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The Relationships Between Health Literacy, Self-Efficacy and Readiness for Change to Health Promotion Behaviors in Urban Black Women

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BY

Millie Hepburn

Dissertation Committee

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Dr. Dorothy Carolina
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Date: 6/15/16

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Finally, to my friends, who have listened to me throughout this adventure, yet still manage somehow to be my friends - I salute you!
DEDICATION

This study is dedicated to the millions of Black women who have suffered the consequences of preventable conditions and diseases.

May we as healthcare providers and researchers someday better serve you …
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Abstract

Problem: Black women have been shown to experience higher rates of morbidity and mortality as a result of stroke, cardiovascular disease, hypertension, diabetes and overweight or obesity than women of other races/ethnicities. The ability to avert certain health problems, such as cardiovascular disease, hypertension, diabetes, stroke and overweight or obesity is known to be directly related to active engagement in health promotion behaviors, yet Black women are consistently less likely to engage in these behaviors than are white women. Improved understanding of the various factors that impact individual health promotion behaviors to reduce risk, such as health literacy, self-efficacy and readiness to change, may result in developing more effective interventions to reduce health care disparities in this vulnerable population.

Method: This descriptive, correlational study examined the contribution of health literacy, self-efficacy and readiness for change to health promotion behaviors. The Health Promotion Model served as the conceptual framework. A convenience sample of 132 urban Black women aged 30 to 64 participated in the study. Participants completed a demographic profile and instruments that measured health literacy (Newest Vital Sign), self-efficacy (New General Self-Efficacy Scale) and readiness for change (Health Risk Inventory) and health promotion behaviors (Health-Promoting Lifestyle Profile II).

Results: The majority of the respondents (72.6%) had completed high school and 25% had achieved a college degree. There were positive correlations between each of the independent variables to health promotion behaviors: NVS ($r = .244, p < .002$), NGSE ($r = .312, p < .001$) and HRI ($r = .440, p < .001$). The combination of health literacy, self-efficacy and readiness for change accounted for a total of 29.8% of the variance in health
promotion behaviors. A positive correlation was also noted between education and health literacy \( r_s = .414, p = .001 \). However, the internal consistency of the Newest Vital Sign instrument, used to measure health literacy, was low (\( \alpha = .597 \)).

Conclusion: Readiness for change was most highly correlated with health promotion behaviors, a finding consistent with previous studies on changing behavior. The Newest Vital Sign instrument demonstrated poor internal consistency, and although this instrument is widely used clinically, it may not be the best instrument to measure health literacy for research purposes. Replication of this study with larger populations of Black women may further identify these relationships. The reproducibility of these findings may then serve to guide future interventionalal studies aimed at reducing health disparities among Black women.
CHAPTER I
INTRODUCTION

Black women are disproportionately affected by cardiovascular disease (CVD), hypertension, diabetes and stroke as well as overweight and obesity as compared to Caucasian women (American Heart Association [AHA], 2013; Christian, Rosamond, White, & Mosca, 2007). This increased incidence is consistently related to modifiable risk factors (AHA, 2016). Health promotion behaviors (activities motivated by a desire to protect or promote health and well-being) include participating in regular physical activity, consuming a healthy diet, maintaining a healthy weight, abstaining from cigarette smoke, sleeping seven to eight hours a night, using preventative health and dental care and reducing alcohol intake (Luyter, Strollo, Zee, & Walsh, 2012). Health promotion behaviors have been shown to correlate with optimal health and to prevent conditions such as cardiovascular disease (CVD), hypertension, diabetes, stroke and overweight and obesity (AHA, 2016). The landmark study of women’s health across the nation (SWAN) showed that Black women do not perform these behaviors as consistently as other populations of women (Matthews, Sowers, Derby, Stein et al., 2005), and little progress has been made over the last two decades to improve these behaviors in at risk populations (Healthy People 2020; Mosca, Hammond, Mochari-Greenberger, Towfighi, & Albert, 2013).

Healthy People 2010 established goals to eliminate racial disparities in mortality related to preventable diseases and conditions, and these goals continue to be included in the Healthy People 2020 objectives because little progress has been made (Healthy People 2020). An inadequate understanding of behaviors in populations at high risk for
cardiovascular disease, hypertension, diabetes, stroke and overweight and obesity hinders the development of effective health-promoting interventions (Rosamond et al., 2007; Trimble & Morgenstern, 2008). Therefore, researchers are called upon to better understand the determinants of health promotion behaviors in at risk populations such as Black women (Walker, Mays & Warren, 2004; Wolfe, Crichton, Heuschmann, Grieve, Toschke, & Rudd, 2011).

**Black women and health promotion behaviors**

The ability to avert certain health problems, such as cardiovascular disease, hypertension, diabetes, stroke and overweight and obesity is known to be directly related to active engagement in health promotion behaviors (AHA, 2016; Christian et al., 2007; Johnson & Nies, 2005). Black women have been shown to experience higher rates of morbidity and mortality as a result of these health problems as compared to women of other race/ethnicities. Therefore, understanding the factors that affect health, such as the capacity to use health related information and a belief that change is possible as well as a readiness to change behaviors, is key to guiding efforts to increase health promotion behaviors in Black women (Healthy People 2020; Mosca et al., 2013).

**Black women and health promotion behaviors in cardiovascular disease.**

Health promotion behaviors are well known to reduce multiple modifiable risk factors for CVD such as high blood pressure, elevated serum cholesterol levels, physical inactivity, obesity, diabetes mellitus, and cigarette smoking. The existence of these risk factors is higher among Black women than in other races or ethnicities (AHA, 2013). Although lowering risk factors for heart disease such as controlling blood pressure, adherence to cholesterol medications, and maintaining a body mass index (BMI) less than 25 in young
adulthood (age 18-30) has long been shown to significantly promote general health (Frishman, 2007; NIH, 2007), it has also been shown in multiple studies that Black women do not participate in health promotion behaviors as consistently as Caucasian women (Mosca et al., 2013). This may partially explain why Black women have a 30% higher death rate due to cardiovascular disease (267.9 per 100,000 population) than Caucasian women (190.4 per 100,000 population) (AHA, 2013).

Although the knowledge among the general public that heart disease is the leading cause of death has increased, major knowledge gaps in this knowledge continue among women in minority racial and ethnic groups when compared to Caucasian women (Christian et al., 2007; Mosca, et al., 2013). Black women exercise less than women of other races and ethnicities, and this is related to culture and belief systems (Mansyur, Pavlik, Humen, Taylor & Goodrick, 2013; Mosca, et al., 2013). Black women are also less likely to use preventative medical and dental services due to lack of insurance coverage (Freeman, Kadiyala, Bell & Martin, 2008; McWilliams, 2009; Mosca, et al., 2013).

**Black women and health promotion behaviors in hypertension.** Health promotion behaviors, such as participating in physical activity, following a healthy diet, reducing stress, and maintaining a healthy weight have been shown to dramatically reduce the likelihood of developing hypertension in all populations (AHA, 2016). Although genetic links to hypertension have been discovered in people of African or Caribbean descent, control of hypertension (or high blood pressure) has long been known to be modifiable (AHA, 2016; Finnerty, 1971). Hypertension rates in Black women in the US are among the highest in the world, and have increased in the past decade (US Census
Bureau, 2014), as reported health promotion behaviors among Black women trail far behind other populations of both women and men (Baruth, Bopp, Benjamin, Webb, & Peterson, 2015; Johnson & Neis, 2005; Lloyd-Jones et al., 2009; Mansyur et al., 2013). Blacks in the United States have been shown to be two times less likely than Whites to have their blood pressure controlled using either medication or lifestyle modification, and this disparity was shown to be a result of lack of understanding or access to care (Safford et al., 2007). Although Black women have been shown to correctly identify the modifiable risk factors for CVD, diabetes and stroke (obesity, inactivity, smoking and poor diet) and identify their individual risk of hypertension, they may also identify that hypertension was inevitable if other members of their family are hypertensive, or if they were an overachiever, or if the stress burden of their family role is high (Webb & Gonzalez, 2006).

**Black women and health promotion behaviors in diabetes mellitus.** Health promotion behaviors, such as eating a healthy diet, participating in regular physical exercise, and maintaining a healthy weight, have been shown to dramatically reduce the likelihood of developing diabetes in all populations (AHA, 2016). Black women have been shown to have a higher risk than Black men and Caucasian women for developing diabetes mellitus resulting in over 33% more subsequent clinic visits for diabetes mellitus treatment than Caucasian women, in order to keep their blood sugars controlled (Bohanny, Wu, Liu, Yeh, Tsay, & Want, 2013; Krishnan, Rosenbert, & Palmer, 2008). In 2004, the overall death rate from diabetes mellitus was 24 per 100,000 population (AHA, 2007). In 2009, the diabetes death rate for Caucasian women was 19 per 100,000 population, as compared to 35.9 per 100,000 population for Black women (AHA, 2013).
Diabetes mellitus has been diagnosed in over 3.2 million Black Americans, a prevalence rate 1.4 times higher than that of Caucasians. This rate has tripled over the past three decades and is linked to a lack of health promotion (National Institute of Diabetes and Digestive and Kidney Disease [NIDDK], 2016). Although brisk walking for periods greater than five hours per week was associated with a reduced diabetes risk (incidence ratio= 0.67, 95% CI: 0.49, 0.92) as compared to no walking, Black women were found to be more likely to have a sedentary lifestyle, thereby contributing to a higher incidence of diabetes mellitus. (NIDDK, 2016). Early research provided insight as to the barriers associated with health promotion, including cultural beliefs, self-care practices, education deficits and weight loss that related to diabetes (Maillet et al., 1996). Maillet et al. (1996) found that these barriers were dramatically reduced if the program was perceived to be culturally sensitive by participants. Therefore, the key to understanding barriers to diabetes prevention, treatment and general health promotion behaviors in Black women may relate to prior related behaviors that are perceived to be culturally sensitive (Bohanny, et al., 2013; Harris, 2010).

**Black women and health promotion behaviors in stroke.** It is estimated that engagement in health promotion behaviors could have prevented nearly eighty percent of all strokes (AHA, 2016; Christian et al., 2007). Although the overall incidence of stroke has decreased over the past 60 years, Black women are two to four times more likely to experience stroke than Caucasian women (Kleindorfer et al., 2010). They are also twice as likely to experience complications and have poor outcomes following their stroke (often a sequella of cardiovascular disease, hypertension and diabetes) than women of other races/ethnicities, as they are less likely to actively engage in health promotion
behaviors both before and after the stroke event (Christian et al., 2007; Cruz-Flores et al., 2011).

Reduction of stroke risk is known to be linked to adherence to health promoting behaviors, such as sleeping 7-8 hours per night, eating breakfast, exercising three times per week, abstaining from alcohol and tobacco, and controlling blood pressure (AHA, 2016). Moreover, proper dental care has long been demonstrated to significantly decrease an individual’s risk of stroke (Grau et al., 2004; Pussinen et al., 2004) as periodontitis and gingivitis have been shown to increase the risk of stroke (OR 4.3, 95% CI [1.85, 10.2]) (Grau et al., 2004). However, Black women are more likely than Caucasian women to defer various aspects of preventative healthcare, (such as regular dental care, annual physical exams, assessment of blood pressure and blood tests) due to cost constraints (National Center for Health Statistics, 2011). In the longitudinal ‘Reasons for Geographic and Racial Differences in Stroke’ (REGARDS) study, investigators found a 17.8 percent increased incidence of stroke symptoms in Black adults in a sample population of 468 participants that were 50% Caucasian and 50% Black Americans (Howard et al., 2006).

**Black women and health promotion behaviors in overweight or obesity.**

Health promoting behaviors (such as participating in regular physical activity) decrease risk associated with developing diabetes mellitus or hypertension, and aid in maintaining proper body weight, thereby reducing the risk of CVD (Price, Greer & Tucker, 2013). The age-adjusted prevalence of overweight or obesity of Black women is between 53-82%, and is higher than any other race or ethnicity (AHA, 2013). Overweight or obesity has been linked to sedentary lifestyles in Black women (AHA, 2013; Price, Greer &
Tucker, 2013), and the effect of extra body weight has been shown to dramatically impact the development of cardiovascular disease, hypertension, diabetes, stroke and death (AHA, 2016; Price, Greer, & Tucker, 2013). Although weight management programs have long been shown to be effective (Johnson et al., 2008), Black women are less likely to report participation in health promotion programs, or outpatient rehabilitation than other groups ($p \leq .01$), as they reportedly claim there is little or no benefit (Halbert et al., 2010).

**Relationships between health literacy, self-efficacy and readiness for change to health promotion behaviors.** Health promotion behaviors are activities motivated by a desire to protect or promote health and well being (Pender, Murdoch & Parsons, 2011). The engagement of an individual in activities that promote general health are thought to be related to many factors including health literacy, self-efficacy, readiness for change, perception, motivation, social, living and working conditions, culture and language (Berkman et al., 2011; Bohanny et al., 2013; Guerra & Shea, 2007; Halbert 2010; Mansyur, 2013).

Although many investigators have explored the socioeconomic factors that affect health promotion behaviors, such as living condition, work status, and annual income, no studies have been conducted in regard to the unique affective and cognitive variables, such as health literacy, self-efficacy and readiness for change that impact the advent of health promotion behaviors exclusively in urban community dwelling Black women (Sharma, Sargent, & Stacey, 2005). Additionally, although health literacy, self-efficacy, readiness for change and health promotion behaviors have been addressed in previous investigations as single variables,
they have not been described as potentially related variables, and have not been
investigated in at risk populations such as Black women in urban communities, known to
be at a high risk for mortality as a result of cardiovascular disease, hypertension, diabetes,
stroke and overweight and obesity. An empiric understanding of the nature of the
relationships between health literacy, self-efficacy, and readiness for change to the
development of health promotion behaviors in at risk populations, is essential for the
development of community based intervention research in disease prevention.
(Kleindorfer et al., 2008; Owens, 2006).

**Problem Statement**

Black women have been found to exhibit health promotion behaviors significantly
less often than women in other population groups, and to experience higher rates of
morbidity and mortality due to diseases and conditions that can be largely prevented by
reducing modifiable risks. Despite the high risk of preventable diseases in this population,
current health promotion behavior studies that include the variables of health literacy,
self-efficacy and readiness for change, have not been conducted specifically in
populations of community dwelling urban Black women.

**Research question**

What are the relative contributions of health literacy, self-efficacy and readiness
for change to health promotion behaviors in urban Black women?

**Definitions**

The following variables will be measured in this study: health literacy, self-
efficacy, readiness for change, and health promotion behaviors.
**Health literacy.** Health literacy is identified as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Koh et al., 2010, p. 3; Ratzan & Parker, 2000, p. 4) and are dependent on an individual’s cognitive ability (capacity and competence). Health literacy was operationalized using the Newest Vital Sign (NVS), as it measures the ability to interpret information in order to make healthy choices (Weiss et al., 2005).

**Self-efficacy.** Self-efficacy is a perception, belief or judgment regarding one’s personal capability to effect personal changes (Bandura, 2004). A degree of individual self-efficacy moderates health promoting behaviors (Bandura, 2004, Chen et al., 2001, Pender, 2011), and may be defined in terms of a generalized motivational trait (a belief in individual overall competence to perform over a wide variety of situations) or as a specific motivational state (a belief in an ability to perform specific tasks, given situational demands) (Eden, 1996, Lee & Bobko, 1994). Ultimately these beliefs affect the ability to change behaviors (Chen et al., 2001). General self-efficacy addresses an individual’s belief in his or her overall capability to perform in a variety of different situations. Researchers most often utilize instruments to measure self-efficacy that include general measures, as they are most likely to capture trait-like self-efficacy rather than variable conditions, such as self-esteem (Chen et al., 2001). However, general self-efficacy as a concept identifies inherent belief differences regarding one’s capacity to achieve desired outcomes in a broad array of contexts, based on an aggregation of previous experiences, and this belief emerges over a lifespan (Judge, Erez, & Bono, 1998). Self-efficacy was measured using the New General Self Efficacy Scale ([NGSE],
Chen et al., 2001), an eight-item scale designed to measure individual motivational belief traits associated with an ability to achieve desired outcomes.

**Readiness for change.** Readiness for change is defined as the stage of readiness for instituting behavioral change consistent with the stages of the trans-theoretical model of change: pre-contemplative, contemplative, preparation, action, and maintenance (Prochaska, 1997). Readiness for change will be measured using the Health Risk Intervention instrument ([HRI], Prochaska, 2009).

**Health promotion behaviors.** Health promotion behaviors are activities motivated by a desire to protect or promote health and well-being and include participating in regular physical activity, consuming a healthy diet, maintaining a healthy weight, abstaining from cigarette smoke, sleeping seven to eight hours a night, using preventative health and dental care and reducing alcohol intake (United States Department of Health and Human Services [USDHHS], 2005). Health promotion behaviors will be measured using the domains identified in the Health-Promoting Lifestyle II Profile ([HPLPII], Walker, Sechrist, & Pender, 1987).

**Population**

A sample of adult community-dwelling urban black women between the ages of 30-64 years was selected to participate in this study as it has been demonstrated that this population has a high level of modifiable risk factors.

**Delimitations**

This study was limited to subjects that described themselves as urban Black women between the ages of 30-64, were English speaking, and had not been hospitalized
within the previous six months for cardiovascular or stroke related problems or diabetes, and are able to live independently or with their significant others in an urban community.

**Purpose**

The purpose of this study was to examine the relationships between the specified three independent variables of health literacy, self-efficacy and readiness for change in relation to the dependent variable health promotion behaviors, in urban dwelling Black women.

**Theoretical framework**

The health promotion model (HPM) proposed by Pender et al. (2011) guided this study, as it integrates a holistic perspective of nursing and behavioral science perspectives encompassed in the expectancy-value theory (Feather, 1982), and social cognitive theory (Bandura, 1986). There are multi-dimensional factors that influence health behaviors and place an emphasis on the individual’s responsibility for maintaining health behaviors (Pender et al., 2002). Pender et al. (2011) defines health as a positive dynamic state, and describes health promotion as actions directed at increasing an individual’s sense of well being in a multi-dimensional environment. The HPM includes two broad related concepts (individual characteristics and experiences, and behavior specific cognitions and affect) with several variables (perceived benefits and barriers to action, perceived self-efficacy, activity related affect, as well as interpersonal and situational influences on motivation) and moderating concepts (commitment to a plan of action and intermediate competing demands and preferences) that serve to facilitate or interfere with actions required to obtain a health promoting behavior (Pender & Pender, 1986).

The health promotion model provides a framework for the development of
innovative population specific models and is considered consistent with social cognitive theory as defined by Bandura (1986). Pender’s construct of behavior specific cognitions and affect is consistent with the concept of health literacy as defined by Nutbeam (2001), self-efficacy as defined by Bandura (1977) and readiness for change as defined by Prochaska & DiClemente (1992), using the trans-theoretical model of behavior change (TTM).

In order to promote health, individuals must develop high levels of health literacy (capacity and competence) to integrate a compendium of specific skills, such as following instructions on medications, keeping appointments, following the directions of a health care provider, locating accurate health information, reading food labels, understanding nutrition information, and orally communicating and interpreting spoken medical advice or treatment directions (Nutbeam, 2008; Paasche-Orlow & Wolf, 2008; Weiss et al., 2005). Health literacy skills have been shown to enhance health by analyzing health information, making decisions, and applying these skills into current lifestyle behaviors in social settings to maintain health (Nutbeam, 2008). Health literacy as a concept emerged from theories of social exchange (Homans, 1958), and self-efficacy (Bandura, 1997), and although health literacy, self-efficacy and health promotion behaviors are related, they are not synonymous. Health literacy is not specifically defined within Pender’s model, but Pender (2011) posits that capacity and competence is a critical variable in the successful adoption of health promoting behaviors, and is incorporated within the categories of activity related affect, and prior related behaviors. Although associations have been made between an individual’s level of education and health literacy (Nutbeam, 2008), this may not be a linear relationship. Health literacy is
considered to be dependent on an individual’s ability to assume an active role in health care related decisions and actions in a broad range of health and disease states (Mancuso, 2009; Nutbeam, 2008; Speros, 2005).

Behavior-specific cognitions and affect impact particular actions and the individual’s feelings associated with those actions and are considered to be of major motivational significance. Nursing modification strategies that are designed to improve an individual’s commitment to participate in health promotion behaviors can impact behavior-specific cognitions and affect.

Behavior change is seen as a perceived capability to mobilize resources and courses of action (Bandura 1986; Pender et al., 2011). Self-efficacy represents the belief that one can change health behaviors by personal action, and employ skills to resist temptation (Bandura 1986). Self-efficacy impacts the intention to change risk behavior, the amount of effort expended to attain this goal, and the persistence to continue striving in spite of barriers and setbacks that may undermine motivation. This perspective suggests that success in coping with high-risk situations depends partly on an individual’s belief that one operates as an active agent of personal actions and possesses the necessary skills to reinstate control should a slip occur (Bandura, 1986).

