input (2 items). The latter subscale was composed of just 2 items, one item below what some researchers consider the cutoff for support of a

factor. However, considering the novel nature of the MBHB and the limited options representing this construct in the survey, it was retained. As defined by previous research, each of the four factors were found to be reasonable reliable.

EFA: Barriers Factors

There were 4 Barriers factors found among a pool of sixteen total retained items. These factors represented themes of and were labeled Food Choices (4 items), Beverage Choices (3 items), Knowledge (5 items), and Family and Social Support (3 items). Each of the factors demonstrated reasonable reliability as defined by previous researchers.

Predicting Body Composition with Motivators and Barriers Factors

In order to address the hypotheses of this study, 4 Multiple Regression analyses were conducted. The first two address prediction by the 5 Motivators factor scores, and the second two by the 4 Barriers factor scores.

Motivators Factors and BMI

The first analysis reflected predictability of BMI by the entirety of the final Motivators survey, or all 5 factors found in the previously conducted factor analysis. Results were significant, and the final model indicated that a 1-point increase in score on the Motivators subscale factors of both Personal Health and Beverage & Food Choices factors was associated with a decrease in BMI of 0.04. Also indicated was that a 1-point increase in score on the Church & Spirituality factor subscale was associated with a decrease in BMI of .44. Further, an increase in 1-point on the Social Support subscale indicated a decrease in BMI of 1.5. An increase in one point on the Physician Input factor subscale score was associated with an increase in BMI of 2.39.

Motivators Factors and WC

The second hypothesis and multiple regression reflected predictability of WC by the entirety of the final Motivators survey, or all 5 factors found in the previously conducted factor analysis. Results were significant, and the final model indicated that a 1-point increase in score on the Motivators Personal Health subscale was associated with a decrease in WC of .06, and that a 1-point increase in average score on the Beverage & Food Choices factors was associated with a decrease in WC of 0.05. Also shown was that a 1-point increase in score on the Church & Spirituality factor was associated with a decrease in WC of 0.17; that an increase in 1-point on the Social Support scale indicated a decrease in WC of 0.88; and finally, that an increase in one point on the Physician Input factor score was associated with an increase in WC of 1.43.

Barriers Factors and BMI

The third multiple regression analysis reflected predictability of BMI by the entirety of the final Barriers survey, or all 4 factors found in the previously conducted factor analysis. Results were not significant, therefore there was insufficient evidence to reject the null hypothesis.

Barriers Factors and WC

The fourth multiple regression analysis conducted reflected predictability of WC by the entirety of the final Barriers survey, or all 4 factors found in the previously conducted factor analysis. Results again were not significant, with lack of evidence present to reject the null hypothesis.

Food Preferences Survey

In order to answer the fourth research question of this study, which consisted of 5 parts, all items cited by participants on each of the five open-ended questions were compiled and described. The first inquiry asked participants to list their favorite foods or meals. There were ten top food items cited most often. Each of those actually encompassed multiple dishes that appropriately fit within each representative food. There was a total of 311 items cited. The foods and meal categories that were listed with the most frequency and in descending order were *Chicken, Red Meats, Vegetables, Fish, Starches,* and *Pastas.*

The second question asked participants to indicate their favorite beverages. There were a total of 281 beverages and drinks cited. Sodas that contain sugar were the most cited beverage/drinks. These were followed in frequency by *Waters, Fruit Juices, Flavored Drinks, Teas, and Alcohol.* Because this study focused on health behaviors, it was noted that beverages with high caloric count were cited three times more-often than water.

The third question asked participants which grocery stores they shopped at most-often. There were a total of 269 grocery stores cited. Those establishments that were cited with the most frequency and in descending order, were: *Pick N Save, Lena's, Walmart, Woodman's, Aldi's, Sav-A-Lot, Sam's Club, Meijer's,* and *Piggly Wiggly*.

The fourth question inquired about fast food restaurant patronage, and which participants frequented most-often. There were a total of 216 food establishments cited. The fast food restaurants that participants cited most-often, and listed in decreasing

frequency were as follows: *McDonald's,* followed in order of frequency named by "*None*", *Wendy's Burger King, Popeye's, Checkers, Subway, Taco Bell, Culver's,* and *Applebee's.*

The last question asked participants to list the physical activities that they engaged in regularly. There was a total of 169 activities listed. The activities cited with the most frequency are shown in Figure 8. All physical activities named are available to be viewed in Appendix N. In order of frequency, they were as follows: *Walking* (Walking, Walking the dog, and Walking kids to school); *Work-related activities* (Going to work, Walking at work, Stairs at work, Standing at work, and Shoveling at work); *None*; *Exercise at Home* (including Exercise at home, Sit-ups, Stepper at home, Sit and Be Fit; Workout videos, Stretch bands, and Dumbbells*); Stairs, Gym/Health Club; Cleaning; Bicycling; Running*; and *Physical Therapy.*

Interpretation of Results

Research Question 1

The first research question of this study aimed to discover what African American women in Milwaukee consider some of the perceived motivators of engaging in health-supporting behaviors. The results of this investigation pointed to five factors that may be considered motivational to women's engagement in health-supporting behaviors. The items contained within the first, labeled the *Personal Health* factor, appeared to reflect thematic of considerations about the outcomes of one's own physical health. Avoiding health problems, eating foods that keep one's body in a state of health and feeling good physically were all content included within these items. In addition to containing four out

of the five items meant to capture the same construct a priori, there was one reflective of the afore supposed construct of Knowledge.

The second Motivators factor involved choices made surrounding beverage and foods and was accordingly labeled Beverage and Food Choices. Items within this retained factor demonstrated agreement with statements reflecting decisions made before consuming a beverage or food. Reading nutrition labels, electing to choose whole-grain bread over white, avoiding soda and high-fat foods, and considering the healthiness of any individual item prior to drinking or eating it were the representative topics on the survey.

The third factor found was thought to represent correlated agreement with items representing *Church and Spirituality* on the survey. The five items supporting this final factor were the same ones chosen a priori to represent this construct. They asked participants about belonging to a church and attend services regularly; perceived feeling that God may be a supportive resource; the idea that God wants one to take care of their body; and a statement of agreement about the likelihood of joining a group for healthier living if it was offered through one's church. These results parallel previous research demonstrating that African American women involved in the church are likely to report that it has a supportive role in increasing motivation and initiating change in living healthier lifestyles (Sutherland, 2013; Debnal, et. al., 2012; and Robinson & Wicks, 2012).

The fourth Motivator factor was labeled Social Support and consisted of 3 items that were thought to potentially be included in this construct. The statements reflected in the construct specifically were related to having an exercise partner, friends who drink

mostly water and other healthy drinks, and having coworkers that are or would be supportive in the participant leading a healthy lifestyle.

The final Motivators factor thought to potentially be useful to address, was ultimately devised of just 2 items. Interestingly, they originated from two different intended construct categories: Family and Social Support and Personal Health. The first reflects having received encouragement from a doctor to drink water and eat a low-fat diet. The second indicates having been told by a doctor to lose weight to better one's health. Because both items seem to capture comments heard from participants' doctors, it was ultimately labeled *Physician Input*. Although this category was not anticipated a priori, the items logically fit together and make sense as a motivation or indication to increase health-supporting behaviors.

The meaning of the results of the research question proposed about what may be some factors contributing to motivation to engage in health-supporting behaviors are subjective but potentially important. First, the African American women who participated in this study clearly value their personal vitality and almost all wished to increase their health via nutrition and/or physical activity. It was noted that one woman commented to a researcher: "I don't want to be like my neighbor, she can hardly walk anymore." Likely most individuals would prefer to remain independent and not have to tolerate unpleasant physical side effects of obesity or health conditions, which may be inconvenient, uncomfortable, or negatively viewed by others. The implications of this finding could be that conveying the negative consequences of not engaging in health behaviors and positive personal health consequences of engaging in good nutrition and physical activity

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would be important dynamics to discuss with regard to helping women maintain or gain health.