The HPM addresses commitment to a plan of action as initiating a behavioral event in which the individual identifies the perceived benefits of action, interpersonal and situational influences and activity related affect, as well as definitive strategies for eliciting, carrying out and reinforcing the behavior. This commitment to change described by Pender has been identified within TTM as the preparation and action stages of change.
According to Prochaska (1983), readiness for change includes an understanding of the stage of change identified by the individual: Pre-contemplation (not ready to change), contemplation (getting ready to change within six months), preparation (ready to take action within 30 days), action (already initiated change) and maintenance (have initiated change more than six months ago) (Prochaska & DiClemente, 1983).

An individual’s readiness for change has been shown to moderate the likelihood of adopting health promotion behaviors. Individuals who believe that they are capable of developing skills and competencies (self-efficacy) have been shown to have a high positive affect (self-confidence) and identify fewer perceived barriers to the intended behavior. This belief of the ability to perform a certain behavior has been shown to be a motivator toward developing the capacity and competence for performing health-related skills and ultimately sustaining a set of health promotion behaviors (Bandura, 1986, Pender 2002, Prochaska, et al., 1983). Readiness for change has been measured previously in regard to smoking, physical activity, stress management, and obesity, as well as other aspects of health promotion (Prochaska, 2008).

Therefore, a study designed to assess the relationships between health literacy, self-efficacy, readiness for change, and health promotion behaviors in a sample population known to be at a high risk for CVD, hypertension, diabetes, stroke, and overweight and obesity is conceptually in alignment with the health promotion model.
Hypothesis

Although self-efficacy and readiness for change have been linked to health promotion behaviors in previous studies, they have not been tested in combination with health literacy, nor has the nature of these relationships been explored with urban community dwelling Black women. However, supportive evidence implies that there may be positive relationships between these variables and health promotion behaviors.

Therefore, the following hypothesis will be tested in this study: There will be a positive relationship between the following variables: Health literacy, self-efficacy and readiness for change to health promotion behaviors in urban Black women.

Significance of the Study

The disparities in health promotion behaviors among at risk populations such as urban dwelling Black women are consistent with a disproportionate incidence of preventable conditions such as cardiovascular disease, diabetes, hypertension, stroke and overweight and obesity (AHA, 2016). Alarming statistics indicate that these disparities persist despite a host of national initiatives over the past two decades (IOM, 2002; Healthy People 2020), indicating that current national initiatives and interventions toward prevention of these conditions have not been successful among at-risk populations.

The rates of chronic morbidity and mortality related to these conditions are consistently higher in Black women than other populations studied, and the economic burden of this disparity in the US is largely unknown (Healthy People 2020; Johnson & Neis 2005; Koh, Baur, Brooks, & Herrera, 2010). Therefore, an ability to establish empiric knowledge regarding the correlation between the antecedents to health promotion behaviors, such as health literacy, self-efficacy and readiness for change in urban Black
women is a first step to a reduction in disease disparity. Although current nursing theory
and research has described health literacy, self-efficacy and readiness for change in
separate studies, no studies have integrated these variables into a single study of Black
women. This study will supplement empiric knowledge in regard to the theory of health
promotion and will serve to guide future nurse scientists and public health researchers in
providing community-based interventions to promote health in populations of Black
women.
CHAPTER II

REVIEW OF THE LITERATURE

This literature review examines the relationships among health literacy, self-efficacy, readiness for change and health promotion behaviors in urban community dwelling Black women. A brief history of health promotion theory development is presented first, followed by current understanding of health promotion behaviors and related empiric evidence. The subsequent sections address the theory and empiric evidence regarding health literacy, self-efficacy and readiness for change, and their relationships to one another. It is limited to literature obtained in a search of MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, Psych INFO, and Google Scholar for the following terms: cardiovascular disease risk, diabetes mellitus risk, hypertension risk, stroke risk, overweight and obesity, health promotion behaviors, health literacy, self-efficacy, and readiness for change in Black women.

Sixty-seven relevant research publications, published between 1995 and 2015 were selected for this review based on the following criteria: research integrity, relevance to research questions and variables, as well as the relevance of these variables to a health promotion theoretical framework. As stated in the preceding chapter, the health promotion model (HPM) developed by Pender (2013) provides the theoretical underpinning for this research study. The theories that led to the development of the Health Promotion model are presented in the following section.

This synthesis illustrates a theoretical progression from disease prevention to health promotion by targeting healthy lifestyle behaviors. Health promotion is defined as
behavior motivated by the desire to increase well being and actualize human health potential (Pender et al., 2013). Our current understanding of health promotion theory may be traced back to the nineteenth century when urban disease epidemics necessitated the development of initiatives to improve public health (McKeown, 1979).

In 1923, Winslow defined health promotion as the art and science of promoting health, thereby preventing disease and prolonging life through the organized efforts (community health education programs and clinics for the early detection of diseases and conditions) of society (Davies et al., 2006; Davies & MacDowall, 2006). Winslow’s definition of health promotion provided support for a host of public health initiatives in the 1950’s, 1960’s and 1970’s. Various committees (e.g. the Cohen Committee [1964], the Health Education Council [1968]), and programs (such as the Bureau of Health Education in 1974) were formed to support public health education (Haefner & Kirscht, 1970; Hochbaum, 1958; Rosenstock, 1966). New publicly and privately funded public health education programs were initiated in the 1970’s and 1980’s and in turn inspired new health promotion models. One such model, the health belief model (HBM), was designed at the US Public Health Service (Rosenstock, 1974) to understand health behavior. The HBM defined individual health promotion behaviors as actions taken in response to a perceived condition or consequence (perceived threat).

Subsequently in 1981, The World Health Organization (WHO) adopted the ‘Health for All’ strategy, which stated that the attainment of health would permit all peoples of the world to lead a socially and economically productive life by the year 2000. The WHO declared that health attainment should become a focus of governments and
international organizations. As a result, several theoretical health promotion models emerged in the 1980’s and 1990’s.

Current theories of health promotion include specific temporal ordered strategies to guide change within specific populations, organizations, and in health policies to ensure maximum impact. Within these theories, individuals are thought to perceive specific barriers to health, and as a result, develop a set of beliefs regarding their ability to engage in health promotion behaviors (Nutbeam & Harris, 1999). The social cognitive theory developed by Bandura (1986) explained the role of these individual beliefs in promoting health. In his theoretical framework, Bandura (1986) identified cognitions (reciprocal determinism, observational learning, expectations, and self-efficacy) that motivate an individual to engage in a healthy lifestyle, rather than in response to a perceived threat to health. Of these cognitions, self-efficacy is regarded as the most valuable cognition to promote health, and therefore, self-efficacy has been incorporated into many health promotion models.

Prochaska and DiClemente (1984, 2009) also examined the individual when they developed a theoretical framework describing the process of readiness for change that has been integrated into newer health promotion models. In 1990, Downie, Fyfe and Tanahill described health promotion theory in a framework of public health services, such as education, prevention, and public health protection programs. Nutbeam (2003) then integrated these theories when he created a foundation for international health promotion planning models. Subsequently, Tannahill (2009) identified more specific physical, social and educational strategies to achieve health and well-being. Tannahill’s integration of
medical prevention models with public health promotion has fostered public health research in diverse populations.

**The Health Promotion Model**

The health promotion model (HPM) described by Pender (2013) was chosen as the framework for this study as many of Rosenstock’s (1974) and Bandura’s (1986) concepts have been further explored and developed within the HPM. According to Pender (1996, 2013), health promotion behavior is an outcome that is dependent on the demonstrated attainment of a healthy lifestyle that includes multiple health promotion behaviors to improve an individual’s functional ability at all stages of development.

As a framework, the health promotion model (HPM) has demonstrated high levels of consistency in numerous intervention studies of diverse populations, such as farmers (McCullagh et al., 2002), college students (Martinelli, 1999), homeless women (Wilson, 2005), the elderly (Duffy, 1993; Seo, 2004), low income elderly women (Shin, et al., 2008), adolescents (Garcia et al., 1995), blue collar workers (Weitzel, 1989), working women (Canaval & Sanchez, 2011), rural women, (Adams, Bowden, Humphrey & McAdams, 2000), women with cervical cancers (Taechaboosermak et al., 2005), people with spinal cord injuries (Keegan, Chan, Ditchman, & Chiu, 2012), married couples (Padula & Sullivan, 2006), construction workers (Lusk, Ronis & Hogan, 1997), in the workplace (Pender, 1990) and various social situations (McCullagh, 2002), and among patients with chronic disease (Shin, Kang, Park, Cho & Heitkemper, 2005).

These studies compare and support various aspects of the health promotion model, such as self-efficacy, readiness for change, as well as the individual factors (such as prior related behaviors, and perceived benefit of action) that contribute to health promotion
behaviors that in turn prevent conditions such as cardiovascular disease (CVD), hypertension, diabetes, stroke and overweight and obesity in diverse populations.

**Health promotion behaviors.** Health promotion behaviors have been defined by the United States Department of Health and Human Services (2005) as those activities motivated by a desire to protect or promote health and wellbeing. These activities include preventing or controlling hypertension, participating in regular physical activity, consuming a healthy diet, maintaining a healthy weight, abstaining from cigarette smoke, sleeping seven to eight hours a night, using preventative health and dental care and avoiding the overuse of alcohol (Pender, 2013; Shakeshaft, 2012; Tingen et al., 2012).

The active engagement in the aforementioned health promotion behaviors (especially among vulnerable populations such as Black women) has been shown to prevent CVD, hypertension, diabetes, stroke, overweight or obesity, and to reduce the incidence of recurrent hospitalizations, inconsistent follow up care, poor medication adherence, and mortality related to these conditions (AHA, 2016; Baker et al., 2008, Chiuve et al., 2008; Institute of Medicine, 2011).

More recent studies have focused on health promotion behavioral interventions that increase physical activity, promote a healthy weight, ensure medication adherence and help to avoid contributors to an unhealthy lifestyle such as cigarette smoking and overuse of alcohol, especially in populations at risk for experiencing cardiovascular disease, hypertension, diabetes and stroke both at home and in the workplace (Khan, Shah & Hameed, 2014; Shakeshaft, 2012; Tingen et. al., 2012).

These behaviors have long been shown to affect the climate of the workplace. This was illustrated in a study of 8400 British civil servants (Ferrie et al., 2007) that
identified how unhealthy behaviors were positively correlated to increased absence from work due to sickness (Ferrie et al., 2007). The ability to measure individual health promotion behaviors has been studied using a wide variety of instruments in varied populations. Unfortunately, many of the instruments that claim to measure health promotion behavior (such as the Goal Attainment Scale [GAS] and the Kaiser Physical Activity Survey [KPAS]) do not comprehensively measure health promotion behavior, but measure a different variable, such as self-efficacy or goal attainment, thereby limiting the instruments’ utility (Khan, Pallant, & Turner-Stokes, 2008; Sternfeld, 1999).

Six distinct and broad categories of health promotion behavior that are consistent with the Health Promotion Model (health responsibility, physical activity, nutrition, spiritual growth, stress management and interpersonal relationships) have been identified as determinants of a healthy lifestyle (Walker, Sechrist, & Pender, 1995). These domains were incorporated into the Health-Promoting Lifestyle Profile (HPLPII) (Walker, Sechrist, & Pender, 1995). Internal consistency for the total scale was .943, and coefficients for each subscale ranged from .793 to .872. The 3-week test-retest reliability for the total scale was .892.

Each category has a demonstrated impact on health, and the applicability of these categories to the proposed study sample of Black women is demonstrated more fully in the next subsection and will be described more fully in chapter three.

**Health promotion behaviors in Black women and prevention of diseases and conditions.** The ability to avert many diseases and conditions such as cardiovascular disease, hypertension, diabetes, stroke and overweight and obesity is directly related to reducing modifiable risk factors through engagement in health promotion behaviors
Alterations in lifestyle behaviors can have significant long-term effects on health. For example, health promotion behaviors (e.g. healthy diet and exercise to control hypertension, cholesterol and blood sugar, as well as a body mass index (BMI) of less than 25) have been demonstrated in a large national survey to play a vital role in lowering risk factors for CVD in young adulthood (ages 18-30) as well as middle adulthood (ages 30-64), and have been shown to increase life expectancy by 7-15% (AHA, 2013).

The prevalence rates of CVD, hypertension, diabetes mellitus, stroke, overweight and obesity in Black women are nearly twice as high as Caucasian women, and Black women are much more likely to die at a younger age as a result of these conditions (AHA, 2014). Using focus groups, Johnson and Nies (2005) found that hypertensive Black women in their sample had inadequate strategies to improve their diet, and they attributed overweight and obesity to a lack of discipline, a lack of time and a lack of motivation, as well as cost constraints. While the studies specific to nutrition in Black women seem limited, there are numerous studies that report higher levels of physical inactivity and a more sedentary lifestyle in this population as compared to other ethnic/racial groups (Adams-Campbell et al., 2000; Christian et al., 2007; Krishnan et al., 2008).

For example, in a sample of 64,524 Black women, 57% reported an hour or less of walking per week, 18% reported moderate activity, and 61% reported engaging in only one episode of strenuous activity each week; and overall physical activity was 20% lower than a referent Caucasian group (Adams-Campbell et al., 2000). These sedentary behaviors are acknowledged to contribute to a higher incidence of CVD, stroke (Christian et al., 2007) and diabetes (AHA, 2015; Krishnan et al., 2008; National Institute of
Diabetes, Digestive and Kidney Disease, 2016) among Black women. The Black Women’s Health Study (Krishnan et al., 2008) compared various levels of physical activity and television watching in the US over a ten-year period. Krishnan and colleague’s study (2008) demonstrated that vigorous physical activity was inversely associated with the development of type 2 diabetes ($p< .001$), with brisk walking for periods greater than 5 hours per week associated with a reduced diabetes risk as compared to no walking (incidence ratio = 0.67, [95% CI: 0.49,0.92]) and television watching for greater than 5 hours per day as compared to less than 1 hour per day associated with an increased incidence of type 2 diabetes (incidence ratio = 1.86, [95% CI: 1.54, 2.24]).

Black women are reported to display less responsibility for promoting their health than other groups of women. For example, Black women are reported more likely to defer regular dental care and medical care (National Center for Health Statistics, 2011), less likely to use preventive services (Mosca, 2012) and obese Black women are less likely to report for prescribed outpatient rehabilitation (Ross, Halm, & Bravata, 2009). Ineffective stress management skills have also been related to preventable disease and conditions, most especially hypertension and cardiovascular disease (Barnes, Schneider, Alexander & Staggers, 1997), and in a study by Webb and Gonzalez (2006) it was noted that Black women with hypertension reported that being overachievers and having multiple family role burdens were contributors to their hypertension (Webb & Gonzalez, 2006). In another study, lack of interpersonal support in Black women was associated with poor glycemic control (Melkus, Whittemore, & Mitchell, 2009). These study
findings support the assessment of health responsibility, physical activity, nutrition, stress management and interpersonal relationships in this study’s population of Black women.

**Variables Associated with Health Promotion Behaviors**

This section of the review of literature includes a theoretical framework and empiric support for the three independent variables identified for this study: health literacy, self-efficacy, and readiness for change.

**Health Literacy.** The current definition of health literacy has been identified by the World Health Organization (WHO) as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Koh, Baur, Brooks, & Herrera, 2010; Koh et al., 2011). Concepts related to health literacy do not exist solely within a single health care discipline, but are shared between social sciences, psychology, public health, applied linguistics, medicine, psychiatry and nursing (Andrulis, 2007; Jordan, 2011; Jorm, 2000; Lizabeth & Kleindorfer, 2009; Marrie, Salter, Tyry, Fox, & Cutter, 2014; Rubin, 2010; Speros, 2005).

Homan (1958) initially defined the concept of health literacy as a continuum of negotiated exchanges, resulting in focused movement of resources as a result of these interactions. The theoretical and conceptual underpinnings for our current understanding of health literacy are found in social exchange theory, social cognitive theory and self-efficacy theory (Bandura, 1997; Homans, 1958). Health literacy concepts have evolved to include a set of cognitive and social skills (competencies) that facilitate an individual’s ability to access, understand, and use health information to promote or maintain health (Apfel, 2010; Rudd, Anderson, Oppenheimer, & Nath, 2007). Theoretical frameworks of
health literacy integrate a compendium of individual variables (such as competency and capacity to translate health knowledge to actionable skills) to promote health in diverse populations (Nutbeam, 2008; Paasche-Orlow, 2007; Rudd et al., 2007; Speros, 2005). Current studies in health literacy utilize a process oriented method that addresses a compendium of patient competencies, as well as an assessment of the effectiveness of the patient-provider interaction and related health care costs (AHRQ, 2010; Koh et al., 2011; Marrie et al., 2014).

Health literacy was first identified as a critical component of health care delivery by Simonds in 1974, and has been addressed in national health care policies for over a decade (National Research Council, 2005; Nielson-Bohlman, 2004; Nutbeam & Harris, 1999; Rubin, 2010, Rudd et al., 2007). It is generally agreed that health literacy is required to understand and use health information, and is evidenced in the ability to perform essential skills in a medical plan of care. According to Harris (2010), individuals with the highest prevalence of chronic disease have the fewest skills required to manage their healthcare needs, and this may be related to a lack of cultural competency.

Researchers from the US Department of Education conducted a national assessment of health literacy using the Adult Literacy and Life Skills Survey and discovered that approximately 88% of US citizens had inadequate health literacy skills (US Department of Health and Human Services, 2010). The researchers that conducted this assessment concluded that low health literacy prevents individuals from participating in a meaningful way to promote their health (US Department of Health and Human Services, 2010). Several studies have found that higher average health literacy scores were discovered among White and Asian/Pacific Islander participants than Black, Hispanic, American
Indian/Alaska Natives and multiracial adults (Kutner et al., 2006; Nielsen-Bohlman, 2004; US Department of Health and Human Services, 2010; Stuart-Shor, Berra, Kamau, & Kumanyika, 2012).

Low health literacy scores have been linked to inadequate proper health promotion behaviors (such as a healthy diet, physical activity, regular health maintenance care, medication use and disease management), thereby increasing modifiable disease risk factors and resulting in poor health outcomes, including death (Baker, Wolf, Feinglass, & Thompson, 2007; CDC, 2015; Khan et al., 2014; Koh et al., 2011). A component of effective dietary management is the ability to read and understand food labels. Rothman et al. (2006) performed a cross sectional study of 200 primary care patients with a US high school education, using a 24 item quiz regarding a food label, and measured literacy with the Rapid Assessment of Adult Literacy (REALM) and numeracy with the Wide Range Achievement Test, third edition (WRAT-3). Individuals that scored higher on these instruments were found to also have a higher literacy in reading printed words (rho= .52), higher income (rho= .39), higher education (rho= .39), and higher numeracy (rho= .67), than those who scored lower and had lower incomes, education, literacy and numeracy, and all of these differences were highly significant (p< .001) (Rothman et al., 2006).

Although adequate health literacy is not always associated with years of formal education, researchers at the Centers for Disease Control (Koh et al., 2010) reported that individuals with low health literacy are more likely to have less education than those with higher levels of education, regardless of age, race or ethnicity. These individuals are also at four times the risk of developing chronic conditions such as hypertension, asthma and
diabetes than are those with higher literacy rates. Key findings among individuals with low health literacy included a higher likelihood of misunderstanding drug labels on prescriptions or food labels, appointment slips and other essential health related materials related to their condition (Davis et al., 2006; Davis, Wolf, Bass, Thompson et al., 2006; Joint Commission, 2007; Khan et al., 2014; Wolf et al., 2007). Unfortunately, although these patients are often labeled as noncompliant, it is posited that individual misunderstanding of health instructions is most often a result of low health literacy skills (Pleasant, 2014; Smith, Curtis, O’Conor, Federman, & Wolf, 2015).

Racial and ethnic minorities (as well as the economically disadvantaged, women and elderly) have been identified as research priority groups, as they often experience a dis-proportionate burden of disease, combined with poor access to quality health care. Although inadequate health literacy is seen across various levels of education and reading abilities, individuals that have been shown to be most vulnerable to poor understanding (and subsequent non-adherence to their health care regimen) are minority populations, immigrant populations, and low-income populations with a reading comprehension below the 5th grade level. Although inadequate health literacy occurs at all reading levels, low reading levels create challenges when attempting to comprehend conventional patient education materials and are a strong indicator of high rates of hospitalizations (Joint Commission, 2007; Paasche-Orlow, 2007).

Researchers (Baker et al., 1999; Berkman et al., 2011; CDC, 2010; Davies et al., 2006; Juzych et al., 2008; Kemper 2010; Mancuso & Rincon, 2006; Osborn, 2011; Paasche-Orlow, 2007; Price-Haywood, 2010; Pleasant, 2014; Rubin, 2010; Smith et al., 2015) have identified a relationship between low health literacy and the inability to
assume health promotion behaviors in varying circumstances. In a cross-sectional study, Mancuso and Rincon (2006) assessed health literacy in a racially/ethnically diverse sample of 175 mainly female (83%) asthmatic patients with a mean age 42 years using the TOFHLA instrument to measure health literacy. They found that over a two-year period, participants with lower health literacy described poor adherence to their asthma medications as prescribed, and an increase in emergency department visits for acute asthmatic episodes as compared to patients with higher health literacy ($p \leq 0.05$ for all comparisons) (Mancuso et al., 2006).

In a systematic review of health literacy research (29 randomized controlled trials and 13 quasi-experimental designs) (Berkman, Sheridan, Donahue, Halpern & Crotty, 2011), low health literacy was reported to be associated with poor health outcomes and inadequate use of health care services. Within this synopsis, Berkman et al. (2011) found that 58% of Blacks surveyed scored at or below basic health literacy levels, and this correlated with percentages of racial disparities in health care services, such as overuse of emergency care, lower rates of mammography screening and influenza vaccination. Berkman et al. (2011) also reported evidence of racial disparities in an ability to interpret labels and health messages, and these patients also experienced poorer health outcomes, including higher mortality rates.

In another study, Davies et al. (2006) utilized interviews of 396 patients with prescribed medication to assess their ability to use the information provided on prescription drug labels to correctly self-medicate. This cross-sectional study was conducted in three different US states, at primary care clinics serving indigent populations, and participants were 67% female (and among women, approximately half
were African American and half were Caucasian), and 86% had completed a minimum of a high school education (Davies et al., 2006). Participants’ reading comprehension was measured using REALM, and nearly half were shown to have low (at or below sixth grade) or marginal (at or below seventh grade) literacy.

Low literacy ($p < .001$) was associated with African-American race, advanced age, and less than high school education, but no differences were found between literacy level and gender (Davies et al., 2006). Participants were asked to demonstrate how they would self-administer five different medications, based on the instructions provided on the label (prescriptions were selected by the primary investigator and no validated instrument was used) (Davies et al., 2006). Nearly half (46.3 %) of the participants in this study misunderstood at least one of the instructions on the prescription label, and the prevalence of adequate, marginal, and low literacy was 37.7%, 51.3%, and 62.7%, respectively ($p < 0.001$) (Davies et al., 2006). Low literacy (adjusted relative risk, 2.32 [95% CI, 1.26, 4.28]) and multiple medications (adjusted relative risk, 2.98 [CI, 1.40, 6.34] for ≥ 5 medications) were independently associated with misunderstanding dosing instructions on prescription medication labels (Davies et al., 2006).

Further highlighting this phenomenon, Juzych et al. (2008) reported that 50% of diverse English speaking participants in a cross-sectional observational study (selected from convenience sample at a US eye clinic) were categorized as having low health literacy (using the TOFHLA health literacy instrument). In this study, low health literacy correlated with significant differences in medication compliance, visual acuity and missed clinic appointments when compared to those with adequate or high health literacy (effect not provided) ($p < .001$) (Juzych et al., 2008).
Inadequate health literacy has also been linked to racial disparities in diabetic medication adherence in a cross-sectional observational study in the US (Osborn, 2011). Although adequate health literacy has been identified as critical to the management of modifiable risk factors (control of blood pressure, blood sugar, diet, physical activity) that have been shown to prevent devastating diseases and conditions (such as cardiovascular disease, hypertension, diabetes, stroke, overweight and obesity) few published studies have explored these relationships in at risk populations such as Black women.

Additionally, although inadequate health literacy has been found to be more prevalent in racial and ethnic minorities, several studies have reported that the degree of education was as significant in the advent of health promotion behaviors as the effect of race or culture, suggesting that decisions regarding health care are not specific to cultural preferences, but are more likely due to a misunderstanding and a lack of communication (Baker et al., 2007; Osborn, 2007; Paasche-Orlow, 2008; Volandes, 2008).

The CDC has formally recognized health literacy as a key factor in improving health promotion behavior (CDC, 2010). In 2010, the CDC assembled an outcome oriented, person-centered national action plan to improve health literacy in the US to ensure universal, accessible and actionable health information to support development of the necessary skills to promote good health (Koh et al., 2010).

In March 2011, the Institute of Medicine (IOM) concluded that inadequate health literacy is potentially modifiable and identified a need for additional research on this topic in an effort to reduce health disparities (IOM, 2011). Unfortunately, though eliminating health disparities through improving health literacy were overarching goals of
the Healthy People 2010 initiative (CDC, 2010), little progress was made. As a result, these goals continue to be placed on several national agendas and maintained in Healthy People 2020 (CDC, 2010).

The degree of oral interaction between health providers and their patients may prove to be the most effective way to translate health care information into active engagement in health management, and may also be an optimal method to assess health literacy (Rubin, 2010). Healthcare providers often make assumptions that their teaching methods are accurate, but their instructions are frequently misinterpreted, resulting in a host of problems for patients with inadequate health literacy (CDC, 2015; Khan, 2014; Koh, 2011).

The ability to use information provided by clinicians to make decisions surrounding end of life care has also been correlated to the individual’s degree of health literacy. In an educational interventional study, African American patients with inadequate or marginal health literacy were found to be more likely than Whites to have preferences for aggressive end of life care after health care providers delivered instructions regarding advanced directives (OR 4.8, 95% CI [2.1–10.9]). In adjusted analysis it was demonstrated that low and marginal health literacy were independent predictors of these preferences (ORs 7.1, 5.1, 95% CI [2.1, 24.2], [1.6, 16.3], respectively), but the impact of race on informed decision-making regarding end of life care was not significant (OR 1.1, 95% CI [0.3, 3.2] (Davies, 2006).

The Joint Commission (2007) officially recognized key components of health literacy that are relative to the provider-patient interaction that require hospital-based clinicians to implement individualized methods to teach health information. In a 2007
statement, the Joint Commission noted that in order to self manage one’s care, individuals must be able not only to read, but to locate relevant information, analyze it and demonstrate behaviors that are consistent with health promotion based on this information (Joint Commission, 2007). This led to the development of health literacy standards for hospitals that requires clinicians to deliver specific methods of education that patients can integrate into their lifestyle (Joint Commission, 2007). These standards were designed to ensure that education strategies are relevant, integrative, culturally appropriate and consistent with patients’ cognitive abilities.

The measurement of health literacy using the instruments identified in the aforementioned studies (such as the NAAL, TOHFLA, REALM, and WRAT) has come under scrutiny, as these instruments measure reading literacy more closely than health literacy (Kemper, 2010; Price-Haywood, 2010). Interactive learning may prove to be a much stronger vehicle for learning new health maintenance skills, as these skills may be varied, and condition specific (Baker, et al., 2008; Kemper 2010; Rubin, 2010). To address this issue, Welch et al. (2011) evaluated the feasibility of using the Newest Vital Sign (NVS) instrument as a screening measure in the primary clinic setting in a randomized interventional study. In the intervention group, clinicians identified patients with low health literacy (using the NVS) and tailored their communication strategies (such as teach-back technique) to their patients’ level of health literacy, using a tool kit established by the American Medical Association (Welch et al., 2011). The study showed that the cost of using the NVS to identify a patient at risk was low ($145), as compared to the projected cost of unidentified limited health literacy in one patient ($7797), and that the NVS was reliable, easy to use (completed in approximately two minutes) and
promoted enhanced patient trust and satisfaction with care, but that more studies were indicated (Welch et al., 2011).

The Newest Vital Sign (NVS) is a reliable and valid instrument that assesses ability to apply health information and closely approximates the conceptual definition of health literacy. Therefore, the NVS will therefore be used in this study despite its demonstrated usefulness being limited to clinical assessment.

**Self-efficacy.** Self-efficacy as a concept has been defined by Bandura (1979) as a belief that an individual is capable of performing in a certain manner to attain specific goals that affect life events. In theory, self-efficacy is posited to enhance human accomplishment and personal well being in many ways. A belief in one’s capability offers an opportunity to approach difficult tasks as a challenge rather than a threat (Bandura, 1986). Self-efficacy is not synonymous with a general sense of self-esteem or confidence. While persons with a high degree of confidence or self-esteem display a regard or respect for themselves from a general perspective, a self-efficacious individual specifies a belief in his or her competence to perform a specific act (Bandura, 1997; Cast & Burke, 2002)

Self-efficacy has theoretical underpinnings in social cognitive theory, and incorporates a sense that individual judgments and actions have an effect on individual ability to perform specific tasks in relationship to health goals and criterion standards (Bandura, 1979; Pender & Pender, 1986). Self-efficacy is a belief in the ability to perform actions required to manage a variety of health situations, subsequently reducing overall risk of cardiovascular disease, hypertension, diabetes mellitus and stroke (Kaplan, Manuck, Anthony, & Clarkson, 2002). Self-efficacy is thought to facilitate an
individual’s ability to exercise control over thoughts, feelings, motivation and actions, and impact health outcomes through self-reflection, and is not related to years of education or literacy level (Bandura, 1986; Dennis & Faux, 1999).

Individuals with high degrees of self-efficacy are said to set challenging goals, maintain strong commitments to them, and recover quickly when they do fail (Bandura, 1986). Self-efficacy has been described as related to specific lifestyle behaviors and as a mediator between prior behaviors, personal factors, and a commitment to a plan of action for change (Pender et al., 2013). In a randomized trial of 463 adults with a basal metabolic index (BMI) mean of 34.8 kg/m$^2$, a high level of self-efficacy was shown to positively impact lifestyle behaviors such as improving exercise (by 19%), diet (by 23%), as well as overall diabetes self-management (King et al., 2010). Rejeski et al. (2011) demonstrated that moderate physical activity (30 minutes of exercise 4-5 times a week), healthy eating behaviors (consistent with the American Heart Association guidelines) and weight loss (to achieve and maintain BMI < 25), were mediated by high levels of self-efficacy, $F(2,249) = 15.11$, $p < .0001$, partial $\eta^2 = .11$.

Individuals that have high levels of perceived self-efficacy have also been shown to maintain a positive sense of personal accomplishment, and maintain lower perceived stress levels than individuals with low self-efficacy (Egido et al., 2012). High self-efficacy has also been shown to contribute to the elimination of unhealthy behaviors such as smoking, drinking alcohol, eating an inadequate diet and poor exercise habits (Egido et al., 2012). Martinelli (1999) used regression analysis to demonstrate support for the relationships between prior related behaviors (smoking or avoidance of environmental tobacco smoke), personal factors (biological, psychological and sociocultural) and self-
efficacy in an investigation of tobacco use in 238 US college students. Self-efficacy has been shown to have a significant effect on specific health promotion behaviors ($R^2 = .10$, $\beta = .44, p < .01$) (Martinelli, 1999). Ashford, Edmunds and French (2010) found in a meta-analysis of 27 interventional studies that improving self-efficacy via feedback on performance correlated to improved physical activity levels in over 5,000 participants (mean $d = 0.16, p < .001$), and although this was a relatively small effect size, it is relevant, given the behavioral nature of the study. Self-efficacy was shown to significantly impact self-care behaviors among 150 diabetic patients ($F^{(3,147)} = 7.58, p < .001$) when self-care was facilitated by nurse practitioners in a clinic setting (Bohanny et al., 2013).

Self-efficacy has been shown to influence other health promotion behaviors as well. In a recent survey study of 190 urban dwelling African Americans (Warren-Findlow, Seymour, & Brunner, 2012), self-efficacy was shown to dramatically influence the management of several modifiable hypertension risks using the H-scale (a five item instrument designed to measure self-efficacy specific to hypertension management), which was shown to be reliable and valid in measuring hypertension self-efficacy in African Americans (Warren-Findlow & Seymour, 2011). In that study, a high level of self-efficacy was shown to positively impact hypertensive medication adherence (prevalence ratio (PR) =1.23, 95% CI [1.08, 1.32]), eating a low salt diet (PR=1.64, 95% CI [1.07, 2.20]), engaging in physical activity (PR=1.27, 95% CI [1.08,1.39]), abstaining from cigarette smoking (PR=1.10, 95% CI [1.01,1.15]), and practicing weight management techniques (PR=1.63, 95% CI [1.30,1.87]) (Warren-Findlow, Seymour, & Brunner, 2012). Self-efficacy and the positive impact on health behaviors have also been
reported in previous nursing studies in regard to individual diabetes management (Dennis & Faux, 1999), breast-feeding (Lenz, 2002), and physical activity in Caucasian elders (Lee, Arthur, & Avis, 2008).

In a randomized trial (Martin et al., 2008) of 61 urban Black women, there was a positive correlation between high self-efficacy and physical activity as a health promotion behavior. Women with higher levels of exercise-related self-efficacy were less likely to report barriers to physical activity ($R^2 = 0.15$, $p = .045$) (Martin et al., 2008). Martin et al., (2008) also reported that these women were more likely to evaluate and re-evaluate their own behaviors as they maintained a belief that they had the ability to engage in and sustain exercise to promote their health. The results of these studies show positive correlations between self-efficacy and the adoption of specific health promotion behaviors such as maintaining regular physical activity, maintaining a healthy diet, maintaining a healthy weight, and managing diabetes and/or high blood pressure.

However, published studies have not reported a correlation between self-efficacy and other health promotion behaviors, such as weight reduction to maintain a BMI less than 25, preventative health screenings or regular dental care. Moreover, instruments that have been designed to measure self-efficacy generally utilize the application of self-efficacy to the enactment of health promotion behaviors rather than self-efficacy itself (Martin et al., 2008).

It has been suggested that measures of self-efficacy should be tailored to specific individual traits that lead to health promotion behaviors, and in many cases, to specific populations (Maibach & Murphy, 1995). Although Bandura’s theory of self-efficacy was originally given a very narrow focus, researchers began to explore the more trait-like
generality dimension of self-efficacy, termed *general* self-efficacy (Eden, 1993; Judge et al., 1996). General self-efficacy is defined as one’s belief in an overall competence to effect requisite performances across a wide variety of achievement situations, based on personal traits (Eden, 1993; Judge et al., 1996). Eden (1998) found that general self-efficacy differed from self-esteem or self-confidence. While levels of self-esteem and self-confidence are dynamic, trait-like (or general) self-efficacy was shown to be a strong predictor of general performance. Therefore, general self-efficacy can be used with other measures to assess the likelihood of success in performing goal behaviors identified by an individual (Eden, 1998), making it a good fit for this study, which investigates self-efficacy in relation to a number of health promotion behaviors. Self-efficacy was measured using the New General Self Efficacy Scale (NGSE), as it has been shown to be reliable in diverse populations (Chen, Cully, & Eden, 2001).

**Readiness for change.** The ability to actively engage in a behavior to promote or improve health may in part be explained by an individual’s readiness to adopt a new behavior. Readiness to change is a central concept identified by Prochaska (1997). This concept as developed by Prochaska defines 5 stages of readiness for change: *pre-contemplation, contemplation, preparation, action and maintenance* (Prochaska, 2002).

As described by Prochaska (1997, 2002) individuals in the pre-contemplation stage of change have not identified an intent to initiate a new behavior in the near future (within 6 months), and may actually be unaware of the need to change, and therefore may underestimate the pros of changing, and in turn overestimate the cons. As a result, they are often encouraged by others to become more mindful of their decision-making and more conscious of the multiple benefits of changing an unhealthy behavior pushing them
toward contemplation. During the contemplation stage of change, individuals are
generally aware of the pros of changing behaviors and exhibit an intention to start a given
behavior within the next six months but have not yet made a commitment toward this
action (Prochaska, 1997). During this stage, a person will consider small steps toward
healthy behaviors, and may speak about change to friends and consider how they would
feel if they behaved differently (Morera et al., 1998; Prochaska, 1997). During the
contemplation stage of change, the positive aspects of changing to the new behavior are
perceived to balance the negatives. This indecision may cause uncertainty and delays in
taking action (Morera et al., 1998). During this stage, individuals may envision the type
of person they could be if they changed their behavior and are encouraged to work at
reducing the negative aspects of making a behavior change (Morera et al., 1998;
Prochaska, 1997).

The next stage of change, or the preparation stage, is identified by the individual’s
intention toward action, and the individual will actively attempt to change behavior, with
or without success (Prochaska, 1997). Generally the preparation stage is triggered by an
acquisition of new knowledge and is the first active attempt at change, and is followed by
the formation of deliberate new behaviors in the action stage of change (Prochaska, 1997).
The action stage of change is often described as the most challenging, as it is perceived
by the individual that hard work is required to keep moving forward to promote health
(Prochaska, 1997). Individuals in the action stage of change describe their need to learn
new techniques in order to help support their change to promote their health. Of these
techniques, substituting desired behaviors for undesired behaviors and avoiding people
and situations that tempt unhealthy behaviors have been reported to be the most difficult to maintain (Prochaska, 1997).

During the maintenance stage of change, individuals have already successfully changed their behavior for more than 6 months, and have maintained these behaviors (Prochaska, 1997). It has been noted that individuals in the maintenance stage of change are more likely to spend time with people who behave in healthy ways and demonstrate healthy activities, especially during stressful situations that could cause them to regress into former behavior patterns (Prochaska, 2002).

Reduction of modifiable disease risk factors is partially determined by the individual’s readiness to adopt health-promoting behaviors. The ability to reduce modifiable disease risk by managing hypertension has been measured by assessing readiness for change. Several interventional studies have tested the effectiveness of change strategies guided by first assessing the current stage of readiness for change, and then assisting participants to transition to a more active stage of readiness for change. Participants in an interventional study (Johnson, Driscal, Johnson, Prochaska, et al., 2006) of 1227 hypertensive US adults (47% female; 16.1% Black) demonstrated improvement in action stage of readiness to improve blood pressure medication management ($X^2 (1,639) = 16.66, p < 0.001, \eta = 0.33$) and adherence to the blood pressure regimen [Wilks lambda ($\lambda$) = 0.95, ($F (1,433) = 10.50, p<0.01, \text{eta}^2 = 0.024$)] following guided strategies to accelerate their readiness for change when compared to participants receiving standard care (Johnson, Driscal, Johnson, Prochaska, et al., 2006). The effect of accelerating readiness for change was sustained for up to 18 months by
utilizing action-based interventions that corresponded to the individual’s identified stage of readiness (Johnson et al., 2006).

In an earlier study, (Sarkin, Johnson, Prochaska, & Prochaska, 2001), successful weight reduction was linked to readiness for change in exercise routines and the most weight was lost when guided interventions were employed to accelerate participants’ readiness for change. In this convenience sample of 670 healthy overweight and obese adults (93% Caucasian, 53% female, mean age 50.9 years), it was discovered that participants in the action stages exercised more than those in the pre-action stages for the moderate and strenuous-intensity categories ($p < .001$). On average, participants reported engaging in moderate-intensity exercise 2.7 ($SD = 3.6$) times for at least 20 minutes in a typical week. Overall, participants reported mild intensity exercise 3.7 ($SD = 4.2$) times per week and strenuous-intensity exercise 1.4 ($SD = 5.7$) times per week (Sarkin, Johnson, Prochaska & Prochaska, 2001).

While earlier studies addressing readiness for change determined stage of change using a variety of measurement instruments, many were specific to the targeted area of change (e.g., smoking, drugs, alcohol consumption), the Health Risk Assessment Intervention instrument (HRI), (developed by the Prochaska and colleagues) evaluates an individual’s stage of readiness for change as a baseline assessment for interventional behavioral studies. The HRI has also been used by organizations such as the Centers for Disease Control (2010) to identify readiness for change in epidemiological studies of diverse community-based population studies. The HRI has also been successfully used to evaluate readiness for change in behavioral interventional studies in women (Cabral, Cotton, Seman, & Gielen, 2006). The HRI has been used to identify specific behaviors
of interest: use of lipid lowering agents (Johnson et al., 2008), HIV prevention (Gazabon et al., 2007), dietary behaviors (Spencer, 2007), smoking cessation, exercise promotion and weight management (Findorff, Stock, Gross, & Wyman, 2007; Johnson et al., 2009). In each of these studies, accelerating an individual’s readiness for change has demonstrated more impact on the likelihood of adopting health promotion behaviors in the future than any other measures, such as education and social support.

Exercise readiness for change was evaluated in a sample of 670 healthy adults (mean age 50.9 ± 15.0; mean BMI 30.6 ± 5.5; 53% female; 93% Caucasian) using survey research that included self-reported levels of exercise (Sarkin, Johnson, Prochaska, & Prochaska, 2001). Analyses of variance and follow-up tests discriminated those in the action stages from those in the pre-action stages for the moderate and strenuous intensity categories ($p < .001$). Constructs of positive and negative aspects of change ($p < .001$) and confidence in the change ($p < .001$) differed across the stages in the expected direction, demonstrating good concurrent and construct validity for the stages of change measure (Sarkin, Johnson, Prochaska & Prochaska, 2001). The patterns found across the stages of change were consistent and replicated the patterns observed in previous studies (Sarkin, Johnson, Prochaska, & Prochaska, 2001).