Concerns for *Personal health,* forethought that contributes to *Beverage and Food Choices,* Involvement in a *Church or Spiritual Community,* building a *Social Support System,* and checking in regularly *for Physician Input* may all be areas to focus on with regard to designing a healthcare program for African American women in Milwaukee. This may indicate that investing in education of women about how to avoid health problems may be beneficial in addressing obesity. In addition, psychoeducation regarding how eating healthfully and avoiding drinks with a lot of sugar may contribute to keeping African American women's bodies in shape and feeling good may be helpful. In providing this information to women of the Milwaukee community, demonstrating what healthy eating looks like by displaying and detailing examples may also be beneficial.

Research Question 2:

The second research question explored what African American women living in Milwaukee perceive as barriers to engaging in health-supporting behaviors. The items that were retained within the Barriers factor subscales reflected positions taken when making beverage and food choices. The first factor, labeled *Food Choices,* indicated that one barrier may be the preference for eating foods known to be detrimental to health in some respect. For example, eating red meat at least once per day or about 5 days per week and eating some type of junk food each day were content of items that supported this Barriers factor. Also in the first subscale were statements asking level of agreement with buying food at corner stores and in a separate question, from gas stations. Both types of

stores are known for not being traditionally stocked with healthy food and beverage choices.

Another Barriers factor, *Beverage Choices*, found reflected decisions made surrounding beverage consumption. The items supporting this construct indicated agreement with a habit of drinking sugary drinks, often having sugar sodas available for easy consumption at home, and not having a lot of healthy beverage choices where women most-often purchase beverages. Additionally, there was some concern indicated about water quality, as reflected in an item that originally loaded on the component. However, because eliminating it increased the reliability of this scale, it was ultimately not included in the factor. The topic may be worth exploring in a future survey however.

Knowledge, consisting of five items, was the label given to the third factor thought to be representative of a perceived barrier to engaging in health-supporting behaviors. Retained items within this factor included four of the five intended a priori for this construct, as well as one item from what was originally intended to reflect the construct of Availability. The individual items ask for level of agreement with perceived ability to create healthy meals that also taste great and/or are their or their family's favorite foods, along with understanding of nutrition labels. The item from the outside category was concerning knowledge of where to purchase affordable healthy foods. The results of this factor loading then, were similar to what was designed a priori with regard to this construct.

Research Question #3

The third research question inquired if the MBHB may be a viable measurement of motivators and/or barriers to health behaviors, and if they may be generalizable to the adult female African American population of Milwaukee. The answer to this inquiry is that more research is needed on the MBHB scale before being able to reliably generalize any results to the African American women of Milwaukee or any other community of color. While it does have potential to identify areas of influence and concern in a group of individuals, more work is needed on the construction, validation, and reliablity of each of the domains.

The fourth research question is addressed after the hypotheses, in the same order in which the results were presented.

Hypotheses

The hypotheses derived for the study were evaluated by conducting four multiple regression analyses. The first hypothesis was:

(H1) There will be statistically significant prediction of BMI by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.

The first hypotheses required evaluating whether there would be statistically significant prediction of BMI by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.

Results of the MLR indicated that the null hypothesis stating that 'there is no predictability of BMI by Motivators factor scores' can be rejected and the alternative

hypothesis accepted. These significant results are not able to be interpreted as cause-and-effect relationships. However, it is interesting that those factors thought to indicate decreased BMI appeared to do so, especially the Social Support factor and the Physician Input factors. The former suggests that as an individual's sense of social support via having an exercise partner, having friends that engage in healthy choices such as drinking water, and gaining support of coworkers correlate with decreased BMI.

The latter factor may or may not be considered a motivator to health-supporting behaviors based upon these results. It is probably that BMI correlates, or is able to be predicted by this factor due to someone already being overweight or obese. The higher one's BMI, the more likely they are to have received advice to lose weight and/or consume healthful beverages and foods. Even so, it could be a motivating factor as well. More research is needed to differentiate. Applications of this information may be utilized when designing a health-supporting program for individuals or groups. Sharing the potential importance of having a variety of social supports and getting evaluated by a physician could be topics of discussion. While the other factors did not contribute significantly to the overall model, this author would continue to leave those factors in future surveys for further exploration.

The second hypothesis stated:

(H2) *There will be statistically significant prediction of WC by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.*

The second hypotheses required evaluating whether there would be statistically significant prediction of WC by an overall Motivators factor score generated by all Motivators items contributing to the final retained factors of the Motivators domain survey of the MBHB scale.

Results of the second MLR indicated that the null hypothesis, which stated that 'there is no predictability of WC by Motivators factor scores' could be rejected, and the alternative hypothesis accepted. Note that significant results are not able to be interpreted as cause-and-effect relationships. Even so, is interesting that those factors anticipated a priori to indicate decreased WC appeared to do so, especially the *Social Support* factor and the *Physician Input* factor. The former suggests that as an individual's sense of social support via having an exercise partner, having friends that engage in healthy choices such as drinking water, and gaining support of coworkers correlate with decreased WC. As in the previous analysis, the latter factor may or may not be considered a motivator to health-supporting behaviors based upon these results. It is probable that WC correlates predictably by the Physician Input factor due to the individual already being overweight or obese. The higher one's WC, the more likely they are to have received advice to lose weight and/or consume healthful beverages and foods. Even so, it could be a motivating factor as well. More research is needed to differentiate.

Application of this information may be utilized when designing a health-supporting program for individuals or groups. Sharing the potential importance of having a variety of social supports and getting evaluated by a physician could be topics of discussion. While the other factors did not contribute significantly to the overall model,

this author would continue to leave those factors in a future survey for further exploration. The results of the first two hypotheses then, indicate that the more likely women are to agree with Motivators items, the more likely they are to have a lower BMI and WC. It is important to note that regression analyses do not imply causation, but rather indicate patterns of relationships.

The third hypothesis asked:

(H3) *There will be statistically significant prediction of BMI by an overall Barriers factor score generated by all Barriers items contributing to the final retained factors of the Barriers domain survey of the MBHB scale.*

The results of the third MLR analysis indicated that there was no prediction of BMI by Barriers factors. In this case then, we fail to reject the null hypothesis that there is no relationship between the independent variables of Beverage Choices, Food Choices, Knowledge, nor Family and Social support, and the dependent variable of BMI. It was unexpected that the four factor subscales of Barriers were not significant predictors of BMI. While disappointing, these findings may indicate the greater importance of focusing on strength-based, motivational, and empowering strategies for assisting African American women with losing weight. Instead of looking to fix the ways in which women are hindered in their health aims, it may be more impactful to increase the ways they are motivated. This seems to be valuable information, even though it was not hypothesized at the outset of this investigation. Implications of the answers found to this research question is that more research is needed to strengthen the underlying barriers constructs.

The fourth hypothesis is:

(H4) *There will be statistically significant prediction of WC by an overall Barriers factor scores generated by the Barriers domain portion of the MBHB survey.*

The results of the fourth MLR analysis indicated that there was no prediction of WC by Barriers factors. In this case then, we fail to reject the null hypothesis that there is no relationship between the independent variables of Beverage Choices, Food Choices, Knowledge, nor Family and Social support, and the dependent variable of WC. It was not anticipated that the four factor subscales of Barriers would not be significant predictors of WC. While unexpected, these findings may indicate the greater importance of focusing on strength-based, motivational, and empowering strategies for assisting African American women with losing weight. Instead of looking to fix the ways in which women are hindered in their health aims, it may be more impactful to increase the ways they are motivated. This seems to be valuable information, even though it was not hypothesized at the outset of this investigation. Further implications of the answers found to this research question is that more research is needed to strengthen the underlying barriers constructs.

Research Question #4

The fourth research question had mulitple parts, the purpose of which was to gain insight into what some of the participants favorite food and beverages were, which grocery stores and fast food establishments they patronized most often, and the types of physical activity they engaged in regularly.

The fourth research question was composed of five parts, addressed by open-ended questions on the Demographic and Food Preferences survey. The research question was posed for the purpose of gaining more information about what types of

Foods and Beverages are preferred by African American women living in the Milwaukee area. Results demonstrated that Chicken was the most-cited meal/food, followed by Red Meats, Vegetables, Fish, Starches, and Pastas.