In another study, the effect of readiness for change in the use of condoms to prevent HIV was investigated in a sample of 166 minority adult women (45% African American, 17% Hispanic American, 15% Asian American, 6% Native American, and 17 % self-identified as non-White other and 166 white women (Gazabon et al., 2007). For African American women, stage of readiness for change correlated with condom use: $R^2 = .13, F (11, 165) = 2.15, p < .02$, (Gazabon et al., 2007). This study demonstrated the
impact of the stage of readiness for change on engaging in the health promotion behavior of condom use; the higher the level of readiness for change correlated to the use of condoms to prevent disease transmission.

Based on these studies, the reliability and validity of the HRI in measuring readiness for change has been more than adequately demonstrated in diverse populations in regard to health promotion behaviors. Therefore, the HRI was chosen to measure readiness for change in this study.

**Relationships between variables that affect health promotion behaviors.** It has been shown that there are relationships between self-efficacy and health literacy as well as relationships between self-efficacy and readiness for change that affect health promotion behaviors. Wolf et al. (2007) found that among 204 HIV patients, those with low health literacy skills were 3.3 times more likely to be non-adherent to their prescribed antiretroviral regimen \( p < 0.001 \) and that patients’ self-efficacy mediated the impact of low literacy on medication adherence \( \text{AOR 7.4, 95\% CI [2.7, 12.5]} \).

In a dissertation study (Owens, 2006) of 200 multi-ethnic older adults (age 65 years or greater), health literacy and self-efficacy were shown to separately correlate with health promotion behaviors. Health literacy (measured with the Test of Functional Health Literacy [TOFHL]) was found to correlate with the Health Promoting Lifestyle Profile II (HPLPII) score \( r^2 = .210, p < .05 \), but the relationship of these two variables to knowledge and readiness for change was not supported (Owens, 2006). Using Pearson’s product-moment correlation, Owens (2006) found that self-efficacy (using the General Self-efficacy Scale) correlated with health promotion behaviors as measured by the HPLPII scores \( r^2 = .395, p < .001 \) in adults over 65 years of age.
A number of studies have been conducted to investigate the impact of self-efficacy and readiness for change on health promotion behaviors including reducing fat intake (Ounpuu, 1999) and increasing levels of physical activity (Martin et al., 2008). In a study by Ounpuu (1999) the impact of self-efficacy and readiness for change on reducing the intake of dietary fat (a health promotion behavior) was explored. It was discovered that high self-efficacy scores accounted for 74% of the variance in reducing dietary fat intake in a diverse group of 551 women (71% White, 7% Black, 12% Scottish, 12% Pacific Islander) that were recruited by random digit telephone dialing and identified as being in the action or maintenance stages of change. An overall significant main effect for stage of change was found for self-efficacy (Wilks $\Lambda = .736$, $F = 11.35$, $df = 12, 1109$, [sic], $p < .05$). Findings of other studies have also supported the correlation between levels of both self-efficacy and health literacy to health promotion behaviors such as medication adherence (Murphy, Lam, & Naar-King, 2010; Wolf, Davis, & Osborn, 2007), and use of health screening practices (Peterson, Dwyer, & Mulvaney, 2007).

The relationship of these variables may vary in certain populations or settings. For example, in elderly populations (Seo, 2004), it was demonstrated that the most powerful predictor of health promoting behaviors was readiness for change based on prior related behaviors as posited in the health promotion model ($R^2 = .554$). In Seo’s study, it was shown that the combined effect of prior related behavior, perceived benefits of action, perceived self-efficacy, stage of readiness for change and interpersonal influences described over 64.3 percent of the variance in health promotion behaviors.

In some populations, readiness for change may be the most important consideration in changing health promotion behaviors. McCullagh (2002) identified that
self-efficacy, perceived benefits of action, interpersonal support, barriers and situational factors affected readiness for change and readiness for change was a statistically significant mediator of specific health promotion behaviors. These variables explained 78% of the variance in the use of hearing protection devices in a sample of 139 US farmers (McCullagh, 2002).

Although literature strongly supports that health literacy and an individual’s level of readiness to change are relevant factors in establishment of health promotion behaviors (Koh et al., 2010), these variables are not specifically identified within the HPM. Multiple literature searches of HPM and health literacy yielded no published empirical studies that incorporated both health literacy and readiness to change as variables in the context of HPM.

In a health literacy report for the Agency for Health Care Research and Quality (AHRQ), Berkman et al. (2011) concluded that an assessment of health literacy, self-efficacy, intent for health behavior (readiness for change) as well as initiation and adherence to health behaviors is imperative in the adoption of health promotion behaviors (Berkman et al., 2011). The AHRQ recommendations for future studies included the examination of the mediators and moderators of the effect of health literacy on health promotion behaviors (Berkman et al., 2011), providing support for this study.

**Summary**

Preventable diseases and conditions constitute a significant health problem for Black women, and it has been demonstrated that Black women are less likely to incorporate health promotion behaviors into their lifestyle than White women or Hispanic women (AHA, 2013; Adams-Campbell, Rosenberg, Washburn, Rao, Kim, & Palmer,
2000; Christian et al., 2007; Dancy & Ralston, 2005; Goodwin, 2009; Johnson & Nies, 2005; Melkus, Whittmore, & Mitchell, 2009; Pettaway & Frank, 1999; Webb & Gonzalez 2006). Although a relationship between self-efficacy and health literacy on health promoting behaviors using the health promotion model has been reported (Owens, 2006), the nature of these relationships was not empirically validated. Moreover, the strength of the relationships between health literacy, self-efficacy, readiness for change and health promotion behaviors in a population at risk for cardiovascular disease, hypertension, diabetes, hypertension, stroke, and overweight or obesity, such as urban Black women, has not been explored. Identification of the variables that contribute to individual health promotion behaviors in Black women will inform future interventional studies that seek to reduce health care disparities for modifiable diseases and conditions.

Although the health promotion model has been well validated in several populations (Pender, Walker, Sechrist & Frank-Stromberg, 1990; Pender, Murdaugh & Parsons, 2011; Pinar, Celik, Bahanecik, 2009), the factors that affect health promotion behavior (health literacy, self-efficacy and readiness for change) in urban Black women are understudied. The intent of this study is to provide insight into the nature of the relationships of these variables to health promotion behaviors in Black women, and to inform future interventional studies in health promotion, so as to reduce racial disparities in health.
CHAPTER III

METHODS AND PROCEDURES

Research Design

This study used a descriptive, correlational design to examine the unique relationships between health literacy, self-efficacy and readiness for change to health promotion behaviors in urban Black women using a convenience sample. This chapter includes a description of the population and proposed setting, rationale for sample size, description of instruments and measurement methods, procedures for collection of data, the plan for analysis of the data and ethical considerations.

Description of Population and Sample

A convenience sample of urban Black adult women was recruited to participate in this study. The study focused on Black women as the literature has consistently shown Black women to be at high risk for developing cardiovascular disease (AHA, 2013; Christian et al., 2007; Whitlock & Williams, 2003), hypertension (AHA 2013; Chester et al., 2006; Chobanian et al., 2003; Hajjar & Kotchen, 2003; Johnson & Nies, 2005), diabetes (AHA, 2014; Christian et al., 2007; NIDDK, 2016), stroke (Kleindorfer, 2008; Kleindorfer, Khoury, Moomaw, Alwell et al., 2010) and overweight or obesity (AHA, 2013; Ogden et al., 2006). However, risk factors for developing chronic disease can be modified or reduced with lifestyle changes such as weight loss, eating a healthy diet, and engaging in regular exercise (AHA, 2016). Eligible participants were self-described as Black women between the ages of 30 – 64 years, spoke English, and had not been hospitalized in the prior six months for cardiovascular or stroke related problems or
diabetes. Participants were excluded if they did not meet the aforementioned inclusion criteria.

Potential participants were informed about the study via research flyers (Appendix O) posted in glass encased locked boxes in high visibility areas of the urban medical center complex, as identified by the organization’s institutional review board administrator, as well as by word of mouth. Five culturally diverse nursing students volunteered to assist the researcher. These students self-described as being Japanese, Black, Filipino, African American or Hispanic, and all students completed required online research training as per the recommendations of the institutional review board. The students each received 2 hours of structured training by the researcher in regard to recruiting participants for research. These students distributed research flyers throughout the hospital to potential participants on the assigned data collection days and directed potential participants to the Clinical Translational Science Institute (CTSI).

**Sample Size and Statistical Power.** This study utilized a two-tailed simultaneous linear multiple regression using a fixed model with a single regression coefficient. In order to ensure statistical significance for this study, multiple sources were examined to determine the required sample size. A priori power analysis (G*Power, Faul, Erdfelder, Lang, & Buchner, 2007) was used to determine a standardized measure of effect in this analysis between the independent and dependent variables at an alpha of 0.05 and a power of .80. Using G*Power, a minimum sample size of 85 participants was required to detect a moderate effect (0.30) (Faul et al., 2007). The researcher anticipated a possibility of missing data to be between 10-15% due to the nature of the instruments, and the total
time required to complete the demographic profile and research instruments (30-35 minutes) (Langkamp, Lehman, & Lemeshow, 2010).

In behavioral research, effect sizes tend to be small or moderate (Murphy & Myors, 2004). A small sample size will reduce both statistical power and the likelihood of detecting an effect, especially when the effect is small (Murphy & Myors, 2004).

Therefore, to reduce the possibility of type I or type II error and to ensure a moderate effect (given the behavioral nature of the research questions), the researcher calculated that adding an additional 20% to the minimum sample size (Murphy & Myors, 2004) would be sufficient for statistical analysis with a moderate effect (0.3) at an alpha of 0.05 and a power of 0.8. According to these estimations, a sample size of 107 participants would be needed in this study. Although this study does not measure the difference between two groups, the researcher also used the Cohen’s D method (Cohen, 1988) to identify the necessary sample size to determine a moderate (0.3) effect. Using the Cohen’s D method the researcher calculated that a minimal sample size of 132 participants would be sufficient to analyze behavioral data with multiple variables as well as accounting for the possibility of missing data (Cohen, 1988).

Setting

Data was collected in a large urban medical center complex, at the hospital’s Clinical Translational Science Institute (CTSI) interview room. The urban medical center complex was located in a Northeastern metropolitan area, and has the inpatient capacity for approximately five hundred beds. This urban medical center complex is a non-profit, level-one trauma center, and is well known nationally for providing care and services to diverse patients. The CTSI interview room was designed to accommodate a variety of
research studies. The CTSI interview room has been in operation for five years, and is
has been used as a data collection site for a wide variety of medical, behavioral,
translational and nursing research studies. This room contained four desks and eight
padded desk chairs with eight-foot cubicle type padded dividers and sliding glass doors
for privacy in each cubicle. Privacy during data collection was maintained, as the room
was also equipped with sound muting equipment within the ceiling panels to minimize
sound transfer between the cubicles. Data collection dates and times were approved by
CTSI staff and posted in approved locations at the hospital in collaboration with the
hospital’s institutional research administrator.

Instrument and Measurement Methods

Four survey-instruments were used for this study. They were the Newest Vital
Sign (NVS) to measure health literacy, (Weiss et al., 2005, Appendix F), the New
General Self-Efficacy Scale (NGSE) to measure self-efficacy (Chen, Cully, & Eden,
2001, Appendix D), the Health Risk Instrument (HRI) to measure readiness for change
(Prochaska, 1997, Appendix E), and the Health Promotion Lifestyle Profile II (HPLPII)
to measure health promotion behaviors (Walker, Sechrist, & Pender, 1995, Appendix C).
Letters of permission to use the aforementioned instruments are located in Appendices G,
H and I. All instruments have been shown to be at or below the fifth grade reading level.
The researcher conducted previous pilot testing with 15 volunteer self-described Black
women between the ages of 30-64 years of age. This pilot test indicated that a total of
approximately 30-35 minutes would be required to complete the demographic profile and
research instruments.
Participants who met inclusion criteria were asked to complete the Demographic Profile (Appendix B) and the aforementioned research instruments (Appendixes C, D, E, F) used with permission from survey authors (Appendixes G, H, I). The Newest Vital Sign (NVS) has been declared public domain and as such no permission is required to use this instrument.

**Demographic data.** A demographic profile (Appendix B) was administered to all participants to identify individual characteristics, history and lifestyle, as well as past social and medical history. Specifically, the demographic profile was used to collect information on race and ethnicity, social resources and support, living situation, current health status and health care situation, using a twenty-four item survey with a combination of dichotomous and multiple choice questions, and options for open ended answers if the appropriate option was not listed among the choices provided. The demographic profile used in this study (Appendix B) was adapted from an instrument used in a previous study (Boden-Albala, 2005), and permission to use the demographic profile was granted by Dr. Boden-Albala (Appendix N). This demographic profile was composed and tested by a previous researcher to be at the $5^{th}$ grade reading level. During pilot testing for this study, the demographic profile engaged participants for approximately 4 to 5 minutes to complete all written items.

This profile was originally developed for use in the NOMASS (Northern Manhattan Stroke Study), a prospective descriptive study (funded by the National Institute of Neurological Disorders and Stroke) to evaluate race-ethnic differences in the incidence of stroke and to confirm the protective benefits of health promotion behaviors, such as physical activity and moderation of alcohol intake (Rincon et al., 2008). The
demographic profile was successfully implemented and results were reported in the NOMASS study in over 4,400 adult participants that resided in Northern Manhattan. Participants in NOMASS were largely of Dominican descent, along with Black, Cuban, Puerto Rican, and Central and South American participants.

The demographic profile used in this study was also used to collect data in the SWIFT Study (Stroke Warning Information and Faster Treatment Study), which was an educational intervention study in minority at risk populations, funded by the National Institute of Health, National Institute of Neurological Disorders, and conducted in New York City (Boden-Albala, 2009). The SWIFT study enrolled 1193 participants (average age 63) that experienced a mild stroke or TIA survivors, of which half were women, 51% were Hispanic, 26% white and 17% Black (Boden-Albala, 2009). This demographic profile was chosen for use as it successfully captured vital population characteristics and health related behaviors in these two studies of culturally diverse adults that either were at risk for stroke or had experienced a recent stroke (Rincon et al., 2008; Boden-Albala, 2009). The nature of the data captured within this demographic profile offered the opportunity to compare Black women in this study with regional statistics to determine if there were similarities to other at risk populations within the same city.

Health Literacy. Health literacy was measured using the Newest Vital Sign (NVS) (Weiss et al., 2005) (Appendix F). The NVS is a six item open-ended questionnaire that measures the ability to interpret and apply nutritional information to make healthy food choices. The NVS is available in English and Spanish, and has been used to assess health literacy in more than 25 peer reviewed studies and reports of these studies have been published in well respected peer reviewed journals such as the Journal
of the American Medical Association (Powers, Trinh & Bosworth, 2010) and the Online Journal of Issues in Nursing (Cornett, 2009). As a result, public policy researchers at organizations such as Pfizer adopted the NVS to measure health literacy (Pfizer, 2016). The NVS has an initial adequate reported internal consistency (Cronbach $\alpha > 0.76$ in English, and Cronbach $\alpha > 0.69$ in Spanish) and a convergent validity with the Test of Functional Health Literacy in Adults (TOFHLA) of 0.88 in a study of 500 participants (Baker, Williams, Parker, & Gazmararian, 1999; Weiss et al., 2005). The NVS is the only health literacy instrument that measures numeracy, which is an essential component of making health decisions (Weiss et al., 2005). When compared to other health literacy instruments, the Newest Vital Sign best represents a capacity to process information and is less focused on pure written literacy than the Test of Functional Health Literacy (TOFHLA) (Shah, 2010). NVS requires the participant to interpret numeric information on a food label to make food choices (Weiss et al., 2005; Welch, 2011). Weiss et al., (2005) found the percentage of persons with inadequate health literacy to be 51% when using the NVS. This is consistent with US Department of Education Adult Literacy Studies that used other health literacy instruments and found adequate health literacy levels ranged from 37 to 58% (Davies et al., 2006; Berkman et al., 2011; Shah et al., 2010). Rowlands et al. (2013) compared the NVS with the TOFHLA in a survey study of 337 English-speaking and Spanish-speaking primary care clinic patients. Results of Rowland’s study showed the NVS to have high validity as compared to other health literacy instruments ($r = 0.49$, and an area under ROC curve of 0.81) and demonstrated adequate internal consistency (Cronbach's $\alpha = .74$) (Rowlands et al., 2013). Shah (2010) also reported the rate of inadequate health literacy in a sample of 1014 adults
(participants were described as being 68.8% White, 28.5% African American, 1.5% Hispanic, 1.2% other, with an average BMI of 29.7 [range 12.9-62.8]) using the NVS was 51.9%.

Shah (2010) also reported that women were more likely to possess adequate health literacy than men, regardless of race. This finding was consistent with the United States Department of Education report of adequate health literacy among women (percentage of adequate health literacy among women was 34-51%) (Scherbaum, C., Cohen-Charash, Y., & Kern, M. 2006) using either the test of Functional Health Literacy in Adults (TOFHLA) (37-46%, Davies et al., 2006), or the National Assessment of Adult Literacy (NAAL) (48.1-58%), (Berkman et al., 2011; Shah et al., 2010). Rowlands et al. (2013) also provided validation of the NVS with the TOFHLA in a survey study of 337 English-speaking and Spanish-speaking primary care clinic patients, establishing an \( r = 0.49 \), and an area under ROC curve of 0.81, as well as adequate internal consistency (Cronbach's \( \alpha = .74 \)) (Weiss et al., 2005).

The NVS has been found to be both acceptable and effective in screening for health literacy levels (Shah et al., 2010) as it takes only 2 to 3 minutes to complete, whereas other instruments can engage the participant for up to 25 minutes. Participants are shown a food label and asked to respond to six open ended questions such as “If you eat the entire container how many calories will you eat?” A score of 0-1 correct answers indicates a high likelihood of inadequate health literacy, 2-3 indicates limited health literacy, and 4-6 indicates adequate health literacy (Weiss et al., 2005). The use of a food nutrition label to assess health literacy is intuitively appealing because nutrition labels are familiar items that are important parts of health management for many chronic diseases.
(Weiss et al., 2005). Although no specific reading level was identified on the NVS, the application questions may mirror those of a fourth grade math exam (Weiss et al., 2005). The NVS has been identified as public domain by the author, and does not require permission for use (Weiss et al., 2005).

The NVS was chosen to use in this study, as it is a quick screening tool that combines reading literacy and numeracy with the ability to apply these skills to make choices that promote health, yet has less respondent burden (Pleasant, 2014; Smith et al., 2015). The acceptability and timeliness of using the NVS was evaluated in a cross-sectional study of 1014 patients ranging from 18 to 64 years of age with varied race and ethnicities, and educational levels ranging from high school student to advanced degrees (Shah et al., 2010). Shah and colleagues (2010) found that the average time to complete the six questions identified on the NVS was 2.6 minutes (Shah et al., 2010). Additionally, the NVS has been successfully used in a previous study of Latina women in Spanish (Cronbach’s alpha = .697) (Bowers, Maliski, Lewis, Macabusco-O’Connell & Dimatteo, 2014). The NVS has also been used to measure health literacy in a study of food label use, and diet among adults 19-29 years of age (approximately 70% were Black women) and the NVS displayed adequate internal consistency (Cronbach’s alpha = .72) (Cha et al., 2014). The total Cronbach’s alpha in this study was .597.

**Self-Efficacy.** Self-efficacy was measured using the New General Self-Efficacy Scale (NGSE), which is designed to measure behaviors such as goal setting, effort investment, and persistence. (Chen, Cully, & Eden, 2001) (Appendix D). The NGSE contains eight questions that are scored using a four-point, Likert-type scale. Each item is rated in terms of level of agreement ranging from high (strongly agree) to low (strongly
disagree). All items are tallied for a total score. A total score of 0-20 indicates low self-efficacy, while a score of 24-42 indicates moderate self-efficacy, and 46-64 indicates a high level of self-efficacy (Chen et al., 2001). These scores are then converted to a category that numerically represents a degree of self-efficacy in ascending order from 0-3. The NGSE takes about 2-4 minutes to complete.

The NGSE has been validated in multi-ethnic population studies and in various countries and languages and has been shown to be superior to other self-efficacy instruments that also use item response theory (Scheurbaum, Cohen-Charash, & Kern, 2006). Test-retest reliability coefficients for the NGSE scale range from .62 to .66 (Chen et al., 2001; Schyns & von Collani, 2002; Schyns & Colalni, 2010), which are acceptable for behavioral assessments (Chen et al., 2001). Construct and concurrent validity showed that the instrument met appropriate standards with adequate sensitivity to predict self-efficacy (.86) and its score is related to personality construct scores as opposed to self-esteem (.90) (Chen et al., 2001; Polit & Beck, 2012). These scores are reasonably high for trait-like individual difference variables among community-dwelling adults (Chen et al., 2001; Polit & Beck, 2012).

The global, trait-like constructs of the NGSE have been shown to predict specific measures of self-efficacy as the constructs measure various personality traits that influence the individual’s perception of ability to perform across a variety of different situations and contexts and, therefore, may also address motivational state (Judge et al., 1998). The total Cronbach’s alpha in this study was .93.

**Readiness for change.** Readiness for change was measured using the Health Risk Intervention measure (HRI; Prochaska, 1997) (Appendix E). This 54 item, multiple-
choice instrument measures ten behavior risks within the five stages of change (pre-
contemplation, contemplation, preparation, action, and maintenance) as described in the
TTM model. The HRI uses both categorical data with yes/no responses and various
Likert-type responses that vary according to the question asked (such as: never, rarely,
sometimes, usually, always or poor, fair, good, very good, excellent, or a lot, some, not at
all). The HRI measures readiness for change by identifying specific health promotion
behaviors and the presence of the associated conditions, such as: High blood pressure,
diabetes, high cholesterol, exercise, diet and weight. The HRI was written at the 5th grade
level and takes about 10-15 minutes to complete.

    Scoring on the HRI indicates the individual’s current stage of change
(precontemplation, contemplation, preparation, action or maintenance) in regard to a
specific health promotion behavior. The score achieved in relationship to a specific
domain such as diet or exercise indicates an individual’s current readiness for change for
that specific behavior. These domains are reflected within the HRI in specified questions
that measure (a) consciousness raising, (b) dramatic relief, (c) self-liberation, (d) social
liberation, (e) counterconditioning, (f) stimulus control, (g) self-reevaluation, (h)
environmental reevaluation, (I) reinforcement management, and (j) helping relationship.
Answers in specified questions measure the stage of change. In order to best represent an
overall readiness for change in numerical terms for this study, the researcher spoke with
the author of the HRI (J. Prochaska, personal communication, March 22, 2012) to
determine which questions on the study would best reflect this information. Selected
multiple-choice survey questions were subsequently identified to be specific to readiness
for change. In collaboration with Dr. Prochaska, (personal communication, March 22,
2012), each answer to these survey questions that had multiple-choice answers was
assigned a numerical score between zero and four, and total HRI scores were tallied.
Each progressive stage of change was subsequently assigned a number from 0-4 and
adding scores on individual questions tallied individual scores on the HRI. The total
possible score ranged from 0-54. Each identified item was a multiple-choice question,
and each answer denoted a specific stage of change. The range of scores was
standardized to reflect a specific stage of change: Precontemplation (0-10),
Contemplation (11-21), Preparation (22-32), Action (33-44), Maintenance (45-54).

The HRI has been shown to have high levels of concurrent validity regarding the
differences among the stages of change in several studies (precontemplation,
contemplation, preparation, action, maintenance). Although initial face testing of the HRI
demonstrated the clarity of each stage of change, the significance of each stage of
readiness for change was shown in a weight reduction study results: ANOVA F (4,611) =
54.3, P < 0.001, and \( \eta^2 \) (a measure of effect size) = .26 \( (p < .001) \) with a Cronbach’s \( \alpha \)
score of .82 (Sarkin, Johnson, Prochaska, & Prochaska, 2001). To further describe the
suitability of the HRI, to address readiness for change, these patterns were consistent
across the various stages of change and mean differences in scores were significant at \( p < .05 \) for the Tukey HSD pairwise comparisons (Sarkin, Johnson, Prochaska, &
Prochaska, 2001), and consistent with the theoretical predictions of the TTM. The total
Cronbach’s alpha score in this study was .876.

**Health promotion behaviors.** The Health-Promoting Lifestyle Profile II
(HPLPII; Walker, Sechrist, & Pender, 1995) (Appendix C) is a 52-item instrument that
measures overall health promotion behaviors. The HPLPII is a lifestyle assessment that
was designed at the 5th grade reading level to define discretionary activities that are a regular part of daily living patterns, and subsequently influence health status. The instrument uses a four-point Likert-type scale (never, 0; sometimes, 1; usually, 2; and always, 3) (Walker et al., 1995).

In previous studies, a total HPLPII score has been shown to be valid (Cronbach’s α .95) and reliable (r = 0.365) in adult populations of blended race and ethnicity in the US, as well as in population samples in Taiwan and Korea, (Meihan & Chung-Ngok, 2011). Although the HPLPII has not been used in an exclusive sample of Black women, the first version of the health promotion lifestyle profile instrument (HPLP; Pender, 1987) was used to measure health promotion behaviors in a study that included 187 African American women between the ages of 18-69 years (Ahijevych & Bernhard, 1994). The HPLPII takes approximately 10 minutes to complete (Walker, Sechrist, & Pender, 1995). The total HPLPII has been shown to correlate to the HPLP (α coefficient for internal consistency = .943) in a previous study (Walker, Sechrist, & Pender, 1995).

Criterion related validity of the HPLPII was indicated by significant correlations (α = 0.05) with concurrent measures of perceived health status and quality of life (r's = .269 and .491) respectively and although not highly correlated, is acceptable, given the complexity of the measure (Walker & Hill-Polerecky, 1996). The three-week test-retest reliability coefficient for the total scale was .892 (Walker & Hill-Polerecky, 1996). The overall α coefficient of internal consistency for the HPLPII was .943, and α coefficients for the subscales ranged from .793 - .872 (Walker & Hill-Polerecky, 1996). The total Cronbach’s alpha score for the HPLPII in the current study was .902.
Procedures

Consenting Procedures. The voluntary nature of participation was discussed with potential participants in accordance with Seton Hall University guidelines for research on human subjects, using a script (Appendix L) to ensure consistency. Following a thorough introduction to the study, participants were asked if there were any questions. After all questions were answered, the participants were asked to sign a consent form (Appendix M). Following consenting procedures as above, the participants were informed by the researcher that in return for the time required for their participation in this study they would receive a ten-dollar metro card. Participants were allotted as much time as they preferred to review the consent documents privately in one of four cubicles that included a door that they could close during their review. Participants were given a copy of the consent form as it detailed their rights as a research participant. This document also contained the telephone number and email address of the researcher, the researcher’s faculty advisor, and the Seton Hall University Institutional Review Board if the participant wished to contact them. The researcher provided individual time to each participant to address any questions prior to collecting any research data. Women that agreed to participate were asked to sign a written consent form.

Data Collection Process. The data collection process took place at the CTSI. Potential participants arrived at the CTSI and were welcomed by the researcher. The researcher escorted each to a private cubicle and explained the purpose of the study, obtained informed consent and then explained how to complete the forms. Given that data collection was on the grounds of a hospital complex and clinic setting, participants were also specifically informed that no confidential health information was to be
collected. One of the copyrighted research instruments (Health Risk Intervention [HRI]) contained a question that requested a birthdate. Participants were informed of this prior to data collection, and the researcher turned to this page with each participant, and told participants that this was not required, and that they were requested to enter only their age (in years) to answer this question.

Participants completed data collection in private cubicles in the aforementioned room at the CTSI. Each cubicle contained two chairs, a desk and several pens. Adequate lighting was assured, and participants were requested to confirm that they were able to clearly read the instruments prior to initiating the survey. The researcher then assured participants of both the anonymity and confidentiality of their responses. Participants were also assured that they would be allowed as much time as they needed to complete the instruments. Given the nature of the questions, these strategies have been identified as helpful in acquiring sensitive data (Waltz, Strickland, & Lanz, 2005). The researcher was available to answer any questions participants had in regard to the instrument questions during the process of data collection. If participants identified that they were unable to read the questionnaires, the researcher read the survey questions aloud to the participant in one of the private cubicles, using the exact words identified on the instruments.

The process of completing the demographic questionnaire and four instruments engaged each participant for approximately 35 minutes. When the participant completed the demographic questionnaire and the four instruments, the researcher reviewed each completed document for missing data, identified any missed questions, and briefly asked participant if they preferred to answer the missed questions. When data collection was complete, the researcher presented the participant with a ten-dollar metro card.
Analysis of Data

Descriptive statistics were utilized to analyze data that described the normality and other characteristics of the sample population, including community activity, BMI, participant reported age, marital status, level of education completed, type of work and hours per week worked, the number of community activities that they participated in per week, physical activity level, dietary habits, high blood pressure, high blood sugar, any history of diabetes, respiratory problems, heart problems, memory problems, stroke, smoking, alcohol intake, and height and weight. The researcher then calculated Body mass index (BMI) using the height and weight reported by each individual participant, and an online BMI calculator provided by the National Institute of Health (National Heart, Blood and Lung Institute, 2015). Cronbach’s alpha coefficients were computed to determine internal consistency and reliability for all psychometric measures used in data collection using IBM SPSS Version 22 (SPSS™). The means, standard deviations, frequency distributions and percentages of demographic characteristics were examined using SPSS™ and measures of central tendency. An independent t-test was performed to detect any differences in responses by age. Chi-square analysis was used to analyze non-parametric categorical data (Polit & Beck, 2012; Stevens, 2009). In the event data were not normally distributed, non-parametric tests were planned.

SPSS was also used to analyze scores on the instruments that measured the main study variables (health literacy, self-efficacy, readiness for change, and health promotion behaviors). Health literacy was measured using the Newest Vital Sign (NVS) instrument with a possible score ranging from 0-6, reflecting the number of correct answers to five questions. Self-efficacy was measured using the New General Self Efficacy Scale
(NGSE) on a 0-3 Likert-type scale with a possible score ranging from 0-21. Readiness for change was measured using the Health Risk Intervention (HRI) total score. Total possible scores on the HRI ranged from 0-54. Health promotion behavior was measured using the Health Promotion Lifestyle Profile (HPLPII). The range of possible scores is between 0-155.

Descriptive statistics were computed for the main study variables (health literacy, self-efficacy, readiness for change) as well as the dependent variable (health promotion behaviors), including the possible and actual range of scores (in the form of frequencies, means, standard deviations and percentages) in order to best characterize the sample population. The distribution of scores for the main study variables and the dependent variable were considered normal, therefore transformation of the data was not performed.

Inferential analyses were then performed to answer the research question posed in this study to identify the unique relative contributions of health literacy, self-efficacy and readiness for change to health promotion behaviors. Pearson product-moment correlations (for parametric data) and Spearman’s rank-order correlations (for non-parametric data) were used to determine if there was a relationship of the main study variables to health promotion behaviors. Significance for all statistical analyses was set at 0.05 to minimize results that could be due to chance (Polit & Beck, 2012, Stevens, 2009). Bivariate correlations were utilized to measure the nature of the relationship between the research variables to answer the research hypothesis. Multiple regressions were used to test the relative contributions of each of the main variables to address the research question.
**Research question testing.** To best answer the research question of what are the relative contributions of health literacy, self-efficacy and readiness for change to health promotion behaviors, a series of analyses were conducted. For example, descriptive analysis, bivariate correlation and multiple regression tests were conducted in order to assess the relative contributions of the research variables. The relationship among the variables was analyzed, as well as the interactive effects of each independent variable to the dependent variable. The cumulative effects of the research variables were subsequently analyzed to determine the significance of the relationships between variables, and the effects of the variables on power in this study.

**Hypothesis Testing.** The research hypothesis in this study states that there is a positive relationship between the following variables: health literacy, self-efficacy, and readiness for change, to health promotion behaviors in urban Black women. A descriptive analysis and Pearson product-moment correlation were performed to detect the presence of this relationship. The Pearson product-moment correlation coefficient identifies the strength of relationship between the variables, ranging from -1.0 to +1.0. The closer the coefficients are to -1.0 or +1.0, the greater the strength of the relationship (Stommel & Wills, 2004).

**Ethical Considerations**

The protection of subjects’ human rights in this study was maintained throughout recruitment, enrollment, data collection procedures and storage of data. Institutional review board (IRB) approval at Seton Hall University was obtained, as well as permission from the offsite IRB committees at medical university and the urban medical center complex for data collection. (Appendix N).
Participants were informed of the purpose of the study (both orally and in a printed document), the criteria for participation, the voluntary nature of their participation, and their option to withdraw from the study at any time or defer participation to a later date as their schedule permitted. The available dates and times for enrolling in the study were distributed to each participant with the research flyer. The researcher met with each participant individually, and reviewed the informed consent (Appendix M). The researcher reviewed information regarding the voluntary nature of the study with each participant individually and notified each participant that they could withdraw from the study at any time as per requirements of each institutional review board.

Confidentiality and anonymity were maintained, through use of desks in private cubicles. Anonymity was maintained by using numerical coding to ensure that no individual names could be directly related to research data. All data collected as well as data analysis was de-identified, to ensure that no records would be maintained that could identify data to a specific individual. To further protect anonymity, only aggregate data was utilized for analysis.

All participant consent papers are stored in a locked file cabinet in the researcher’s home office, and will remain there for three years. After three years, data will be discarded using a paper shredder.

Summary

This study utilized a descriptive correlational design to explore the relationship between health literacy, self-efficacy and readiness for change to health promotion behaviors in urban black women. Written research instruments that measure participants’ demographic profiles, as well as the aforementioned variables were administered to urban
Black women for data collection. The data collected via paper and pen was subsequently electronically entered into a data file within the SPSS™ application for statistical analysis.
CHAPTER IV
RESULTS

Introduction

This chapter describes the results of this descriptive correlational study that analyzed the relationship between health literacy, self-efficacy, and readiness for change to health promotion behaviors. Sample demographics are presented first. The analyses of the main variables are subsequently presented to address the research hypothesis and research question.

During the data collection period each of the 132 participants that consented to participate in this study completed a written packet that contained a demographic profile and the following research instruments: The Newest Vital Sign (NVS) (Weiss et al., 2005), the New General Self-Efficacy Scale (NGSE) (Chen et al., 2001), the Health Risk Intervention (HRI) (Prochaska, 1997), and the Health Promotion Lifestyle Profile II (HPLPII) (Pender, Walker, Sechrist, & Frank-Stromberg, 1990).

Description of Sample

Participants in this study were recruited by flyers posted in high visibility areas in the surrounding area of the Clinical Translational Science Institute (CTSI) of an urban hospital center, located in a northeastern US city. Recruiting strategies resulted in a convenience sample of 132 urban, English speaking women who described themselves as Black, and who were between the ages of 30-64.

Each of the participants completed the aforementioned demographic profile, the Newest Vital Sign (NVS), the New General Self-Efficacy Scale (NGSE), the Health Risk Intervention Measure (HRI) and Health Promotion Lifestyle Profile II (HPLPII). The
sample size of 132 was adequate for the research question with a medium effect size ($r = .30$) at an alpha of .05 and a power of greater than .80 (Cohen, 1988). Although a minimum sample size of 107 was required to achieve statistical significance in a multiple regression analysis of the variables (Faul et al., 2007; Polit et al., 2012; Stevens, 2009), more participants were recruited to allow for a possible 20% with incomplete or missing information (Langkamp et al., 2010).

**Data Analysis Procedures**

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 22 software for Mac (IBM, 2013). Univariate statistics were used to describe the demographic data in this study. Bivariate statistics were employed to address the research hypothesis, and simultaneous linear regression was used to answer the research question. Data checks conducted by the researcher after entering data into SPSS ensured correctness of each electronic entry with the written data.

**Research Participants**

All research participants were English speaking females and all self-identified as Black. All participants resided in the service region of the hospital complex and all denied being hospitalized in the previous six months. The majority (65%) of the participants were recruited onsite as they were already visiting a friend or family member in the hospital, or were awaiting clinic health provider appointments for their family, friends or themselves. Approximately 15% of participants were employees of the hospital and had seen the flyer and subsequently arrived at the Clinical Translational Science Institute (CTSI) to participate in the study by appointment or because they were coming with a friend who had expressed interest in participation. Two participants identified that
although they could speak in English, they had difficulty reading and writing in English and the researcher read the research instruments aloud to them. No overall differences were noted in these responses when compared to other instruments completed independently by other participants on same day of data collection. The participant questions were infrequent, and were in specific reference to the intent of a few questions on the instrument.

**Statistical Analysis**

Demographic data regarding participant characteristics are presented in Table 1. Although all of the participants self-described as being Black, approximately 10.6% \((n = 15)\) also described themselves as being of mixed race and 3% \((n = 4)\) described their ethnicity as Hispanic. The majority of participants were single women that had graduated from high school and were employed at least part-time. While 61% \((n = 74)\) of participants described their marital status as single, 26.5% \((n = 35)\) identified themselves as married, 10.6% \((n = 14)\) were divorced, 6% \((n = 8)\) were living together, and 1 participant \((0.8\%)\) was widowed. Although educational levels varied, 96 \((72.6\%)\) of the participants graduated high school, while 34 \((25.4\%)\) had achieved a bachelors’ degree or higher. The majority of the participants were employed either part-time or full time \((n = 84, 63.6\%)\), and most participants \((119)\) described themselves as either professional \((n = 39, 29.9\%)\) or clerical-secretarial/semi-skilled/sales \((n = 51, 37.4\%)\). One participant identified herself as a student \((0.8\%)\) and 20 participants \((15.5\%)\) described themselves as working in positions that were unskilled/nanny.
Table 1

*Participant Characteristics – (N=132)*

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>N</th>
<th>Total</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>117</td>
<td></td>
<td>89.4</td>
</tr>
<tr>
<td>Black + Mixed Race</td>
<td>15</td>
<td></td>
<td>10.6</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Hispanic</td>
<td>128</td>
<td></td>
<td>97</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>14</td>
<td></td>
<td>10.6</td>
</tr>
<tr>
<td>Living together</td>
<td>8</td>
<td></td>
<td>6.0</td>
</tr>
<tr>
<td>Married</td>
<td>35</td>
<td></td>
<td>26.5</td>
</tr>
<tr>
<td>Single</td>
<td>74</td>
<td></td>
<td>61.0</td>
</tr>
<tr>
<td>Widow</td>
<td>1</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Educational Level</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td>8th grade</td>
<td>3</td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td>Some HS</td>
<td>30</td>
<td></td>
<td>22.8</td>
</tr>
<tr>
<td>HS graduate</td>
<td>28</td>
<td></td>
<td>21.2</td>
</tr>
<tr>
<td>HS + some college</td>
<td>28</td>
<td></td>
<td>21.2</td>
</tr>
<tr>
<td>HS + technical school</td>
<td>6</td>
<td></td>
<td>4.8</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>12</td>
<td></td>
<td>9.1</td>
</tr>
<tr>
<td>Graduate school</td>
<td>22</td>
<td></td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Job Type</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not working or disabled</td>
<td>21</td>
<td></td>
<td>16.4</td>
</tr>
<tr>
<td>Clerical-secretarial/semi-skilled/sales</td>
<td>51</td>
<td></td>
<td>37.4</td>
</tr>
<tr>
<td>Professional/skilled</td>
<td>39</td>
<td></td>
<td>29.9</td>
</tr>
<tr>
<td>Student</td>
<td>1</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>Unskilled/nanny</td>
<td>20</td>
<td></td>
<td>15.5</td>
</tr>
<tr>
<td><strong>Hours worked per week</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>47</td>
<td></td>
<td>35.6</td>
</tr>
<tr>
<td>10 or less</td>
<td>6</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>11-35</td>
<td>40</td>
<td></td>
<td>30.3</td>
</tr>
<tr>
<td>36 or more</td>
<td>38</td>
<td></td>
<td>28.8</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
<td></td>
<td>0.8</td>
</tr>
</tbody>
</table>
The sample age was normally distributed as shown in Figure 1. The mean age was 45.5 and approximately 50% of participants were under 45.5 years of age.

Age and additional participant characteristics such as the number of friends in the participant’s home and BMI (The average BMI for all women in this study was 32.2) are denoted in mean values and percentages in Table 2.

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>N</th>
<th>Min/Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>132</td>
<td>30-64</td>
<td>45.0</td>
<td>8.81</td>
</tr>
<tr>
<td>Number of friends in your home during last two weeks</td>
<td>132</td>
<td>0-7</td>
<td>1.18</td>
<td>1.5</td>
</tr>
<tr>
<td>BMI</td>
<td>132</td>
<td>18.2-65</td>
<td>32.2</td>
<td>12.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>3.8</td>
</tr>
<tr>
<td>Normal weight</td>
<td>23.1</td>
</tr>
<tr>
<td>Overweight</td>
<td>29.9</td>
</tr>
<tr>
<td>Obesity</td>
<td>43.2</td>
</tr>
</tbody>
</table>

*Note: BMI classification ranges (CDC, 2015): underweight <18.5; normal weight 18.5-24.9; overweight 25-29.9; obesity ≥ 30.*
Several questions on the demographic form addressed lifestyle behaviors and co-morbid conditions as reported on Table 3. Over half of participants (\( n = 88, 65.9\% \)) stated that they maintained lifestyles that included a low level of physical activity, and roughly half of the participants stated that they consumed foods that were low in trans fats (\( n = 71, 53.8\% \)) and incorporated fruits and vegetables in their diet (\( n = 76, 57.6\% \)).