Poultry has been shown to be healthier than red meat (Chandran et. al., 2013), and it may be regarded as preferable =that it and Vegetables were one of the most-cited as participants' favorite foods. Fish is also often looked upon as being a healthy choice, and it is supported by research. For example, one study concluded that low seafood consumption is a significant dietary contributor to preventable deaths in the U.S. due to lack of healthy fats, essential vitamins, and lean protein (Denaie et al., 2011).

This information could be used as a resource for addressing food choice in a health-enhancement program. For example, chicken, a popular choice, can be made in a variety of healthful ways, including fried. Another way to apply this information usefully may be to address the general repercussions of eating red meats, especially those with high saturated fat content. Because it has been shown that red meats contribute to obesity (Rouhani et. al., 2014), it would not have been surprising they had been cited most frequently. In the case of this study however, chicken was the top choice. Details about which cuts of meat may be healthier, how they can be prepared in a healthier way (ie. baking or grilling versus frying) that are tasty but still satisfy. Offering ways to prepare women's favorite vegetables or make them a main focus of a meal may be worth addressing.

The second part of Research Question 4 explored participants' favorite beverages.

Sodas with sugar were the most-cited favorite beverage, which seems problematic from a health-supporting perspective. Soda often has an average of 150 calories per cup, and 40 grams of sugar. The recommended daily intake is 25 grams for women (CDC, 2016). Second most-cited was water likely the most healthful and low-cost beverage available. Next in frequency were juices, which have similar sugar content as sodas, although there is often a small benefit of containing a daily dose of vitamin C. It was noted that sugar-laden drinks were cited more than three times more often than water as favorite beverages, which seems like an important result. Implications of this information may. The implications of this are many. It only takes an observation at the nearest grocery store to see that the unhealthful, or high-caloric, high-fructose, sugar drinks are prevalent. In vending machines, they outnumber low- or no-calorie options from six to one and more. Sodas, fruit juices, fruit drinks, sweet teas, and sports drinks are prevalent, and likely contribute to the obesity epidemic in this country via excess, non-nutritional calories.

In addressing the third part of Research Question #4, women provided insight into which establishments they are most likely to purchase their groceries. The top store cited was Pick N Save, a Milwaukee-based discount grocer. The second-most popular was Lena's, an African-American owned business and one of the locations of data acquisition for this study. The third most-utilized store for food shopping was Walmart.

These results are informative, and suggest the importance of those corporations providing multiple, high-quality food choices. It has been noted by this author that Walmart in particular does not often offer many healthier versions of popular food items.

For example, there are about twenty different types of shredded cheeses available, and only two of them were found to be of the low-fat variety. The same is true of ice creams and pizzas. There are very few frozen yogurt choices in comparison to the rich and creamy assortment, and the store also does not carry the vegetable pizzas option of any brand that they carry which produces it. Targeting the most popular grocery stores in the area to encourage them to offer more healthy options may be beneficial. In addition, soliciting their willingness to encourage and support their customers in making healthier purchasing choices may be indicated. This could include posting signs about checking for calories, similar to those currently stuck on soda vending machines in the Milwaukee area. Having discount sales that promote the purchase of healthier food options are other ideas.

The last part of Research Question #4 asked women what physical activities they engage in most often. The range of activities listed was more than the researcher expected, and totaled 169. In order of frequency, the top regular exercise included Walking; Work-related activities; None (the individual did not regularly participate in physical movement; Exercise at Home; Climbing Stairs, Gym/Health Club; Cleaning; Bicycling; Running; and Physical Therapy. The implications of this information is that there as many ways people like (or must utilize) to get their physical activity in. One common way is by walking, so perhaps starting or promoting a currently-available walking club would be beneficial and result in more individuals participating versus say, a running or biking endeavor. In a health-enhancing program or workshop, it would be worth surveying what activities women already are doing in their lives and how they

contribute to overall health. Perhaps small increases in activities they already engage may seem like a small change, but that may be what is doable. Sharing activities that women hadn't thought of themselves, or didn't think they could participate in may encourage trying new ways of moving.

Study Limitations

Statistical

Several statistical limitations to this study were recognized. First, the sample size in this study was minimum with regard to the ratio of items to participants, at about 4 or 5 to one item per each the Motivators and Barriers surveys respectively. There were time, financial, and accessibility constraints behind this experiment. If the author were to further investigate the MBHB, a sample size of at least 300 would be desired. An increased number of participants would help to improve the generalizability of these findings. It would also allow for stabilization of factor loadings. Finally, increased sample size may allow for more power and increased confidence in generalizability of results.

The limitations of EFA include their subjective nature when performing analyses, interpreting components and models, as well as any violations of assumptions depending upon how they are compensated (Suhr, 2015). In the current study, care was taken to follow previously established protocols for early test construction and exploratory factor analysis. There were several points in the analysis when a decision had to be made with regard to which statistic to use, whether to leave an item in or out of the overall pot, and what details were important versus others. Another researcher may have found very similar or different results from the same data. More research is clearly needed with the

construction of the MBHB, including factor definition, reliability, and validity with African American women and/or other populations.

Another area of concern is regarding the MLR analyses. When there are several independent variables is the possible existence of multicollinearity. This term describes the situation in which two or more independent variables are highly correlated with one another. In that condition, the meaning of the partial regression coefficient in the multiple regression equation is unclear (Kamer-Ainur, A., 2004). However, other authors ascribe that when correlated variables are or must be included in the analysis, care must be taken when interpreting the results or ascribing meaning to parts or partial coefficients. However, multicollinearity causes no special problem for inferences associated with the overall regression model, such as F test for the significance of the regression effect, or for prediction intervals for individual values of the dependent variable. In addition, if there had been a larger sample utilized, we may have found different results.

Another limitation is that several, potentially influential variables were not controlled for when running the MLR analyses. Age and/or generation, level of education, and income could each or all be contributing to the total variance found overall or for each factor. In further analyses of the MBHB, exploration of the literature with regard to how these constructs may mediate, moderate, or contribute to BMI and WC, or controlling for these extraneous variables would be advised.

Also concerning the MLR analyses, it is easy to misinterpret relationships among variables, implying that the relationship between predictor and outcome variables causal.

A relatively strong relationship between variables could stem from many other, causes including the influence of other unmeasured variables. In the case of health-supporting behaviors, there may be many contextual factors not accounted for.

Practical

There were several practical limitations recognized within this study. For one, participants were recruited at just two sites in the city of Milwaukee. It is possible that African American women from various geographic locations outside of this area may respond differently. In addition, more individuals representative of the intra-diversity of African Americans within the city of Milwaukee may be beneficial. This deficiency could be addressed by offering survey participation at an increased number of events where African American women may be present, at varying times of the year. Perhaps grocery stores in other areas of Milwaukee, community events such as organized walks and church festivals, as well as at other community resource locations such as health clinics or information seminars may be potential sites to get women involved.

Another matter that falls into this category of limitations was the length of the MBHB scale. Consisting of two, 25-item surveys, a 20-minute task was a lot to ask of participants who had been going about their daily business. The researcher noted that the length of the survey was commented by a few participants. This was understandable, especially since the fifty items of the MBHB survey follows a 2-part Demographic and Food Preferences form.

An additional practical matter involves multicultural considerations of semantics in questionnaire wording, which may not have been accounted for with the original

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survey items. It is possible that the personal background or context of the survey designer and/or content reviewers was different than that of the population of interest. Consequently, some words or statements may have different meaning to various individuals, which may or may not reflect the intention of the associated survey question. One example that originated from one participants' comment, was the differentiation of fruit juice (intended by the author to be representative of juice originating from a fruit; and "juice", which in some communities is used to describe any non-carbonated, fruity, fruit-flavored, or colorful drink.