Although none of the participants had been an inpatient in the hospital in the past 6 months, 47 (35.6\%) of the participants stated they had active high blood pressure. Only 20 participants stated that they had high blood sugar (15.2\%), and fewer stated that they had diabetes (often referred to by participants as sugar diabetes) (\( n = 14, 10.6\% \)). The majority of the women (\( n = 106, 79.5\% \)) stated that they had minor memory problems (the most common memory problems described by participants were remembering names and recent events). Nearly one-fifth of the women (\( n = 26, 19.7\% \)) described respiratory problems, but very few stated that they smoked cigarettes (\( n = 6, 4.5\% \)) or drank alcohol in the past 30 days (\( n = 21, 16.4\% \)).
Table 3
*Participant Characteristics- Description of participants’ lifestyle behaviors and co-morbid conditions (N=132)*

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>N</th>
<th>Total</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lifestyle Behaviors:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community activity</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No answer</td>
<td>17</td>
<td></td>
<td>9.8</td>
</tr>
<tr>
<td>No participation</td>
<td>26</td>
<td></td>
<td>19.7</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>3</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>More than once a month &lt; 1/wk.</td>
<td>13</td>
<td></td>
<td>9.8</td>
</tr>
<tr>
<td>More than once a week</td>
<td>73</td>
<td></td>
<td>55.3</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Physical activity level (*moderate, **vigorous)</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>64</td>
<td></td>
<td>34.1</td>
</tr>
<tr>
<td>No</td>
<td>88</td>
<td></td>
<td>65.9</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Dietary habits (low trans fat intake)</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>71</td>
<td></td>
<td>53.8</td>
</tr>
<tr>
<td>No</td>
<td>61</td>
<td></td>
<td>46.2</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Dietary habits (fruits and vegetables)</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>76</td>
<td></td>
<td>57.6</td>
</tr>
<tr>
<td>No</td>
<td>46</td>
<td></td>
<td>42.4</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Smoking</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No (never smoked or quit)</td>
<td>126</td>
<td></td>
<td>93.5</td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Alcohol in last 30 days</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>111</td>
<td></td>
<td>83.6</td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td></td>
<td>16.4</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Co-morbid conditions</strong></td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High blood pressure</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47</td>
<td></td>
<td>35.6</td>
</tr>
<tr>
<td>No</td>
<td>85</td>
<td></td>
<td>64.4</td>
</tr>
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<td>0</td>
</tr>
<tr>
<td>High blood sugar</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20</td>
<td></td>
<td>15.2</td>
</tr>
<tr>
<td>No</td>
<td>111</td>
<td></td>
<td>84.8</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>History of diabetes</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td></td>
<td>10.6</td>
</tr>
<tr>
<td>No</td>
<td>118</td>
<td></td>
<td>89.4</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

* *Moderate: “cardio” activity that increases your breathing and causes you to break a light sweat for at least 150 minutes (2 hours plus 30 minutes) each week. **Vigorous: “cardio” activity that causes big increases in your breathing and heart rate and makes conversation difficult (such as jogging or running) 1 hour and 15 minutes each week*
Description of the Major Study Variables

Descriptive statistics for the main instruments used in this study are presented in Table 4. The research variables, health literacy, self-efficacy, readiness for change and health promotion behaviors, were analyzed apriori using the respective NVS, NGSE, HRI, HPLPII instruments to determine if this sample met the required assumptions for inferential statistical procedures. Higher scores indicate higher levels of health literacy, self-efficacy, readiness for change and health promotion behaviors. The mean score of the NVS was 2.35 (SD = 1.97; Range = 0 - 5), while the NGSE mean score was 2.38 (SD = .65; Range=0 - 3), and the HRI mean score was 37.13 (SD = 10.27; Range = 13 - 55). The mean score for the HPLPII was 77.3 (SD= 25.56; Range = 8 - 133).

Table 4
Main Study Variables (n=132)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean/SD</th>
<th>MIN/MAX</th>
<th>Potential Range</th>
<th>Actual Range</th>
<th>Skewness/ Kertosis/SD/SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVS Health Literacy</td>
<td>132</td>
<td>2.35/1.97</td>
<td>0/6</td>
<td>0/6</td>
<td>0/5</td>
<td>.195/ .215</td>
</tr>
<tr>
<td>NGSE Self-Efficacy</td>
<td>132</td>
<td>2.38/.65</td>
<td>0/3</td>
<td>0/3</td>
<td>0/3</td>
<td>-.924/ .211</td>
</tr>
<tr>
<td>HRI Readiness For change</td>
<td>132</td>
<td>37.13/10.27</td>
<td>0/55</td>
<td>0/55</td>
<td>13/55</td>
<td>-.359/ -.211</td>
</tr>
<tr>
<td>HPLPII Health Promotion Behaviors</td>
<td>132</td>
<td>77.30/25.56</td>
<td>0/156</td>
<td>0/156</td>
<td>8/133</td>
<td>-.289/ .211</td>
</tr>
</tbody>
</table>
Actual and potential ranges of scores were normally distributed for health promotion behaviors as depicted in a histogram with a bell shaped curve distribution (Figure 2).

Figure 2
*Histogram of Health Promotion Behaviors*

Data were then analyzed to determine if the assumptions of parametric testing were met including linearity, multicollinearity, homoscedasticity and normality. The skewness and kurtosis values of each variable plot were within three times the standard error of skewness and kurtosis suggested by Field (2013) and is identified in Table 4. Given a potential for multicollinearity and resultant decreased reliability in this study, the variance inflation factor (VIF) was tested for each of the independent variables as measured by incorporating the linear regression procedure within SPSS. The VIF was consistently between 1.003 - 1.026 for all variables, denoting no potential problems with collinearity (Field, 2013). Zero order correlations of health literacy, self-efficacy and
readiness for change to health promotion behaviors were .246, .312 and .443 respectively. Scatterplots of the residuals (ZPRED by ZRESID) showed positive random plot dispersion, and this identified that there is a random disturbance between the independent variables and the dependent variable that is equal across all of the independent variables, indicating the presence of homoscedasticity. Therefore, no data conversions were required for further analysis.

Frequencies of responses for the main study variables and percentages for each independent variable are depicted in Table 5. Sample results are further separated according to category parameters determined by the instrument developers for health literacy (Weiss et al., 2005), self-efficacy (Chen et al., 2001) and readiness for change (Prochaska, 1997). Table 5

<table>
<thead>
<tr>
<th>Frequencies and Percentages of Responses for Main Study Variables (N=132)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Literacy (NVS)</strong>, Self-Efficacy (NGSE) and Readiness for Change (HRI)</td>
</tr>
<tr>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td><strong>Health Literacy (max correct = 6)</strong></td>
</tr>
<tr>
<td>0 - 1</td>
</tr>
<tr>
<td>2 - 3</td>
</tr>
<tr>
<td>4 - 6</td>
</tr>
<tr>
<td><strong>Self-efficacy (NGSE) (max correct = 3)</strong></td>
</tr>
<tr>
<td>0 - 1</td>
</tr>
<tr>
<td>1.1 - 2</td>
</tr>
<tr>
<td>2.1 - 3</td>
</tr>
<tr>
<td><strong>Readiness for Change (HRI) (max. correct = 54)</strong></td>
</tr>
<tr>
<td>0 - 20</td>
</tr>
<tr>
<td>21 - 30</td>
</tr>
<tr>
<td>31 - 38</td>
</tr>
<tr>
<td>39 - 45</td>
</tr>
<tr>
<td>46 - 54</td>
</tr>
</tbody>
</table>
Hypothesis Testing

The following hypothesis was tested in this study: There will be a positive relationship between the following variables: Health literacy, self-efficacy, and readiness for change, to health promotion behaviors in urban Black women. The correlation between the major study variables (NVS, NGSE, HRI), were computed using a Pearson correlation statistic to determine if there was a relationship between the variables. There were positive correlations between each of the independent variables and health promotion behavior with significance at the 0.01 level: health literacy \(r = .244, p < .002\), self-efficacy \(r = .312, p < .001\) and readiness for change \(r = .440, p < .001\) as shown in Table 6, supporting the research hypothesis.

Table 6
Bivariate Pearson Correlations of Health Literacy, Self-Efficacy and Readiness for Change to Health Promotion Behavior (N-132)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Promotion Behavior (\text{HPLPII})</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Literacy (\text{NVS})</td>
<td>.244*</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (\text{NGSE})</td>
<td>.312*</td>
<td>-.055</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Readiness for Change (\text{HRI})</td>
<td>.440**</td>
<td>-.007</td>
<td>.143</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Significant at the .05 level,
**Significant at the .01 level.

Research Question

A simultaneous multiple regression was calculated to answer the research question: “What are the relative relationships between health literacy, self-efficacy and readiness for change to health promotion behaviors in urban Black women?”
There was a significant positive correlation between health literacy (NVS), self-efficacy (NGSE) and readiness to change (HRI) to health promotion behavior (HPLPII): $F(3,127) = 19.39, p < .001$, with an adjusted $R^2$ of .298 (Table 7). The combination of health literacy, self-efficacy and readiness for change accounted for a total of 31% of the variance in health promotion behaviors.

Table 7
Multiple Regression Analysis Results: Health Literacy, Self-Efficacy, and Readiness for Change on Health Promotion Behaviors.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>9.700</td>
<td>9.456</td>
</tr>
<tr>
<td>Health Literacy (NVS)</td>
<td>.234*</td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (NGSE)</td>
<td>.241*</td>
<td></td>
</tr>
<tr>
<td>Readiness for Change (HRI)</td>
<td>.407**</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .314$, Adjusted $R^2 = .298$, $F(3,131) = 19.30, p < .01$

**p < .01

Note: N = 132.

As shown earlier, each of the independent variables made a statistically significant contribution to the regression model (Table 7). The regression analyses show the partial contributions of health literacy, self-efficacy, and readiness for change to health promotion behaviors as measured with the following instruments: NVS ($R^2 = .059, p < .005$ [contributing 5.9%]); NGSE ($R^2 = .059, p < .001$ [contributing 5.9%]); and HRI ($R^2 = .194, p < .001$, [contributing 19.4%]) (Table 8). The error of variance of health promotion behaviors was found to be equal across groups ($F = 2.007, p < .005$).

Additional analysis. Spearman’s rank order correlations were used to explore relationships between health promotion behaviors as measured by the HPLPII and demographic information that was collected on the HRI instrument. A negative
correlation was discovered between health promotion behaviors and poor diet ($r_s = -0.114$, $p < .05$), lack of exercise ($r_s = -0.162$, $p < .05$), inadequate access to health care ($r_s = -0.177$, $p < .05$), and the presence of hypertension ($r_s = -0.120$, $p < .05$), as well as hypertension that required medication ($r_s = -0.005$, $p < .05$). Conversely, high levels of exercise correlated with more health promotion behaviors ($r_s = 0.365$, $p < .001$). The participant’s level of education was shown to correlate to higher levels of health literacy ($r_s = 0.414$, $p < .001$), readiness for change ($r_s = 0.184$, $p = .029$), and health promotion behaviors ($r_s = 0.368$, $p < .001$), but no significant relationship was discovered between education and self-efficacy ($r_s = 0.073$, $p = .497$).

Given the high BMI of participants in this study (mean BMI = 32 [obese]), further analysis was conducted to determine the specific relationship of BMI to other demographic characteristics among participants. The categories of BMI as described on Table 2 were used to compare participants. A high BMI (> 30) was significantly correlated with fewer behaviors commonly associated with health promotion. Participants with a high BMI were less likely to seek regular medical care or to control hypertension as analyzed using a Spearman’s rho ($r_s = 0.302$, $p < .01$) than participants with a normal BMI (< 25). These participants were also more likely to eat a poor diet, experience hypertension, be prescribed blood pressure medications, and have high cholesterol ($F[1,88] = 5.694$, $p = .019$), as measured on the Health Risk Instrument (HRI) than participants with a normal BMI. Using bivariate correlations, women with a high BMI (>30) were also more likely to have low health literacy ($r = -0.342$, $p = .01$), less likely to take their prescribed medications ($r = -0.442$, $p = .01$) or have a regular provider for routine medical care ($r = -0.663$, $p = .01$) or exercise regularly ($r = -0.367$, $p = .01$).
Subsequent bivariate correlations were conducted (using Pearson correlations) to identify which of the interval demographic variables were related to the dependent variable of health promotion behaviors. No correlation was discovered between age and health promotion behaviors, \( r^2 = 2.81, p = .235 \).

As a result of the large number of participants who met the standards for inadequate or limited literacy the correlation between the level of education and each of the main study variables (health literacy, self-efficacy, and readiness for change to health promotion behaviors) was also computed. To further describe the relationship between health literacy and educational level, Table 8 provides a cross tabulation table demonstrating the relationships between inadequate, limited and adequate health literacy and educational level.

Table 8
*Cross Tabulations for Three Levels of Health Literacy and Education*

<table>
<thead>
<tr>
<th>Health Literacy Levels</th>
<th>Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than HS</td>
<td>HS</td>
</tr>
<tr>
<td>Inadequate</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>52.6</td>
<td>14.1</td>
</tr>
<tr>
<td>Limited</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>%</td>
<td>38.7</td>
<td>19.4</td>
</tr>
<tr>
<td>Adequate</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>11.4</td>
<td>18.2</td>
</tr>
</tbody>
</table>

*Note: N = 132*

Groups based on total number of correct answers on Newest Vital Sign (range 0 - 6): Inadequate = 0 - 1: Limited 2 - 3: Adequate 4 - 6 (Weiss et al., 2005). However, no participant scored above a 5.

As shown in Table 5, the majority of participants in the study (67%) had limited or inadequate health literacy. To better understand how level of health literacy may affect
relationships between study variables, subgroup analysis was performed to explore the relationships between the main study variables in each health literacy subgroup (inadequate, limited, adequate) as shown on Table 9. In this analysis, significant correlations were demonstrated between readiness for change and health promotion behaviors in all three subgroups. This correlation was strongest in the limited health literacy group. In contrast to the overall study findings, self-efficacy was not significantly correlated with health promotion behaviors in any health literacy subgroup.

Table 9
Correlation of Health Literacy minimum/maximum actual scores (min/max), by Health Literacy subgroup to Self-Efficacy, Readiness for Change, Health Promotion Behavior (N=132) with mean (µ) and standard deviation (s) scores

<table>
<thead>
<tr>
<th>Health Literacy Subgroups</th>
<th>Inadequate (n=57) min/max=0-1</th>
<th>Limited (n=31) min/max=2-3</th>
<th>Adequate (n=44) min/max=4-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>µ: 2.38 s: 7.5</td>
<td>µ: 3.26 s: 10.9</td>
<td>µ: 2.88 s: 3.22</td>
</tr>
<tr>
<td>Readiness for change</td>
<td>µ: 71.98 s: 29.1</td>
<td>µ: 63.53 s: 23.77</td>
<td>µ: 79 s: 33.56</td>
</tr>
<tr>
<td>Health Promotion Behaviors</td>
<td>µ: 8.98 s: 2.92</td>
<td>µ: 11.37 s: 2.83</td>
<td>µ: 83.43 s: 28.57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
</tr>
<tr>
<td>Readiness for Change</td>
</tr>
<tr>
<td>Health Promotion Behaviors</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Note: Groups based on total number of correct answers on Newest Vital Sign (range 0 - 6): Inadequate = 0 - 1: Limited 2 - 3: Adequate 4 - 6 (Weiss et al., 2005).

The HRI also questioned participants on what component of health promotion behaviors they would like to change. Sixty-seven participants answered that although they would like to change, they were not currently engaged in making changes to pursue a healthier lifestyle. Specific behaviors that were identified by participants as an area they
would like to change included weight reduction \((N = 54)\), diet \((N = 65)\) and exercise \((N = 42)\). A discussion of these results is reported in chapter 5.

**Summary**

The active engagement in health promotion behaviors in this study was related to a degree of health literacy, self-efficacy and a readiness for change \((p < .001)\). Among these, readiness for change correlated most strongly to health promotion behaviors. This relationship was supported with findings from the overall sample analysis as well as subgroup analysis of participants with inadequate, limited, or adequate health literacy. While other significant relationships were found in the overall sample, readiness for change was the only variable significantly related to health promotion behaviors in the health literacy subgroup analysis. In addition, health literacy had a significant negative correlation to specific demographic characteristics, such as level of education and BMI. Participants that reported high BMI \((\geq 30)\) showed a significant inverse relationship to health promotion behaviors. Participants that reported a diagnosis of diabetes or hypertension (requiring medication) were also more likely to have a BMI \(\geq 30\).
CHAPTER V
DISCUSSION OF FINDINGS

This chapter begins with an overview of the findings of this study as they relate to the research question and to the Health Promotion model. The discussion will include an examination of the research hypothesis, research question and related findings in this study. The relationship of health literacy, self-efficacy and readiness to change will be discussed as they relate to health promotion behaviors in this sample population of urban Black women. Various demographic variables will also be discussed as they relate to health promotion behaviors among participants in this study. Finally, this chapter will discuss theoretical conclusions based on the findings of this study.

This study examined select variables that affect health promotion behaviors among urban Black women. The Health Promotion model guided the study in examining specific health promotion behaviors. Specifically, the relationships between health literacy, self-efficacy and readiness to change to health promotion behaviors were explored and analyzed. The researcher hypothesized that positive relationships existed between these variables, and this hypothesis was supported in the analysis of data. Although each of the three main study variables correlated to health promotion behaviors in this study, readiness for change showed the strongest correlation ($r = .440$, $p < .001$). Together, health literacy, self-efficacy, and readiness to change were found to explain 30% (adjusted $R^2 = .298$) of health promotion behaviors. To further explore the research question, the unique relationship between each study variable (health literacy, self-efficacy and readiness for change) to health promotion behavior was explored. Few studies have reported these relationships in Black women.
Health literacy

Among all participants in this study, 67% had inadequate or limited health literacy. The NVS was shown to have a modest positive correlation to health promotion behaviors ($r^2 = .234$, $p < .05$) in this study. Although health literacy was not specifically addressed in the health promotion model, Pender (2015) identified that individuals seek to actively regulate their behavior, and are able to modify cognitions, affect, as well as the interpersonal and physical environment to create incentives for health actions. Adequate health literacy (the capacity and competence to apply health information) has long been shown to contribute to individual engagement in health promotion behaviors (Mancuso, 2009; Nutbeam, 2008; Speros, 2005) and improve health promotion behavior (Baker, Wolf, Feinglass, & Thompson, 2007; CDC, 2010; Nutbeam, 2000; Paasche-Orlow, 2007; Rothman et al., 2006). More recent studies conclude that low health literacy may be associated with poor outcomes in persons with multiple sclerosis (Marrie, Salter, Tyry, Fox, & Cutter, 2014) and diabetes (Bohanny et al., 2013), while high levels of health literacy are associated with higher levels of health promotion behaviors (Bohanny, 2013; Lee, Boden-Albala, Larson, Wilcox, & Bakken, 2014).

Although health literacy testing has been recommended by regulatory agencies, such as the Joint Commission, measurement of health literacy is especially challenging in at risk populations, due to the fear of stigmatization (Cornett, 2009). Moreover, patients with low health literacy have been shown to be most likely to abandon quality healthcare if they are subjected to extensive health literacy testing (Cornett, 2009). It has been shown that when measuring health literacy, the use of a brief instrument is preferred, as it eliminates fear and stigma, especially in populations that are at risk for health disparities.
(Bass, Wilson, Griffith & Barnett, 2002; Cornett, 2009; Kelly & Haident, 2007; Parikh et al., 1996; Pfizer, 2016). The capacity to use health information to promote one’s health has been related to both literacy and numeracy (Smith, Curtis, O’Conor, Federman, & Wolf, 2015). Literacy and numeracy scores have been shown to vary by age, gender, race, education and the number of co-morbid conditions (Smith et al., 2015).

Health literacy has been defined using both medical and public health models, and various dimensions of these definitions have been shown to impact the ability to provide consistent measurement (Sorensen et al., 2012). In early reports of health literacy concepts, Parikh et al. (1996) concluded that many individuals have low literacy levels and are unaware that they have low health literacy, and often overestimate their own abilities. Among women with inadequate or low health literacy, this gap between an individual’s belief in his or her ability to protect personal health and the actual ability to protect personal health can result in increased rates of morbidity and mortality (Cornett, 2009; Mansyur et al., 2013; Parikh et al., 1996).