Another practical matter involves the five open-ended inquiries. The answers for these questions were compiled and described, but they were not linked to any individual, per the study's IRB agreement. In future studies, making allowances for this link may prove to be useful for identifying correlations between consuming specific foods and obesity or other relationships. Doing so could also further tailor a healthcare program for African American women by offering substitutes for what are cited by any one group as favorite meals and beverages, healthier choices at fast food restaurants, or ingredients their preferred dishes. There are many ways in which such information could be used in research to shed light on African American women's (or all African Americans') health and wellness. It is hoped that many researchers will continue to explore patterns in women's health, especially women of color who disproportionately experience debilitating or fatal diseases due to preventable causes.

In relation to the previous literature on the subject matter of African American women and potential to increase engagement in health behaviors and lower obesity rates,

there is much still to be understood and investigated. The aim of addressing health

disparities in communities of color will be important for decades to come. Obesity is an

issue currently studied extensively in the general population, but there are limited studies

that address specifically cultural influences of health-supporting behaviors in women of

color. The etiologies of the obesity are complex and is unique to an individual depending

upon the intersection of an indivudal's genetics, biology, environment, values,

knowledge, SES, age, accessibility to water, beverages, and food types, and many other

components. This study is a small venture, perhaps offering a tiny bit of insight in a vast

pool of ever-increasing information.

There continues to be a need for culturally normed scales for evaluating

motivators and barriers at an individual and community level (Carithers, et. al., 2009;

Mastin, Campo, & Askelson, 2012). Knowledge of the motivators, barriers and underlying

cultural factors that may influence health behaviors in African American women in the

Milwaukee area would allow for better understanding and more effective and culturally

appropriate interventions. There are currently many community efforts around the

country to assist and encourage African Americans and women in particular to engage in

more physical activity. Sista Strut, a walk for breast cancer awareness, prevention, and

research by and for African American women, currently takes place in cities around the

country. Additionally, T. Morgan Dixon and Vanessa Garrison's *GirlTrek* appears to be

sweeping through the country quickly as African American women sign up to beat obesity

and live healthier (Girltrek.org, 2018).

Recommendations for Future Research

In addition to those addressed in the Limitations, there are several suggestions for future research in the area of motivation and barriers of health-supporting behaviors in African American women. First, in considering construction of an updated version of the MBHB scale, it is the author's view that it may be worth keeping both the Motivators and Barriers survey questions (totaling 37 vs 50 from the original version) that survived the EFAs, even though the latter domain's questions were not shown to have predictive power for BMI and WC. Also of interest would be including additional items intended to support Physician Input to see if this factor could be made more robust.

Another option for development of the MBHB survey includes narrowing down the items by including both Motivators and Barriers items in a single EFA and expect or force two factors. Perhaps two factors assuming each Motivators and Barriers would result in a more comprehensive and/or efficient explanatory or predictive model.

Also interesting would be to compare women and men's responses to the survey. Alternately, aggregating data among peers (college student group) or within families (households of churches) for the purpose designing health-supporting protocols could be helpful. Further, investigating if and/or age, income, zip code, or education correlates with, mediates, or moderates BMI and/or WC may prove insightful. Finally, refining questions within each subscale may be helpful for more accurately capturing construct nuances.

Although it was not a population of focus with the current investigation, future studies could aim to including male subjects as well as female. The purpose for this would be to further our understanding of the utility of the scale, as well as to include important

overlooked components that may contribute to the complex understanding of motivators and barriers to health-supporting behaviors in African American adults overall.

Lastly, implications for health program design could be researched with the information obtained, resulting in a curriculum that incorporates the findings of the current study. The results of this investigation and subsequent related investigations may be applied to maximize participation, engagement, and maintenance of a weight-loss or health-enhancing workshop. The author noted that several participants of this study demonstrated verbal interest in joining such a program if it were to be offered in the areas of data acquisition. Such offerings and involvement may contribute to increased health-supporting behaviors of women who participate

Conclusions

This study was designed to play a small part in addressing the health disparities that exist in African American female populations. These women of color are increasingly losing their lives too soon, often due to the condition of obesity and related diseases. It is imperative that attention is given to the unique perspectives, circumstances, and contexts that may play a role in contributing and preventing to these ailments via engagement in health-supporting behaviors. By doing so, programs and educational information can be designed specifically for African American women that reflects their experiences and needs. Prevention and treatment must be a priority. While every woman is unique, there seems to be overlap in what are perceived to be motivating and hindering factors in participating in health-supporting behaviors. This study hopes to be a stepping stone for further research and investment in the health and wellness of African American women.

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Appendix A

Demographics and Food Preferences Questionnaire

1. Do you currently live in the city of Milwaukee?   YES   NO

2. How long have you lived in Milwaukee? _____

3. What is your zip code? _____

4. What is your age? _____

5. What is your highest level of schooling?

___ Middle School	___ Technical degree
___ Some High School	___ Bachelor's degree
___ High School Diploma or GED	___ Graduate degree
___ Some college	___ Professional degree

6. What is your income level?

     ___ $9,900 or less

     ___ $10,000 – $14,999

     ___ $15,000 – $24,999

     ___ $25,000 – $$34,999

     ___ $35,000 – $49,999

     ___ $50,000+

7. Number of people living in household: _____

8. Do you have regular access to a car/other motorized vehicle?   YES   NO

9. Are you the primary food purchaser in your home?   YES   NO

10. Are you the primary food preparer in your home?   YES   NO

11. Do you currently participate in physical activity/exercise regularly?   YES   NO

12. Do you currently wish to increase your health through diet or exercise?   YES   N

Food Preferences Questionnaire

1.) Please list your and/or your family's *favorite meals*:

_____

_____

_____

_____

2.) Please list your and/or your family's *favorite beverages/drinks:*

_____

_____

_____

_____

3.) Please list the *stores/locations you most often purchase food*:

_____

_____

_____

_____

4.) Please list the *names of fast food restaurants you/your family visits most often*:

_____

_____

_____

_____

5.) Please list the *ways in which you get physical movement/exercise each week (if you do):*

_____

_____

_____

_____

Appendix B

Motivators and Barriers to Health Behaviors: Motivators Survey

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I like the taste of many or most fruits and vegetables.				
2. Eating healthy foods and snacks helps keep my body in shape.				
3. I prefer whole wheat or grain bread over white bread.				
4. I would look to God for support in making healthier lifestyle choices.				
5. Someone has shown me what healthy eating looks like.				
6. I have an exercise partner that I walk or work out with.				
7. My doctor has told me I have to lose weight to better my health				
8. My friends drink mostly water and other healthy drinks.				
9. Eating healthy foods and snacks helps me feel good.				
10. My doctor encourages me to drink water and eat a low-fat diet				
11. I can avoid health problems by eating healthfully and getting regular physical activity.				
12. My friends at church would be a great support for a healthier lifestyle				
13. When I choose what to drink or eat, I think about whether or not it is healthy				
14. I do not want to have drinks with a lot of sugar in them because it's bad for my health.				
15. I regularly read nutrition labels on foods that I eat.				

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
16. I would join a group for healthier living (eating, exercise) if it was offered at my church.				
17. My household would or does support me in healthy living choices ie: food/exercise.				
18. I enjoy drinking water.				
19. I belong to a church and attend services regularly.				
20. I do not drink soda.				
21. I read nutrition labels on drink containers to see how many calories are in it before I drink it.				
22. My coworkers are or would be supportive in my leading a healthy lifestyle				
23. I believe God wants me to take care of my body by making healthy choices				
24. Someone has taught me why healthy eating is important.				
25. I try to avoid deep fried foods, high fat dairy, meats and/or other saturated and trans fats				

Appendix C

Motivators and Barriers to Health Behaviors: Barriers Survey

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
1. We usually have regular soda (not diet) in the refrigerator at home/where I stay.				
2. Drinking sugary drinks (soda, fruit juice, Kool-Aid) is a habit for me.				
3. There are not many healthy drink choices where I purchase them.				
4. It would be difficult for me to change my eating behaviors in my household because no one else would change.				
5. I do not understand why drinking water is healthy.				
6. I would feel embarrassed walking or biking for exercise near my house or in my neighborhood.				
7. I do not know how to read nutrition labels.				
8. Comments from my family or friends would make it difficult to stick to a healthier lifestyle.				
9. I do not feel safe walking or biking in my neighborhood.				
10. I usually eat red meat at least once per day or about 5 days per week.				
11. I often buy food at corner stores/small neighborhood stores.				
12. I do not know how to make a healthy meal that tastes great.				
13. I eat some type of junk food every day.				
14. My family thinks I'm healthy just the way I am.				
15. There are very few healthy choices where I shop for food.				

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
16. I'm not sure how to make a healthy meal for myself or my family.				
17. There is a playground or park near my home (within 6 blocks).				
18. I think tap water tastes terrible/not good OR am concerned about the water quality so do not drink it.				
19. When I go out to eat with friends they often choose unhealthy foods.				
20. I cannot buy fresh fruits or vegetables near my home.				
21. I often buy food or drinks from gas stations.				
22. My and/or my family's favorite foods cannot be made in a healthful way.				
23. I buy less healthy food because you get more for your money.				
24. Deep fried foods are often part of my family's favorite meals.				
25. I do not have a friend/family member who would be interested in being a workout buddy.				

Appendix D
MBHB – Numbered and Coded - Motivators

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I like the taste of many or most fruits and vegetables. MFP1				
2. Eating healthy foods and snacks helps keep my body in shape. MPH1				
3. I prefer whole wheat or grain bread over white bread. MFP2				
4. I would look to God for support in making healthier lifestyle choices. MCS1				
5. Someone has shown me what healthy eating looks like. MKN1				
6. I have an exercise partner that I walk or work out with. MFSS1				
7. My doctor has told me I have to lose weight to better my health. MPH2				
8. My friends drink mostly water and other healthy drinks. MFSS2				
9. Eating healthy foods and snacks helps me feel good. MPH3				
10. My doctor encourages me to drink water and eat a low-fat diet. MFSS3				
11. I can avoid health problems by eating healthfully and getting regular physical activity. MPH4				
12. My friends at church would be a great support for a healthier lifestyle. MCS2				
13. When choosing what to drink or eat, I think about if it is healthy. MKN2				
14. I do not want to have drinks with a lot of sugar because it's bad for my health. MPH5				
15. I regularly read nutrition labels on foods that I eat. MKN3				

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
16. I would join a group for healthier living (eating, exercise) if it was offered at my church. MCS3				
17. My household would or does support me in healthy living choices ie: food/exercise. MFSS4				
18. I enjoy drinking water. MFP3				
19. I belong to a church and attend services regularly. MCS4				
20. I do not drink soda. MFP4				
21. I read nutrition labels on drink containers to see how many calories are in it before I drink it. MKN4				
22. My coworkers are or would be supportive in my leading a healthy lifestyle. MFSS5				
23. I believe God wants me to take care of my body by making healthy choices.MCS5				
24. Someone has taught me why healthy eating is important. MKN5				
25. I try to avoid deep fried foods, high fat dairy, meats and/or other saturated and trans fats MFP5				

MBHB – Numbered and Coded – Barriers

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
1. We usually have regular soda (not diet) in the refrigerator at home/where I stay. BEN1				
2. Drinking sugary drinks (soda, fruit juice, Kool-Aid) is a habit for me. BFP1				
3. There are not many healthy drink choices where I purchase them. BAV1				
4. It would be difficult to change my eating behaviors in my household because no one else would change. BFFS1				
5. I do not understand why drinking water is healthy. BKN1				
6. I would feel embarrassed walking or biking for exercise near my house or in my neighborhood. BEN2				
7. I do not know how to read nutrition labels. BKN2				
8. Comments from my family or friends would make it difficult to stick to a healthier lifestyle. BFSS2				
9. I do not feel safe walking or biking in my neighborhood. BEN3				
10. I usually eat red meat at least once per day or about 5 days per week. BFP2				
11. I often buy food at corner stores or small neighborhood stores. BAV2				

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
12. I do not know how to make a healthy meal that tastes great. BKN3				
13. I eat some type of junk food every day BFP3				
14. My family thinks I'm healthy just the way I am. BFSS3				
15. There are very few healthy choices where I shop for food. BAV3				
16. I'm not sure how to make a healthy meal for myself or my family. BKN4				
17. There is a playground or park near my home (within 6 blocks). BEN4				
18. I think tap water tastes terrible/not good OR am concerned about the water quality so do not drink it. BFP4				
19. When I go out to eat with friends they often choose unhealthy foods. BFSS4				
20. I cannot buy fresh fruits or vegetables near my home. BAV4				
21. I often buy food or drinks from gas stations. BEN5				
22. My and/or my family's favorite foods cannot be made in a healthful way. BKN5				
23. I buy less healthy food because you get more for your money. BAV5				
24. Deep fried foods are often part of my family's favorite meals. BFP5				
25. I do not have a friend/family member who would be interested in being a workout buddy. BFSS5				

Appendix E

Preliminary EFA Data – Motivators

Total Variance Explained – Original 25 Motivators Items						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.611	34.443	34.443	8.153	32.613	32.613	6.160
2	2.268	9.070	43.513	1.836	7.345	39.958	4.404
3	1.630	6.522	50.035	1.102	4.407	44.365	2.954
4	1.294	5.175	55.209	.771	3.086	47.451	2.392
5	1.261	5.044	60.254	.741	2.963	50.414	3.509
6	.954	4.215	64.469				
7	.921	3.683	68.152				
8	.837	3.346	71.498				
9	.796	3.184	74.682				
10	.716	2.865	77.547				
11	.634	2.538	80.084				
12	.614	2.455	82.540				
13	.552	2.206	84.746				
14	.510	2.042	86.787				
15	.475	1.901	88.689				
16	.450	1.802	90.490				
17	.410	1.639	92.130				
18	.395	1.578	93.708				
19	.326	1.302	95.010				
20	.290	1.162	96.172				
21	.247	.986	97.158				
22	.202	.807	97.965				
23	.194	.778	98.743				
24	.164	.656	99.399				
25	.150	.601	100.000				
Extraction Method: Principal Axis Factoring.							

Appendix F

Pattern Matrix – Original/Preliminary 25 Motivators Items

Pattern Matrix[a]					
	Factor				
	1	2	3	4	5
MPH1	.743				
MPH4	.656				
MPH3	.600				
MKN1	.537				
MCS5	.508				
MCS1	.472				
MFP1					
MFP3					
MKN4		.855			
MFP5		.623			
MKN3		.570			
MFP2		.466			
MFP4		.453			
MKN2		.416			
MFSS4					
MCS4			.663		
MCS2			.448		
MCS3			.416		
MKN5					
MFSS3				.536	
MPH5		.467		.479	
MPH2				.452	
MFSS1					.657
MFSS2					.533
MFSS5					.420
Extraction Method: Principal Axis Factoring.					
Rotation Method: Oblimin with Kaiser Normalization.					
a. Rotation converged in 19 iterations.					

Appendix G

Item-Total Statistics – Final Motivators Factors

Motivators Factor 1– *Personal Health*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MPH4	12.5726	7.505	.704	.505	.805
MPH3	12.6496	7.488	.681	.489	.811
MPH1	12.6838	7.477	.684	.471	.810
MPH5	12.8803	7.434	.583	.354	.839
MKN1	12.8376	7.379	.644	.426	.820

Motivators Factor 2 – *Beverage and Food Choices*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MKN4	13.4103	9.796	.679	.512	.704
MKN3	13.3162	10.201	.581	.421	.728
MFP2	13.4017	10.501	.461	.276	.758
MFP5	13.3077	10.008	.614	.399	.719
MFP4	13.8718	11.216	.320	.149	.795
MKN2	13.2479	10.412	.517	.324	.743

Motivators Factor 3 – *Church/Spirituality*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MCS4	12.5505	6.287	.475	.231	.771
MCS5	11.9725	6.805	.556	.332	.748
MCS2	12.4495	5.805	.605	.391	.726
MCS1	12.2752	5.479	.630	.423	.718
MCS3	12.4771	6.511	.558	.330	.744

Motivators Factor 4 – *Social Support*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MFSS1	5.6667	1.941	.377	.175	.489
MFSS2	5.2982	1.981	.385	.178	.476
MFSS5	5.3158	2.537	.197	.039	.580

Motivators Factor 5 – Physician Input				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MFSS3	2.6239	.961	.348	.121	.
MPH2	3.1026	.851	.348	.121	.