In this study of urban Black women, 66.7% of participants fell into the categories of inadequate health literacy \((n = 57)\) and limited health literacy \((n = 31)\). This figure is consistent with given national findings about health literacy levels but raised questions about the influence of literacy on this study’s findings. Therefore, to better understand the literacy of this group, a detailed analysis of health literacy subgroups was performed (Table 9). In the analysis of health literacy subgroups, higher levels of education were generally associated with adequate health literacy. However, five women without a high school education had adequate levels of health literacy, while nine college graduates were included in the limited and inadequate groups. This suggests that health literacy may be
significantly impacted by factors that were not explored in this study, a finding consistent with other studies (Baruth, et al., 2015; Bohanny et al., 2013; Cornett, 2009; Mansyur et al., 2013). Further subgroup analysis revealed that the relationships between readiness to change and health promotion behavior were significant in all health literacy subgroups (Table 10). Subgroup size precluded further analysis in this study; however, future studies with larger sample sizes could further explicate these relationships. The modest correlation of the health literacy to health promotion behavior in this study is likely due to the low reliability of the NVS ($\alpha = .597$) in this sample. However, the comparatively small sample size (132) in this study and an inability to separately measure numeracy and literacy may have also impacted the ability to properly address internal consistency of the NVS (Rouquette & Falissard, 2011). Additionally, although an instrument with fewer items is generally preferred over a longer instrument for ease of data collection, shorter instruments can result in limitations, including inability to separate out factors, especially with small sample sizes (Rouquette et al., 2011). For behavioral research instruments, such as the NVS, a sample size of 300 or greater may be required to reveal factor structure (Rouquette et al., 2011). These factors could have contributed to the poor internal consistency of the NVS in this sample.

There are just six items on the NVS measuring reading comprehension, conceptual application and applied math skills to solve a health-related question. Although directly relevant to health-related decision-making, measurement of health literacy is complex, and a lack of consensus regarding the precise concept of health literacy likely presents a challenge to accurate measurement and comparison of the construct (Altin et al., 2014; Pleasant, 2014; Sorensen et al., 2012). Previous studies that
have reported higher levels of internal consistency for the NVS have consistently included over 300 participants (Pleasant, 2014). The NVS instrument requires the participant to apply math skills, such as multiplication and division to correctly answer four of the six NVS questions. In this study, a large percentage of participants had inadequate health literacy. The rationale for this could have been twofold: 1. Participants did not have mastery of basic math, such as multiplication and division, and 2. The sample size was too small to ensure internal consistency of the instrument.

A previous study of African American women greater than 65 years of age demonstrated that both numeracy and literacy scores were significantly lower than Caucasian women of the same age using the NVS instrument (Smith et al., 2015). Participants in this study were between 30 - 64 years of age and did not receive separate measures of numeracy and literacy skill testing, making it impossible to determine how literacy and numeracy abilities uniquely contributed to low NVS scores. Additionally, over one third of participants in this study were born outside of the US. However, there was no significant difference in health literacy scores between participants born in the US or outside of the US.

Self-efficacy

Among all participants in this study, 95.5 % had moderate to high self-efficacy using the New General Self-Efficacy Scale (NGSE). Self-efficacy was shown to correlate to health promotion behaviors ($r = .241, p < .05$). As mentioned earlier, self-efficacy denotes a belief that one is capable of achieving individual goals, based on commitment to particular practices (Bandura 1986; Pender et al., 2011). This belief is thought to result in an increased positive affect, and therefore, persons with higher self-efficacy are
supposedly less likely to perceive barriers to promoting their health (Bandura 1986; Pender et al., 2011). Possessing a general optimism about ability (trait-like self-efficacy) limits readiness for change unless there is a perceived need to improve a health promotion behavior. Self-efficacy is thought to influence the individual’s perception of ability to perform across a variety of different situations and contexts and, therefore, may also address motivational state (Judge et al., 1998). However, reports from a study of hypertensive African Americans (Mansyur et al., 2013) showed that although high self-efficacy helped to reduce smoking, it had little effect on improving physical activity or dietary changes.

While self-efficacy and readiness for change were not significantly correlated, this could be because the participants with high levels of self-efficacy may not have perceived any immediate threat to their health. Each of the women in this study lived independently in their communities, had no hospitalizations within the prior six months, and may not have perceived a health risk requiring any action. When examining relationships with other variables, the NGSE showed no correlation to overall levels of health literacy or readiness for change.

**Readiness for change**

Among all participants in this study, 75.8% were shown to be either in the pre-contemplation, contemplation or preparation stage of change using the HRI, leaving slightly less than one fourth of the sample making active changes in health promotion behaviors. Readiness for change was shown to have the strongest relationship to health promotion behaviors ($R = .440, p < .001$) as compared to health literacy or self-efficacy combined. According to the health promotion model, the greater the commitment to a
specific plan of action, the more likely health-promoting behaviors are to be maintained over time (Pender, 2013). The lack of readiness to engage in health promotion behaviors among African Americans is thought to be cultural in nature, and has been related to health disparities in previous interventional studies (Campbell et al. 2007; Baruth et al., 2015). Creating understanding of the cultural components of readiness for change among Black women, especially in regard to promoting diet change and weight loss, is critical to successful future interventions (Carcone et al., 2016).

**Health promotion behaviors**

The mean score for health promotion behaviors using the HPLPII in this study was 77.3 (possible range = 0 - 156, actual range = 8 - 133). While comparison HPLPII scores in African American populations are not currently available, this mean score is approximately 17% points lower than the average HPLPII score in a previous descriptive study of 545 Hispanic adults living in Midwestern US communities (Hulme et al., 2003).

**Demographic variables and health promotion behaviors.** The mean demographic characteristics of the sample population in this study were compared to the latest US Census Bureau (2014) statistics for all women residing this city. The participants in this study were self-described Black women between the ages 30-64 years ($M = 45, SD = 9.72$) and approximately 10.6 % ($n = 15$) described themselves as being of mixed race. Although educational levels varied, 96 (72.6%) of the participants graduated high school, and 25.4% ($n = 34$) had achieved a bachelor’s degree or higher. The majority of participants were employed either part-time or full time ($n = 84, 63.6$%). According to the U.S. Census Bureau statistics (2014), 3.2% of women between the ages of 25-64 years of age that resided in this urban region self-described as mixed race, while 86% had
graduated high school, and 62.4% were employed. Although a significant relationship was discovered between health literacy, self-efficacy and readiness for change to health promotion behaviors in this study, the engagement in health promotion behaviors is not fully explained by these variables. Several demographic characteristics among participants in this study were related to health promotion behaviors and merit further discussion.

**Additional Analyses**

Several of the findings from the planned analysis and additional analyses of relationships between characteristics of study participants and health promotion behaviors require further discussion. The expanded analysis of education was, as noted previously, the result of the noted low level of health literacy in the sample.

**Education.** Although participants’ education levels in this study mirror those of the US population of Black women (CDC, 2015), there is a disparity in educational preparation between Black women and other women that has been previously noted (Mansyur et al., 2013). In detailed analysis of education and its relationship to study variables, a moderate statistically significant correlation was noted between education and health literacy ($r_s = .414, p = .001$). This suggests that generally among these Black women, those most likely to have inadequate health literacy were those with low levels of education. This is a critical finding, as it has been shown that poor health literacy has repeatedly been linked to inadequate management of many conditions, such as diabetes (Syayah, Majumdar, Williams, Robertson, & Johnson, 2013), regular use of emergency rooms for routine medical care (Herndon, Chaney, & Carden, 2011), and poor self-medication management skills (Mosher, Lund, Kripalani & Kaboll, 2012). However,
further analysis of the subgroups of women noted that although half of the most highly educated women had adequate health literacy, the other half did not. This supports the premise that education cannot be a proxy for multidimensional concepts like health literacy. It also contributes to concern that a single measure of health literacy may be inadequate for research purposes. The correlation between education and health promotion behaviors was also positive ($r_s = .368, p = .001$). This finding is consistent with those of previous studies.

**Age.** Women in this study greater than 59 years were less likely to report hypertension ($r_s = -.404, p < .001$), perhaps because they were more likely to receive regular medical care and their hypertension was controlled. Hypertension care that has been individually tailored by a regular healthcare provider has been shown to correlate to higher medication adherence (Khan, Shahj, & Hameed, 2014).

**Overweight or obesity.** According to the CDC (2015), a healthy weight is represented by a BMI of 18.5-24.9. Overweight classification is 25-29.9, and obese is classified as a BMI $>30$. In an earlier study, Hulme et al. (2003) reported that women with the lowest HPLPII scores had the highest BMIs of all participants, a finding consistent with those in this study. Among the participants in this study, 70.2% were overweight or obese (BMI $>25$ and $<30 =$ overweight, and BMI $\geq 30 =$ obese). Among Black women in the US, the obesity rate is 82% (CDC, 2015). A BMI $>30$ has been shown to negatively impact health promotion behaviors (Khawaldeh, 2014). According to the New York State Department of Health (2011), 68.1% of Black women residing in the state of New York are considered overweight or obese, indicating that this convenience sample is similar to state residents. Obesity is well known to contribute to a host of
diseases and conditions. While the obesity rate among Black women in the study was 70.2%, the obesity rate among White women in New York State is 23.1%, indicating a health disparity (New York State Department of Health, 2011). Although this disparity is modifiable, current efforts to eliminate the disparity have been unsuccessful (Carcone et al., 2016).

Although obesity is defined as a BMI $\geq 30$, higher degrees of obesity may be associated with fewer health promotion behaviors. For example, participants with a BMI $> 30$ in this study were less likely to seek regular medical care ($r_s = -.316, p < .05$), or control their hypertension ($r_s = -.297, p < .05$), than those with a normal BMI. They were also more likely to consume a poor diet ($r_s = .236, p < .05$), experience hypertension ($r_s = .340, p < .05$), be prescribed blood pressure medications, ($r_s = -.352, p < .05$), and have high cholesterol ($r_s = .234, p < .05$). Women with a high BMI were also more likely to have inadequate or limited health literacy ($r_s = .397, p < .05$), less likely to exercise regularly ($r_s = -.476, p < .05$), and were also less likely to have a regular provider for routine medical care ($r_s = -.342, p < .05$).

Participants in this study were all community dwelling, and had not been hospitalized within the prior six months. Although the mean BMI of participants was classified as obese, it is possible that despite the health risks associated with obesity, participants with high levels of self-efficacy may have not perceived an immediate health threat to their health. An absence of an immediate health threat may have contributed to the low readiness for change scores.

Specific health promotion behaviors. Participants with low (0 - 50) HPLPII scores ($n = 76, 57.6\%$) were less likely to consume a diet rich in fruits and vegetables
($r_s = -0.114, p < .05$), exercise regularly ($r_s = -0.162, p < .05$) or have regular access to
health care ($r_s = -0.177, p < .05$). These women were also more likely to experience
hypertension ($r_s = -0.120, p < .05$) and require medication to control their hypertension ($r_s$
$= -0.005, p < .05$). The rationale for these behaviors requires further exploration, but could
be related to access to care, and a host of other individual and community-related
variables. Conversely, high levels of exercise were associated with high levels of health
promotion behaviors ($r_s = -0.365, p < .001$). These correlations are consistent with the
definitions of health promotion behaviors as stated within the Health Promotion model
(Pender, 2015), and support recommendations from the American Heart Association
(2016) and the Centers for Disease Control and Prevention (2015) national health surveys.

**Measurement of Health Promotion Behaviors and the Health Promotion Model**

According to Pender (2015), health promotion behavior results in the attainment
of a healthy lifestyle by incorporating activities that improve functional abilities. The
Health Promotion Lifestyle Profile II (HPLPII) has been previously to be a valid and
reliable instrument in the measurement of health promotion behaviors as identified within
the health promotion model (Pender, 2015). When used in research, the HPLPII has been
shown to accurately identify specific opportunities to promote general health, such as
control of hypertension, regular physical activity, maintaining a healthy diet and weight,
abstaining from cigarette smoke, sleeping seven to eight hours a night, using preventative
care and avoiding the overuse of alcohol (Pender, 2013; Shakeshaft, 2012; Tingen et al.,
2012).

The health promotion model is based on assumptions, such as the individual’s
ability to regulate behavior (Pender 2015). Pender (2015) also described disparities in
health promotion behaviors that may be linked to personal demographic characteristics (such as age, race, ethnicity, personality structure and socioeconomic factors). Health promotion behaviors were most closely related to readiness for change in this study. Readiness for change has been shown to be modifiable, especially in specific health promotion behaviors, such as diet, exercise and regular medical care through interpersonal and community influences (Prochaska, 1997).

**Strengths of the Study**

This is the first study that examined the relationship of health literacy, self-efficacy and readiness to change to health promotion behaviors specifically among urban Black women, and subsequently the first to find that readiness for change is the variable most significantly related to health promotion behaviors for this group. Despite knowledge of the health disparities that exist between Black women and other groups of women, few studies have identified the degree of impact that readiness for change can have on promoting healthy behaviors in Black women. Future studies can confirm this finding and identify and target factors that have an impact on readiness for change. This study’s findings support prior recommendations that measurement of health literacy must employ instruments that measure numeracy and literacy separately, as limited participant math skills may dramatically impact health literacy scores.

Methodological strengths of this study include the sample size, availability of participants for recruitment, data collection methods and location, and minimal missing data. Although the minimum needed sample size calculated for this study was 107 (G*Power), the actual sample size was extended. The participants in this study were slightly more likely to be of mixed race and less likely to have graduated high school than
the national average for Black women, but employment rates were similar. The similarity of participant BMI demographics with the demographics of both state and US census regarding Black women in this region may have strengthened the generalizability of this study.

Additionally, the multicultural nature of the student nurses that assisted the researcher in recruitment may have provided the opportunity for a representative sample of participants (UyBico, Pavel & Gross, 2007). The ability to post dates and times for data collection in advance may have proved to be useful in recruitment as well.

**Limitations of the Study**

There were several methodological limitations in this research study. Only Black women who could speak English were included in the study. In the US, the inability to speak or read in English presents monumental barriers to studying health promotion behaviors in this population. Additionally, there was no measurement of unique characteristics of the participants in this study, such as country of origin, years lived in the US, number of children, or type of medical insurance, compared to other women that lived in this geographic region. This would have greatly contributed to further exploration of health literacy as well as other variables in this sample.

The Cronbach's alpha value for health literacy as measured by the Newest Vital Sign (NVS) was .597. This value was poor as compared to the reliability statistics value for the other main study variables, this could in part be explained by the complexity of measuring health literacy as well as a sample size of less than 300 participants. As reported earlier, the Cronbach’s alpha for the NVS in larger studies was .72, a figure just above the accepted minimum of .70. Participants in this study were between the ages of
30 - 64 years. It has been shown that many adults do not retain the basic skills of applied math throughout adulthood (Office of Education and Continued Development [OECD], 2013). This instrument was preferred over other health literacy instruments for this study; however, as the overall requirement for reading literacy was considered to be lower than other available instruments (Weiss et al., 2005) and the measure was consistent with the conceptual description of health literacy, it was used in this study. On further inspection of the literature, the use of the NVS has been limited to descriptive or correlational studies using dichotomous variables, with one exception (Fry-Bowers, 2012). Therefore, this study’s findings about health literacy underscore concerns about measuring a multidimensional concept such as health literacy with an instrument that does not clearly distinguish between its recognized domains of reading, numeracy, comprehension, and decision making skills (Oldfield, 2010), or the aspects stipulated by Smith, Nutbeam and McCaffery (2014) as functional, interactive, and critical.

The results of this study are also limited to the geographic service area of the hospital site in this study and may differ from other areas even among hospitals in the same city, and therefore may not be generalizable to other populations. Lastly, the researcher offered a ten-dollar metro card to participants. Although this may have provided incentive for some participants, it is not known if this truly had an effect on the response rate.
Theoretical Conclusions

This was the first study of this type to test the relationships of health literacy, self-efficacy, and readiness to change to health promotion behaviors together in a sample of Black urban women. Winslow (1923) described various health promotion strategies that improve the health of various at risk populations. Bandura (1986) then identified that belief systems impact one’s perception of a healthy lifestyle. Prochaska (1997) utilized the transtheoretical theory of change, including the concept of readiness to change, to improve health in a variety of populations using a host of strategies to promote weight loss, smoking cessation, and to increase physical activity. Using the work of these theorists, Pender (2015) created a framework for health promotion that has shown promise in a host of studies. Although health literacy is not included in Pender’s model, it is viewed as influential to health promotion.

Researchers have successfully combined testing of health literacy using the NVS with nominal or ordinal level measured variables such as BMI categories, attitude, formal education, race, insurance, primary language (other than English), lifestyle, perceived health and transplant outcomes, and provider knowledge (Escobedo & Weismuller, 2013; Gutierrez, Kindratt, Pagels, Foster, & Gimpel, 2014; Kazley, Hund, Simpson, Chavin, & Balega, 2015; McCune, 2010; Protheroe et al., 2016; Shah, West, Bremmeyr, & Savoy-Moore, 2010). The aforementioned studies highlight the overall measurement complexity of the concept of health literacy. This complexity has been identified in various settings and cultures. Health literacy was found to vary by an individual’s level of educational achievement, capacity and skill application, as well as the effectiveness of
communication across varied contexts, making accurate measurement challenging (Altin et al., 2014; Pleasant et al., 2014; Smith et al., 2015; Sorensen et al., 2012).

Given the complexities of measurement, the current study integrates health literacy with Pender’s model of health promotion by using the most valid instrument currently available to conduct population assessments to describe the unique factors that impact health promotion behaviors. It is unknown whether or not numeracy and literacy impacted the modest value for internal consistency for health literacy in this study.

This raises the question as to whether a multi-nuanced variable such as health literacy can accurately be measured using only one instrument. Although NVS may be the best fit for testing health literacy in the clinical setting (Cornett, 2009; Paasche-Orlow et al., 2007), as it is less likely to make individuals with low health literacy feel stigmatized than other instruments, there is a continued need for development. Although new abbreviated instruments have been constructed to measure health literacy, a continued lack of consensus as to the optimal conceptual constructs (such as literacy, functional health literacy and numeracy), as well as the correct format for testing health literacy, continue to impede progress in effective measurement (Altin, Fink, Kautz-Freinmuth, & Stock, 2014). Additional research should look at using the NVS with other measures of health literacy to see if all instrument scores consistently result in similar relationships with study variables. Further exploration of the relationship between the main study variables with larger populations (>300 participants) may provide additional information in this regard.

Statistically significant positive correlations were discovered between each of the main study variables to health promotion, as well as discovery of several demographic
variables that influence an ability to promote healthy behaviors in urban Black women. In this study, readiness for change was found to be the most highly correlated with health promotion behaviors, a finding consistent with previous studies on changing behavior (Mache et al., 2014; Spring et al., 2013).
CHAPTER VI

SUMMARY, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

The purpose of this correlational study was to investigate the relationship of
health literacy, self-efficacy and readiness for change to health promotion behaviors in a
convenience sample of 132 urban Black women living in the northeastern US. Since the
relationship between these four variables has not been studied previously, this study
contributes to the current knowledge of health disparities in Black women. The
relationship between health literacy, self-efficacy and readiness for change to health
promotion behavior was statistically significant. This study adds to a body of knowledge
about health promotion behaviors, which is of use to clinicians, nurse scientists and
researchers, and suggests directions in practice and research that can improve health in
urban Black women. This chapter has summarized and discussed the implications,
recommendations and conclusions for clinical practice and future research in regard to
health promotion behaviors among urban Black women.

Summary

In this study, participants completed four paper and pen instruments and a
demographic profile to identify variables that relate to health promotion behavior. The
Newest Vital Sign (NVS; Weiss et al., 2005) was used to measure health literacy. The
mean score was 2.35 (SD = 1.97) out of a possible 6 points, indicating limited health
literacy among participants. The NVS demonstrated poor internal consistency in this
study (α .597) and further exploration of this finding was provided. The New General
Self-Efficacy Scale (NGSE; Chen et al., 2001) was used to measure self-efficacy. The
mean NGSE score was 2.38 (SD = .65) out of a total of 3 possible points, indicating that
participants maintained a high degree of self-efficacy. The NGSE demonstrated high reliability in this study (α .930). The Health Risk Instrument (HRI; Prochaska, 1997) measured readiness for change, and participants’ mean score (37.13, SD = 10.27) out of a possible 55 points indicated that the majority of participants (75.8%) were in the precontemplation, contemplation or preparation stages of change. The HRI also showed high reliability (α .876). The Health Promotion Lifestyle Profile II (HPLPII; Pender et al., 1990) was used to measure health promotion behaviors. The mean HPLPII score was 77.3 (SD = 35.56), out of a total of 156 possible points indicating that participants were moderately engaged in health promotion behaviors. The reliability was also high in this study for the HPLPII (α .902)

The results of this study demonstrated that each of the main study variables was correlated to health promotion behaviors and that the combination of health literacy, self-efficacy and readiness for change accounted for a total of 29.8 % of the variance in health promotion behaviors. Readiness for change demonstrated the strongest relationship to health promotion behaviors.