Appendix H

Original Barriers Preliminary Data

Total Variance Explained – Original 25 Barriers Items						
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.316	37.264	37.264	8.879	35.518	35.518	6.475
2	1.831	7.324	44.588	1.380	5.520	41.037	4.490
3	1.516	6.064	50.652	1.139	4.556	45.593	6.157
4	1.471	5.883	56.534	.947	3.790	49.383	1.286
5	1.295	5.180	61.714	.737	2.948	52.331	2.827
6	.991	3.963	65.676				
7	.912	3.647	69.323				
8	.822	3.287	72.610				
9	.757	3.027	75.637				
10	.711	2.845	78.482				
11	.675	2.700	81.183				
12	.581	2.323	83.505				
13	.561	2.243	85.748				
14	.512	2.049	87.797				
15	.431	1.726	89.522				
16	.413	1.654	91.176				
17	.352	1.408	92.584				
18	.335	1.340	93.925				
19	.299	1.197	95.122				
20	.267	1.068	96.189				
21	.231	.923	97.112				
22	.214	.857	97.969				
23	.202	.807	98.776				
24	.169	.676	99.452				
25	.137	.548	100.000				
Extraction Method: Principal Axis Factoring.							

Item Total Statistics – Final Barriers Factors

Barriers Factor 1 – *Food Choices*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BEN5	7.2105	4.964	.616	.475	.804
BFP2	6.9211	5.330	.595	.415	.810
BFP3	6.8772	5.171	.680	.502	.773
BAV2	7.1754	4.854	.738	.580	.745

Barriers Factor 2 – *Beverage Choices*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BEN1	4.7478	2.348	.591	.383	.577
BFP1	4.6348	2.357	.613	.398	.549
BAV1	4.8783	3.003	.441	.295	.750

Barriers Factor 3 - *Knowledge*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BAV5	8.2193	8.828	.660	.453	.801
BKN2	8.4561	8.958	.639	.417	.807
BKN3	8.2281	8.956	.598	.395	.818
BKN4	8.3860	8.788	.685	.471	.794
BKN5	8.3246	8.823	.627	.441	.810

Barriers Factor 4 – *Family & Social Support*				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BFSS2	5.0531	1.854	.384	.386	.570
BFSS4	4.4425	2.392	.386	.399	.660
BFSS5	4.8938	1.703	.488	.342	.393

Appendix J

Complete List of Favorite Foods Cited

"Ethnic Dishes"	1	Cupcakes	1	Meat	1	Steak	9
Alfredo	1	Dinner	2	Meatballs	3	Stuffed Turkey	1
Bacon	3	"Everything"	1	Meatloaf	8	Sweet Potatoes	1
Baked Chicken	12	Fish	23	Mexican	1	Tacos	9
Baked Fish	1	French Fries	2	Mock Chick Leg	1	Thanksgiving	1
Baked Meats	1	Fried Chicken	8	Nachos	1	Tuna	2
Beans	6	Fried Fish	1	"None"	1	Turkey/Turkey	
Beef Fried Rice	1	Fruit(s)	1	Oatmeal	1	&Gravy	2
Bread	1	Fruit	1	Okra	2	Turkey Neck	1
Breakfast	3	"Fruits &		Pasta	8	Vegetables	7
Broccoli/Broccoli cheese	3	Vegetables"	1	Pinto Beans	3	Yams	1
		Garlic Bread	2	Pizza	5		
Buffalo Fish	1	Gravy	2	Pork	1		
Cake	1	Green Beans	6	Pork Chops	7		
Carrots	1	Greens	14	Potatoes	12		
Casseroles	1	Grilled Cheese	1	Ribs	4		
Catfish	1	Grilled Chicken	2	Rice	9		
Chicken	57	Ground Beef	3	Rice and Beans	3		
Chicken Breast	2	Ground Turkey	1	Roast Beef	1		
Chicken Salad	1	Ham	1	Salad	10		
Chinese	1	Hamburgers	1	Salmon	1		
Chips	1	Ham Hocks	1	Seafood	2		
Cookies	1	Hot Wings	1	Shepard's Pie	1		
Corn	2	Italian Beef	1	Shrimp	2		
Corn	3	Lasagna	6	Shrimp Stirfry	1		
Corn Beef	1	Loaded Potatoes	1	Soul Food	4		
Corn Bread	5	Mac and Cheese	16	Soup(s)	1		
Crab legs	1	Mashed Potatoes	7	Sour Krout	1		
Cream of Chicken	1	Meat(s)	2	Spaghetti	7		

Appendix K

Complete List of Favorite Beverages Cited

7-UP	3	Orange Juice	11
100% Juice	1	Pepsi	5
Alcohol/Liquor	2	Pineapple Soda	1
Almond Milk	1	Pop	1
Apple Juice	1	Root Beer	1
Beer	2	Soda	33
Cocoa	1	Sprite	4
Coffee	8	Sugarfree Drinks	1
Coke	2	Sweet Tea	1
Cranberry Juice	1	Tea	26
Diet Kool-Aid	1	V-8 Splash	2
Diet Soda	1	Water	63
Diet Sprite	1	Watermelon	
Dr. Pepper	1	Drink	1
Flavored Drinks	1	Water w/Crystal	
Flavored Water	1	Light	1
Gatorade	3	Water with Mix	1
Ginger Ale	16	Wine	1
Grape Soda	1		
Green Tea	1		
Hawaiian Punch	1		
Iced Tea	2		
Juice	38		
Juicy Juice	1		
Kool-Aid	14		
Lemonade	5		
Lemon Water	1		
Milk	13		
Mountain Dew	4		

Appendix L

Complete List of all Grocery Stores Cited

"Any"	1
Aldi	21
Cermax	2
Dollar Days	1
Dollar Store	1
Dollar Tree	1
ElRay	1
Food Town	1
Fresh Thymes	1
Galst	4
Lena's	48
Meijer	6
Outpost	2
PickNSave	69
Piggly Wiggly	6
Sam's Club	7
Save a Lot	7
Save on Foods	1
Sentry	4
Target	2
Total Cited	1
Trader Joe's	2
Walgreens	2
Walmart	45
Whole Foods	1
Woodman's	32

Appendix M

Complete List of Fast Food Restaurants Cited

Restaurant	Count	Restaurant	Count	Restaurant	Count
Apple Bees	6	None/		Wing Stop	2
Arby's	1	Do not eat	20	ZaZa's Steak &	
Boston Chicken	1	Noodles	1	Lemon Aid	2
Buff Wild Wings	2	Old Country			
Burger King	19	Buffet	1		
Checkers	8	Olive Garden	2		
Cheesecake		Other	0		
Factory	1	Outback			
Chick Fil-A	4	Steakhouse	1		
Chili's	1	Papa Johns	1		
Chinese	2	Perkins	1		
Corson's	1	Pizza Hut	4		
Cousins	4	Popeyes	17		
Cracker Barrell	2	Portillos	1		
Culver's	7	Pot Belly's	1		
Dave and		Pueblo's	1		
Busters	1	Qdoba	1		
Denny's	2	Red Lobster	2		
Escabar's	1	Rocky Rococo	1		
Famous Daves	1	Speed Queen	1		
George Webbs	1	Subway	8		
Golden Corral	1	Taco Bell	8		
Haji's	1	Texas Road			
J.J. Chicken	1	House	1		
JJ's Fish	1	The Mall	1		
KFC	5	Valeo's Pizza	1		
McDonald's	40	Wendy's	20		
Michael's	1	White Castle	1		
		Whole Foods	1		

Appendix N

Complete List of Physical Activities Cited

Bending	1	Run/Running	4
Bungee Cords	1	School	1
Chasing Kids	1	Shoveling	
Cleaning/work		at Work	1
at home	5	Sit-ups at Home	3
Church	1	Sit and Be Fit	1
Curves	1	Stairs	2
Dancing	2	Stairs at	
Delivering		Work/School	3
Newspaper	1	Standing	1
Drinking Water	2	Standing	
Dumbell Lifting	1	at Work	1
Family	1	Stepper	
Freestyle		at home	1
Workouts	1	Stretching	1
Gazelle	1	Treadmill	5
Grocery Shopping	1	Up & down	
Gym	7	Stairs	8
HomeDVD/		Walk/Walking	63
Exercise Video	3	Walking at Lunch	
Home Exercise	4	Break	1
Lifting children	2	Walking at Work	5
None/NA	14	Walking kids	
Physical Therapy	4	to School	1
Planet Fitness	1	Walking dog	3
Playing with		Walking to work	1
Children	1	Water Aerobics	1
Rebounder	1	Weights	1
Ride Bike	5	Weight Training at	
		home	1

<div align="center">Curriculum Vitae</div>

<u>Graduate Education</u>
University of Wisconsin-Milwaukee
Milwaukee, Wisconsin
Concentration in Counseling Psychology
GPA 3.6/4.0
Doctor of Philosophy, expected August, 2018

University of Wisconsin-Milwaukee
Milwaukee, Wisconsin
Concentration in Community Mental Health Counseling
GPA 3.9/4.0
Master of Science, May 2011

Dissertation:
Motivators and Barriers to Health Behaviors in African American Women
Defense Date: July, 2018

<u>Other Clinical Training</u>
Trans-Knowledgeable Care for Psychotherapists Certificate (Washington University; St. Louis, MO) - 2017   *Intersectionality; Trauma-Informed Care for Professionals*, Safe Zone, (Kansas State University) - 2017
The Body Project - Peer Leader Certification (Kansas State University) - 2016
Campus Connect Suicide Gatekeeper Training Program (UW-Milwaukee) – 2014
Hypnosis Workshop (Medical College of Wisconsin) - 2014
Smoking Cessation Training Certificate (Mayo Clinic, MN) - 2013
Group Facilitation Training Certificate (Milwaukee Mental Health Alliance) - 2009

<u>Doctoral Clinical Experience</u>
University of Missouri– Columbia, MO   **08/2017 - present**
Counseling Center   Supervisors: Christy Hutton, Ph.D., LP
Post-Intern Psychology Resident   Kimberly Conde, Ph.D., LP

- **Assessment and Individual brief and ongoing counseling** with diverse Mizzou undergraduate and graduate students from widely varying backgrounds, providing comprehensive and focused clinical care for individuals with a wide variety of psychological, relational, and academic concerns. I especially enjoy working with students of color and of other marginalized status', graduate students, and international students.

    - Mood Disorders, FOO concerns, identity development, romantic and familial relationship discord, bereavement, childhood and recent trauma, sexual orientation and gender identity development, psychosis

- **Crisis Intervention and Assessment, Pager Duty**
- **Group Coleader:** Graduate/Non-Traditional Students
- **Outreach Committee Member:**
    - Biweekly meetings, planning and participation in campus events: Fall Carnival, Family Weekend, Mental Health Week, presentations as listed below

- **Consultation and Collaboration**
    - Weekly Clinical Team meetings (case presentation, client acquisition, consultation)
    - Community and University Health System – Primary & Psychiatric Care
    - MU Police Department; RAD Training Support
    - MU Student Health Center
    - Wellness Resource Center
    - LGBTQ Resource Center
    - International Center

- **Seminars, Independently/Co-Developed and Presented:**
    - **Take Action and Mental Health Stigma, Disabilities & ADA,** Division of Inclusion, Diversity, and Equity
    - **Dating in the United States for International Students**
    - **Mental Health, Stress, and College Students,** School of Journalism
    - **Finding Work/Life Balance,** Mizzou Law School
    - **Creating a Trans-Affirmative Environment in Higher Education,** Meeting of the Minds; Kansas City, MO (April 2018)
    - **Mental Health Awareness Week**
- **Other**
    - Intern Selection Committee
    - Trans-focus group
    - Other Tabling

Kansas State University – Manhattan, KS   **08/2016 - 07/2016**
Counseling Services
APA-Accredited Internship in Psychology
Doctoral Psychology Intern   Supervisors: Cliff Rone, Ph.D., LP, Training Director
                                                                    Laurie Wesely, Ph.D., LP, Asst Director

- **Individual brief and ongoing counseling** with diverse K-State undergraduate and graduate students, providing services for a wide variety of psychological health, identity, and academic concerns.

    - Mood difficulties, anxiety disorders, academic and social concerns, romantic and familial relationship discord, sexual orientation exploration, gender identity development, sexual assault and other trauma history, adjustment disorder, phase-of -life, eating disorders, health behaviors

- **Counselor-on-Duty/Crisis and consultation services**
- **Referrals, Consult, and Collaboration**
    - Lafene Health Center

- Office of Student Life
- CARE (Center for Advocacy & Response & Education)
- Academic Success Center - College of Engineering
- Career Center
- Academic Assistance Center
- Student Access Center
- Variety of community referrals (i.e. Via Christy Hospital, Pawnee Mental Health)

- **Group counseling** Understanding Self and Others Process Groups
- **Assessments & Reports**
  - KPIRS A, B (K-State Problem Identification Rating Scales)
  - CAMS (Collaborative Assessment and Management of Suicidality)
  - EDI III (Eating Disorders Inventory III)
  - SII (Strong Interest Inventory)
- **In-services** (Individual presentations provided to all Counseling Services staff)
  - *Micro-Aggressions and Bystander Intervention*
  - *Culture and Communication*
- **Outreach/Other**
  - Diversity Seminar Discussion: *Experiences of Being Black on Campus: AA at PWI*
  - *The Body Project* Workshop Series - Trainer
  - Greek Life workshop: *Alcohol Awareness*
  - KatChats (*Managing stress; Alcohol 101*)
  - Diversity Project (KSU's Indigenous Alliance and NASA -Native American Student Association)
  - Campus-wide classroom presentations by instructor request (*Adjusting to College; Managing Stress)*
- **Other Responsibilities**
  - Training Team
  - Intern Search Committee
  - Diversity Work Group
  - Teaching
  - ED Treatment Team Consultation
  - Case presentations and conferences

Counseling & Consultation Services at Norris Student Health Center
University of Wisconsin - Milwaukee   **08/2014-05/2015**
Counselor/Advanced Practicum Student

Supervisors: JoAnne Graham, Ph.D., Senior Psychologist
Laura Pagel, M.A., LPC

- **Individual brief and ongoing counseling** with diverse UW-Milwaukee undergraduate and graduate students, providing services for a wide variety of psychological health and academic concerns
  - Depression, anxiety, and other mood disorders, relationship issues, substance abuse, impulse control disorders, academic probation and major/career guidance, bereavement/loss; trauma history, mindfulness, sleep disorders,

- **Assessments**
  - Intake   - BASICS
  - Suicide   - e-Checkups
  - BAI/BDI   - PTSD

- **Group** design, facilitation, co-facilitation
  - Multicultural Women's Group *Sister Talk* (in cooperation w/the Women's Resource Center)
  - Mindfulness Group

- **Consultation**: Weekly and biweekly inter-clinician meetings
  - Staff consultation group (present, discuss cases)
  - Eating Disorders Treatment Group

- **Campus Outreach and Partnerships**
  - Let's Talk walk-in consultation
  - Stepping Forward (in cooperation w/Department of Rec Sports & Facilities)
  - National Depression Screening Day
  - National Alcohol Screening Day
  - Eating Disorders Awareness Week
  - Mental Health Awareness Week

- **Other Responsibilities**
  - Set up psychiatric appointments and consulted as needed regarding medication evaluation
  - Connected students with campus and community resources
  - Worked in conjunction with the Health Center, Accessibility Resource Center, University Housing, Student Services, Military/Veterans' Resource Center, and UWM Police

Medical College of Wisconsin (MCW)
Wauwatosa, Wisconsin   **06/2012-07/2014**
Psychotherapist/Prac Student   Supervisor: George Jacobson, Ph.D., LP, Assoc. Professor