The findings in this study also reported that individuals with higher levels of education have higher levels of health literacy. Given that health literacy involves both numeracy and literacy, the capacity to apply these skills is likely enhanced with continued education. Sixty seven percent of the participants in this study had inadequate or limited health literacy. Detailed analysis identified that the relationship between variables changed, depending on the level of health literacy. Self-efficacy has often been theoretically related to health promotion behaviors, and while no statistically significant relationship was found in this study, trends in the data warrant further research to explore
the potential relationship between self-efficacy and health literacy. Additionally, selected demographic variables were related to health promotion behaviors. In this sample, 70.2% of the participants were overweight or obese and there was an inverse relationship between BMI and other health promotion behaviors. The overweight or obese participants were shown to exercise less, experience more hypertension, have reduced medication adherence to their medications and did not have a regular healthcare provider.

**Implications**

Disparities in preventable health conditions such as cardiovascular disease, hypertension, diabetes, stroke and overweight and obesity are prevalent among urban Black women, and pose significant risk of mortality (American Heart Association, 2015). Although many diseases and conditions such as cardiovascular disease, diabetes, hypertension, stroke and overweight and obesity have been shown to be largely preventable, disparities among at risk populations has not improved over the past 20 years (Healthy People, 2020). The American Heart Association has set goals to reduce cardiovascular risk in diverse and underserved groups by 20%, but national initiatives and behavioral interventions have produced little or no success (American Heart Association, 2016; Stuart-Shor, 2012).

The challenge of future programs aimed at reducing health care disparities will be to address disparities in modifiable risk factors that are known to increase the risk of cardiovascular disease, hypertension, diabetes and stroke. These include the ability to lower and maintain an individual’s BMI below 25, increase physical activity (goal: 2 ½ hours of moderate intensity aerobic physical activity every week or 1 hour and 15 minutes of vigorous aerobic physical activity every week), and improve diet (avoid
sugary foods and beverages, incorporate fish and lean meat, fruits, vegetables and whole grains while lowering fat intake and reducing portion size) (American Heart Association, 2016).

The results of this study provide evidence that self-efficacy and readiness for change are key variables to the improvement of health promotion behaviors and that there are complex challenges associated with measuring health literacy. The development and incorporation of a model that promotes health promotion behaviors should include health literacy, self-efficacy, and readiness for change, especially among at risk populations such as urban Black women in order to reduce critical health disparities.

The strongest indicator of health promotion behavior in this study was shown to be readiness for change, and this is consistent with other published studies (Price et al., 2013; Prochaska et al., 2009; Rejeski et al., 2011). However, the results of this study suggest that the relationships between health literacy, self-efficacy, and readiness for change and their relationship to health promotion behaviors are complex.

**Recommendations**

Given the complex nature of the questions raised by the results of this study, future interventional studies that address health promotion behaviors may be best served if the focus of the intervention is to enhance readiness for change. Moreover, measurement of other variables affecting health promotion behaviors, such as health literacy, require further investigation to better understand how literacy and numeracy individually impact health literacy. Additionally, the nature of the relationship between self-efficacy to health literacy, readiness for change, and health promotion behaviors, requires further exploration to better identify how the trait-like belief of self-efficacy
supports health promotion behaviors (Cha et al., 2014; Scherbaum et al., 2014). The nature of the inverse relationship between high levels of self-efficacy and various levels of health literacy (inadequate, limited, adequate) also requires additional investigation (Bowers et al., 2014). While some researchers have found that self-efficacy related to specific behaviors such as exercise and breast-feeding is more salient than general self-efficacy, there remain gaps in our understanding.

The American Nurses’ Association’s social policy statement states that nurses promote healthy patterns of living (American Nurses Association, 2010), and the International Council of Nurses defines nursing as the promotion of health and the prevention of illness (International Council of Nurses, 2010). However, the multi-dimensional influence of the community in the promotion of healthy behaviors is challenging and complex (Pender, 2015). Creating an understanding of strategies to impact readiness for change in urban Black women will be critical in order to create strategies to address health disparities.

Additional research is warranted to determine the best ways to measure health literacy for research studies that are investigating relationships between multiple influences on health promotion behaviors. This may include the refinement of the Newest Vital Sign, use of several instruments and/or the development of a new health literacy instrument that is more attentive to the theoretical dimensions of the concept. This is especially important to understanding patterns of behavior in larger culturally diverse sample populations of at risk populations such as Black women. Following further investigation and refinement of effective instruments to measure health literacy, replication of this study with other populations using subgroup analysis can provide
insight into the unique aspects of other populations that are at risk for health care disparities.

**Conclusions**

The findings in this study add to what is known about the varied influences impacting health promotion behaviors in a sample of urban dwelling Black women. The results may serve to direct future programs in health promotion, as well as contribute to public health interventional studies aimed at an improved understanding of the factors that influence health promotion behaviors, and ultimately promote the health of at-risk populations such as urban Black women. In addition, findings suggest a renewed look at the distinction between instruments that are useful for clinical assessment and those effective for research purposes.
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Appendix A:

Model Describing Research Variables and Health Promotion Model

Research Variables

- Health Literacy
- Self-Efficacy
- Readiness for change

Health Promotion Behaviors
Appendix B

Demographic Profile

Thank you for your participation. I would like to begin by asking you some questions about where you live and follow up with questions regarding your health. Your individual answers on this survey are confidential and will not be shared. This survey has been reviewed and approved by Seton Hall University institutional review board for use in this study. Place a check mark in appropriate box to indicate your selection, and add other answers in the space provided.

1. With whom do you live? (Please check all that apply)
   - Husband
   - Children
   - Parents
   - Significant Other
   - Friends
   - Other Relatives
   - Other

2. Place an X in the appropriate box to indicate your selection (please check all that apply).

4. Were you born in the United States?
   - Yes
   - No

5. What is your native language?
   - English
   - Spanish
   - Other?

6. What is the highest level of education you have completed?
   - Eighth grade or less
   - Some high school
   - Completed high school/GED
   - Some college
   - Technical school or vocational
   - College graduate or bachelor degree
   - Some graduate school
   - Graduate school/Post graduate
7. On the average, how many hours per week are you working?
   □ Not currently working
   □ 10 hours or less
   □ 11-35 hours
   □ 36 hours or more
   □ Never worked

8. What is your usual job title?
   □ Unskilled
   □ Semi-Skilled
   □ Skilled
   □ Clerical worker
   □ Sales worker
   □ Administrator
   □ Commissioned military officer
   □ Professional
   □ Executive
   □ Government official
   □ Other_____________________________

9. How many years have you lived in your community?
   □ Less than 1 year
   □ Between 1-2 years
   □ Less than 5 years
   □ Five years or more

10. Do you receive any professional home help or health services?
   □ Yes
   □ No

11. Which best describes your marital status
   □ Single
   □ Married
   □ Widowed
   □ Divorced
   □ Living together/common law married/partner

14. How many family members did you visit in their home, or have visited you over the past week?
15. Below is a list of community activities. Please let me know how often you are involved in these organizations. (Please place appropriate number in space to the left of the community organization from the choice below)

1. No participation
2. Less than once a month
3. More than once a month, but less than once a week
4. Once a week
5. More than once a week, but not daily

___ Church or mosque
___ Community Center
___ Senior Activities
___ Adult Education
___ Arts & Crafts
___ Other (Please Specify)

(Please circle your answer)

16. Do you have high blood pressure or hypertension? Yes No
17. Do you have chronic bronchitis, asthma or emphysema? Yes No
18. Do you have diabetes or high blood sugar? Yes No
19. Have you ever had cancer? Yes No
20. Have any of your brothers or sisters ever had a stroke? Yes No
21. Have any of your brothers/sisters ever had a heart attack? Yes No
22. Do you have any problems with your memory? Yes No

If you answered yes, please describe those problems in the space provided:

_________________________________________________________________
_________________________________________________________________

23. How tall are you? ________________________________
24. How much do you weigh? __________________________
Appendix C

HPLPII

LIFESTYLE PROFILE II

DIRECTIONS: This questionnaire contains statements about your present way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, S for sometimes, O for often, or R for routinely

1. Discuss my problems and concerns with people close to me. N S O R
2. Choose a diet low in fat, saturated fat, and cholesterol. N S O R
3. Report any unusual signs or symptoms to a physician or other health professional. N S O R
4. Follow a planned exercise program. N S O R
5. Get enough sleep. N S O R
6. Feel I am growing and changing in positive ways. N S O R
7. Praise other people easily for their achievements. N S O R
8. Limit use of sugars and food containing sugar (sweets). N S O R
9. Read or watch TV programs about improving health. N S O R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber). N S O R
11. Take some time for relaxation each day. N S O R
12. Believe that my life has purpose. N S O R
13. Maintain meaningful and fulfilling relationships with others. N S O R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day. N S O R
15. Question health professionals in order to understand their instructions. N S O R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week). N S O R
17. Accept those things in my life which I can not change. N S O R
18. Look forward to the future. N S O R
19. Spend time with close friends. N S O R
20. Eat 2-4 servings of fruit each day. N S O R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling). N S O R
23. Concentrate on pleasant thoughts at bedtime. N S O R
24. Feel content and at peace with myself. N S O R
25. Find it easy to show concern, love and warmth to others. N S O R
26. Eat 3-5 servings of vegetables each day.  
27. Discuss my health concerns with health professionals.  
28. Do stretching exercises at least 3 times per week.  
29. Use specific methods to control my stress.  
30. Work toward long-term goals in my life.  
31. Touch and am touched by people I care about.  
32. Eat 2-3 servings of milk, yogurt or cheese each day.  
33. Inspect my body at least monthly for physical changes/danger signs.  
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).  
35. Balance time between work and play.  
36. Find each day interesting and challenging.  
37. Find ways to meet my needs for intimacy.  
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.  
39. Ask for information from health professionals about how to take good care of myself.  
40. Check my pulse rate when exercising.  
41. Practice relaxation or meditation for 15-20 minutes daily.  
42. Am aware of what is important to me in life.  
43. Get support from a network of caring people.  
44. Read labels to identify nutrients, fats, and sodium content in packaged food.  
45. Attend educational programs on personal health care.  
46. Reach my target heart rate when exercising.  
47. Pace myself to prevent tiredness.  
48. Feel connected with some force greater than myself.  
49. Settle conflicts with others through discussion and compromise.  
50. Eat breakfast.  
51. Seek guidance or counseling when necessary.  
52. Expose myself to new experiences and challenges.
Appendix D

New General Self-Efficacy Scale

Place a check mark in the appropriate box to reflect your answer

<table>
<thead>
<tr>
<th>I will be able to achieve most of the goals that I have set for myself.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree Nor Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>When facing difficult tasks, I am certain that I will accomplish them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In general, I think that I can obtain outcomes that are important to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe I can succeed at most in any endeavor to which I set my mind.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will be able to successfully overcome many challenges.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident that I can perform effectively on many different tasks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compared to other people, I can do most tasks very well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Even when things are tough, I can perform quite well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Health Risk Intervention

HRI instrument is copyrighted. Use of the instrument is fee based. As such, permission not granted to display in entire instrument within this document. Approved sample is shown below.

*(Demographic component of this instrument was not included in study as this information is collected within the demographic profile as shown on Appendix B)*
Appendix F

Newest Vital Sign

Please answer the questions below in reference to the following label.

This information is on the back of a container of a pint of ice cream:

| Nutrition Facts |
|------------------|----------------|
| Serving Size     | 1/2 cup        |
| Servings per container | 4            |
| Amount per serving |               |
| Calories          | 250            |
| Fat Cal           | 120            |
| Total Fat         | 13g %DV 20%    |
| Sat Fat           | 9g 40%         |
| Cholesterol       | 28mg 12%       |
| Sodium            | 55mg 2%        |
| Total Carbohydrate| 30g 12%        |
| Dietary Fiber     | 2g             |
| Sugars            | 23g            |
| Protein           | 4g 8%          |

* Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

**Ingredients:** Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

1. If you eat the entire container, how many calories will you eat? ____________________________

2. If you are allowed to eat 60 g of carbohydrates as a snack, how much ice cream could you have? ____________________________

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day? ____________________________

4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving? ____________________________

5. Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves and bee stings. Is it safe for you to eat this ice cream? Yes___ No__

If no, why not? ____________________________
Appendix G

Permission to Use Instrument: New General Self Efficacy Scale

Millie,
You are free to use the NGSE (attached, along with 2 papers validating the scale).
Good luck with your work.
Gilad

______________________________________________________________
Gilad Chen
Ralph J. Tyser Professor of Organizational Behavior
Chair of Management & Organization Department
Associate Editor, Journal of Applied Psychology
Robert BMI ≥ 30. Smith School of Business
4530 Van Munching Hall
University of Maryland
College Park, MD 20742-1815
301-405-0923 TEL
giladchen@rhsmith.umd.edu
http://BMI ≥ 30.rhsmith.umd.edu
Appendix H

Permission to Use HRI

Janice Prochaska, PhD
Pro-Change Behavior Systems, Inc
1174 Kingstown Road, Unit 101
South Kingstown, RI, 02879

Millie,

You have Pro-Change's permission to use our Health Risk Intervention. Attached is the measures letter for you to fill out and sign in order to use our HRI for research purposes. Please email back to me.

The fee is $1 dollar per usage.
Appendix I

Permission to Use HPLPII

Dear Ms Hepburn:

Thank you for your interest in the Health-Promoting Lifestyle Profile II. The original Health-Promoting Lifestyle Profile became available in 1987 and has been used extensively since that time. Based on our own experience and feedback from multiple users, it was revised to more accurately reflect current literature and practice and to achieve balance among the subscales. The Health-Promoting Lifestyle Profile II continues to measure health-promoting behavior, conceptualized as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual. The 52-item summed behavior rating scale employs a 4-point response format to measure the frequency of self-reported health-promoting behaviors in the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. It is appropriate for use in research within the framework of the Health Promotion Model (Pender, 1987), as well as for a variety of other purposes.

The development and psychometric evaluation of the English and Spanish language versions of the original instrument have been reported in:


Copyright of all versions of the instrument is held by Susan Noble Walker, EdD, RN, FAAN, Karen R. Sechrist, PhD, RN, FAAN and Nola J. Pender, PhD, RN, FAAN. The original Health-Promoting Lifestyle Profile is no longer available. You have permission to download and use the HPLPII and Health Promotion Model for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal. Reproduction for any other purpose, including the publication of study results, is prohibited. A copy of the instrument (English and Spanish versions), scoring instructions, an abstract of the psychometric findings, and a list of publications reporting research using all versions of the instrument are available for download.

Sincerely,

Susan Noble Walker, EdD, RN, FAAN
Appendix J

Request for Approval of Research, Demonstration or Related Activities Involving Human Subjects

REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR RELATED ACTIVITIES INVOLVING HUMAN SUBJECTS

All material must be typed.

PROJECT TITLE: Health Promotion Behaviors in Urban Black Women

CERTIFICATION STATEMENT:
In making this application, I(we) certify that I(we) have read and understand the University’s policies and procedures governing research, development, and related activities involving human subjects. I (we) shall comply with the letter and spirit of those policies. I further acknowledge my obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making those deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

Millie Hepburn 5/20/14

My signature indicates that I have reviewed the attached materials and consider them to meet IRB standards.

_________________________________________

RESEARCHER’S ADVISOR OR DEPARTMENTAL SUPERVISOR
DATE

**Please print or type out name below signature**

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research at the _____________________________ meeting.

The application was approved ___ not approved ___ by the Committee. Special conditions were ____ were not _____ set by the IRB. (Any special conditions are described on the reverse side.)

_________________________________________  __________________________

DIRECTOR, DATE

SETON HALL UNIVERSITY INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH
Appendix K

Script to Introduce Study to Potential Participants

I would like to invite you to participate in a study that is investigating health promotion behaviors. The researcher is attempting to better understand the factors that affect whether or not Black women participate in healthy behaviors. Are you interested in learning more about how you could participate in this study?

_______yes

_______no
Appendix L

Invitation to Participate in Study

My name is Millie Hepburn, and I am a doctoral student at Seton Hall University, in the College of Nursing. I would like to invite you to participate in my research study to examine the relationship between health literacy, self-efficacy and readiness for change and health promotion behaviors in urban dwelling black women. You may choose to participate if you live in an urban community, are between the ages of 30 to 64 years and describe your race as Black. As a participant, you will be asked to complete a one-time survey that includes a demographic profile, a survey to learn more about the following: health literacy (newest vital sign), your self-efficacy (NGSES), your readiness for change (HRI), and your health promotion behaviors (HPLPII), at our meeting that will take approximately 35 minutes to complete. There are no risks associated with participation in this study and any information you have shared with us will be private, anonymous, and confidential. The primary investigator will be the only individual that will have access to your information after it is de-identified. In order to offset your transportation costs to attend this meeting, you will receive a $10 metro card. If you would like to participate in this study, we will make arrangements to meet. At that time you will be asked to give consent and complete the survey described earlier.

If you have questions, you can direct them to me by calling 570 204-0433 or by contacting my graduate advisor, Dr. Pamela Galehouse at (973) 761-9294 or at pamela.galehouse@shu.edu, or by mail: 400 South Orange Avenue, South Orange, New Jersey, 07079.
Informed Consent Form

Researcher Affiliation:

Millie Hepburn is a doctoral student at Seton Hall University College of Nursing and is conducting a research study as part of the requirements for the degree.

Purpose:

The purpose of this study is to help nurses and other health care providers better understand the factors that affect healthy lifestyle behaviors in Black women.

Duration:

Participants will be asked to meet in person with the researcher on one occasion, and this meeting will last no more than one hour.

Procedures:

The participant will be asked to complete five questionnaires. Completion of the questionnaires should take about 35 minutes.

Instruments (Questionnaires):

The questionnaires measure a demographic profile, health literacy, using the Newest Vital Sign (NVS), self-efficacy, using the New General Self-Efficacy Scale, Readiness to Change, using the Health Risk Instrument (HRI), and Health Promotion Behaviors (HPLPII). Sample questions from each questionnaire are listed: 1. **Demographic Profile:**

How many years have you lived in your community? 2. **Newest Vital Sign:** A nutrition
label is provided and participants are asked how many calories are consumed if the entire container is eaten. 3. **New General Self-Efficacy Scale (NGSE)** the participant is asked if she will be able to achieve most of the goals set for herself, and asked to choose between strongly agree, agree, neither agree nor disagree, or disagree, 4. **Health Risk Intervention (HRI)** participant is asked about their smoking history and their intent to quit smoking, and 5. **Health Promotion Behaviors (HPLPII)** participants are asked if they take time for relaxation each day.

**Voluntary Nature:**

Participation in this study is strictly voluntary. A participant may withdraw at any point in the study by simply informing the researcher that she wishes to stop completing the questionnaire.

**Anonymity:**

No identifying data about participants will be recorded, so that no one will ever be able to link the data to any individual. Other than the consent form, names will not appear on any documents in the research study. Participation or non-participation will not be shared.

**Records:**

Records will be anonymous and will be kept on a flash drive, locked in the researcher’s home office for three years. No one except the researcher will have access to these records.

**Risks or discomforts:**

There are no risks for participation. There are also no benefits, other than helping to add to the knowledge of those trying to improve the health of Black women.
Remuneration:

In order to offset the cost of transportation, each participant will receive a ten-dollar metro card at time of data collection.

Alternative procedures:

There will be no other alternative procedures or methods of data collection.

Video or audio-tapes:

There will be no use of video or audio tapes in this study.

Copies of consent form:

Subjects will be given a copy of the signed and dated Informed Consent Form.

Questions:

If there any questions at all about this research, the researcher may be contacted at:

    Millie Hepburn  (570) 204-0433

For any questions regarding rights as a research subject:

Chair of the Institutional Review Board for the Protection of Human Subjects at Seton Hall University:

    Mary F. Ruzicka, Ph.D. (973) 313 6314

Participation in this study is voluntary and participants may refuse or stop participation at any time without any penalty.

I HAVE READ AND UNDERSTAND THE CONSENT FORM AND WILLINGLY AGREE TO PARTICIPATE IN THIS STUDY

________________________________________________________________________________________ DATE ___________

(PARTICIPANT)
Appendix N

Demographic Profile Permission

5-1-14

To Whom it May Concern:

Millie Hepburn has my permission to adapt and use the demographic profile that I have written and used in previous studies such as the Northern Manhattan Stroke Study (NOMASS), and Stroke Warning Intervention and Faster Treatment SWIFT funded by the National Institute of Health.

Best Regards,

Bernadette Boden-Albala
Appendix O

Recruitment Flyer

Seton Hall University
College of Nursing
400 South Orange Avenue, South Orange, New Jersey 07079

Volunteers needed to help in Health Promotion Behaviors study!

This Study is IRB-approved through the School of Nursing to investigate the factors that may be associated with health promotion behaviors.

If you are:
• Living in an urban community
• A woman between the age of 30-64 years old
• Speak English
• Identify as Black

I would like to have you participate in my study

For more information, or to inquire about participating, contact:
M. Hepburn at (570) 204-0433, millie.hepburn@gmail.com