- **Individual brief and ongoing counseling** with diverse community clients, couples, families, and medical residents, providing services for a wide variety of mental health concerns and conditions

  - Depression, anxiety, bipolar disorder, personality disorders, substance abuse, financial distress, trauma history, sleep disorders, eating disorders, health behaviors

- **Assessments & Report Writing**
  - Intake   - MMPI
  - Suicide   - WAIS IV
  - BDI/BAI   - MMSE

- **Group** design, facilitation
    - Depression and Anxiety Support Group
    - Relaxation and Meditation Series
- **Other Responsibilities**:

    - weekly staff consultation meetings
    - present and discuss cases, other clinic concerns

<u>Masters Clinical Experience</u>

Counseling & Psychological Services   **07/2010-05/2011**
Milwaukee School of Engineering
Counselor/Practicum Student   Supervisors: Joseph Meloy, MS/Mary Wellenstein, MS

- **Individual brief and ongoing counseling** with diverse MSOE undergraduate and graduate students (especially engineering, nursing, and biological science majors, providing services for a wide variety of psychological health and academic concerns:

    - Depression, anxiety, adjustment and other mood disorders, relationship issues, substance abuse, academic probation and major/career guidance, trauma history, sleep disorders, health behaviors

- **Assessments**

    - Intake   - Heart-Math Biofeedback System
    - Suicide   - Strong Interest Inventory
    - Anxiety   - eCheckups
    - Depression   - MBTI

- **Group** design, co-facilitation

    - Social Skills Group
    - Academic Probation Support Group

- **Campus Outreach**

    - Independently Design & Present Campus Workshops:
        - *Alcohol & You*
        - *College Students & Stress*
        - *Self Esteem for College Students*
        - *Date Rape, Sexual Assault, and Harassment*
        - Health and Wellness Fair
        - National Alcohol Screening Day
        - National Depression Screening Day
        - Sexual Assault Awareness Month

- **Other Responsibilities**

  - Coordinate and assistance with other campus departments: Health Services, Guidance, Housing, Student Support Services (TRIO), University Disability Services (UDS)
    Student Appeals processing and recommendation
  - Early Alert Referral System committee (campus wide intervention reporting/protocols for at-risk students)
  - Monthly Newsletter

Supervision Experience

University of Wisconsin - Milwaukee   **08/2014 – 05/2015**
Doctoral Supervision & Consultation   Supervisor: Leah Rouse, Ph.D., LP, Asst.Professor
Master of Science in Mental Health Counseling Program
- Individual, biweekly supervision of graduate students' practicum experiences
- Received weekly group and individual Supervision-of-Supervision
- Broad client base: AODA, community, children
- Evaluations available upon request

Milwaukee Center for Independence   **05/2015 – 09/ 2015**
Community Crisis Service   Supervisor: Robert Huberty, LCSW, Clinical Director
Doctoral crisis counselor and master's level counselor supervisor

- Weekly supervision of 2 masters level practicum students
- Urban, residential crisis clinic

Teaching Experience

Kansas State University   **08/2016 - 05/2017**
Co-Instructor   Supervisor: Jay Middleton, Ph.D., LP
Department of Education, Counseling,
and Educational Psychology

- **EDCEP 202: Career & Life Planning (U)**
  - Defining and exploring interests, values, and skills
  - Career assessments:
  - Strong Interest Inventory (SII)
  - Career Thoughts Inventory (CTI
  - MBTI/Jung Typology Test (JTT)
  - VIA Signature Strengths Survey

University of Wisconsin - Milwaukee
Instructor (independent)
Department of Educational Psychology   **08/2012- 06/2016**
Counseling Department   Supervisor: Nadya Fouad, Ph.D

- Ed Psych 110 Exploring your Major and Career (U)
- Gauging interests, values, and skills
- Matching career personality with vocational personality (Holland Codes)
- Exploring career paths; O*Net and Occupational Outlook Handbook (OOC)
- SMART goal setting and follow through
- Organization and time management
- Researching of academic requirements for specific programs
- Informational interviewing, mock interviews, elevator speeches

- Ed Psych 104 Pathways to Success at UW-Milwaukee (U)
- Co-designed premise, curriculum, syllabi
- Campus as a system and exposure to all degrees and certificates
- Adjusting to independence
- Introduction to and interaction with campus resources and organizations
- Explanation of General Education Requirements
- Study skills, organization, and time management
- Connecting and preparing for advising appointments
- Navigating D2L, PAWS, library
- Personality and vocational assessments
- Financial Aid
- MAPWORKS assessment and follow-up

- Ed Psych 301 Career Transitions- Planning for Post-Graduation (U, Hybrid)
- Online and in-person
- Utilizing Career Planning & Resource Center
- Goal setting
- Researching internship and employment opportunities
- Vocational Assessments
- Resumes/Interview preparation and skills
- Job Fairs
- Networking

- **Counseling 403 Overview of Counseling Skills (U)**
    - Designed curriculum/syllabus
    - Junior and senior standing students
    - Introduction to careers in mental health
    - Interpersonal communication skills
    - Insight and action-oriented theories and techniques
    - Multicultural awareness and considerations
    - Ethics
    - Graduate school options; application protocol and preparation

- **Counseling 714 Essentials of Counseling (G)**
    - First opportunity for master's students to practice counseling skills
    - Lectures theory and practice-based
    - Students hold mock therapy sessions, transcribe a large portion, and review and comment on their own skills before I evaluated the session Self-analyses
    - Designed and promoted marketing materials for most of the courses above
    - Assist students in getting to know themselves and be more aware of their interactions with others
    - Student evaluations available upon request

Graduate Research Experience:

- Health disparities and inequalities among racial and ethnic minority groups, especially with respect to individuals of African American and Latino descent

- Intervention Specialist: Oneida Nation Smoking Cessation Study: 11/2013-02/2015.

    -Using counseling and hypnotherapy techniques, we helped many Native American (Oneida, Ho Chunk, Menominee) adults reach their smoking cessation goals.

- Retention of College Students in the United States. Basis for design of Pathways to Success course

- Assisted in recruiting research participants in several studies via in-person surveys, interviews, online questionnaires

- Journal article research, review, summarizing, writing

Posters/Paper Presentations: Conventions of the American Psychological Association

Alomá, A., Lira, E., **DePratt, T.**, Quant, M., Fallon, O. & Sapp, M. (2012). Medical Providers' Perceptions of Hypnosis in the Treatment of Latinos with Type 2 Diabetes.

Alomá, A., **DePratt, T**., Leon, E., Lira, E. N., Rouse Arndt, L., & Sapp, M. (2014).

Development of a Culturally Tailored Smoking Cessation Hypnosis Script for an American Indian Community.

DePratt, T., Alomá, A., Quant, M. B., & Lira, E. N. (2014) Cultural Influences on Health Behaviors and Perceptions of Hypnosis by African American Adults.

DePratt, T., Alomá, A**.**, Lira, E., Fallon, O., Quant, M. & Sapp, M. (2012). Increasing Health Behaviors in Very Overweight African American Adults*.*

Rouse Arndt, L. M., Powless, M., Sapp, M., Alomá, A., Lira, E. N., **DePratt, T.,** M., Quant, M., & Del Ponte, M. (2013). Smoking Cessation Using Hypnosis in a Native American Sample*.*

Sapp, M., **DePratt, T.**, Leon, E., Lira, E. N., Alomá, A., Quant, M. B., & Hunt, J. (2014). Hypnosis, CBT, Automaticity, and African American College Students

Other Service

- *Counseling Psychology Student Association* (2012-2015)
  - Communications Officer & Faculty Liaison (2013-2014)
- *NAMI Walk Wisconsin* Team Captain (2015)
  - CPSA/Norris Counseling Services Team
- *Masters Counseling Student Organization* (2009-2011)

Electronic Health Records Software

- TiTanium
- Point & Click
- EPIC
- Evolve
- Pyramed

*Thank you for reviewing my Curriculum Vitae