A Salutogenic Framework to Understand Disparity in Breast Cancer Screening Behavior in African American Women

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LOYOLA UNIVERSITY CHICAGO

A SALUTOGENIC FRAMEWORK TO UNDERSTAND DISPARITY IN
BREAST CANCER SCREENING BEHAVIOR
IN AFRICAN AMERICAN WOMEN

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

PROGRAM IN NURSING

BY
REGINA CONWAY-PHILLIPS
CHICAGO, IL
MAY 2011
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The inquiry, knowledge and belief of truth is the sovereign good of human nature.

—Francis Bacon
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ABSTRACT

African American women (AAW) have a higher breast cancer mortality rate and a lower survival rate than any other racial or ethnic group. Research has demonstrated that limited access to care reduces mammography screening for AAW. Despite barriers, some AAW do access mammography and engage in breast cancer screening behaviors. The salutogenic theory of health focuses on factors that support well-being and increase positive health behaviors. Given this perspective, salutogenesis offers a novel framework to understand personal factors that allow some AAW to surmount barriers and to engage in health behaviors. Sense of coherence (SOC) is central to salutogenesis. Individuals with greater SOC view life as more manageable and take advantage of available resources.

A two-group cross sectional design was used to address the following aims: 1) evaluate the contribution of SOC to breast cancer screening (BCS) motivation and behaviors in AAW, 2) determine whether social support and/or spirituality modifies the effect of SOC on BCS motivation and behaviors, 3) determine if health perception mediates the effect of SOC on BCS motivation and behaviors, and 4) determine whether there are differences in SOC, spirituality, and social support of AAW who take advantage of the IBCCP (free mammogram) program compared to AAW who do not. This study enrolled 134 women with 53 in the IBCCP group and 81 in the non-IBCCP group.
Logistic and multiple regression were used to analyze findings.

Findings revealed that SOC was significantly related to health perception, social support, spirituality, and motivation. Spirituality and education significantly predicted BCS motivation. Barriers were associated with decreased odds of women practicing BSE. Regression models containing covariates and predictor variables as complete units predicted specific BCS behaviors. IBCCP participants’ had greater SOC, motivation and compliance with BCS guidelines than non-IBCCP participants; these differences trended toward significance.

These findings demonstrate the importance of free mammography programs and the contribution of spirituality to BCS in AAW. Future studies exploring the impact of components of SOC and barriers on BCS behaviors in AAW are warranted. Such results can inform future studies designed to reduce the large disparity in breast cancer mortality in AAW.
CHAPTER ONE

PROBLEM STATEMENT

Breast cancer is particularly burdensome on African American women (AAW). African American women have a higher breast cancer mortality rate at every age, and a lower five-year survival rate than White women (WW) (Ries et al., 2007). Although statistics indicate that between 1990 and 2004, the mortality rate for women of all races combined declined by 2.2% annually, in WW breast cancer mortality declined by 2.5% annually, compared to a 1.4% annual decline in AAW during the same period. Breast cancer accounts for approximately 27% of all newly diagnosed cancers and 19% of all cancer deaths among AAW (American Cancer Society, 2009c; American Cancer Society, 2010a; Ries et al., 2007). Evidence suggests that screening mammography can reduce breast cancer mortality by approximately 20%-35% in women aged 50-69 years and approximately 20% in women aged 40-49 years (Centers for Disease Control and Prevention, 2007; Fletcher & Elmore, 2003) while other studies report reduction of breast cancer mortality associated with mammography ranging from 16% to 30% (Berry et al., 2005; Humphrey, Helfand, Chan, & Woolf, 2002).

Although the incidence of breast cancer is highest in WW, AAW have higher mortality than any other racial or ethnic group, with breast cancer ranking second among the causes of cancer death in AAW. Statistics indicate that the gap in mortality between African Americans and Caucasians has widened in recent years.
Mortality rates among AAW are approximately 28% higher than WW and the five-year survival rate for breast cancer among AAW is 73% compared to 88% among White women (American Cancer Society, 2010a). In the Metropolitan Chicago area, the mortality rate among AAW is 68% higher than WW (Metropolitan Chicago Breast Cancer Task Force, 2007).

Over the past fifteen years, a significant number of studies aimed at exploring factors that contribute to the disparity in breast cancer mortality rates among AAW and WW have been published. The aim of the majority of these studies has been to identify and explain breast cancer screening (BCS) behaviors of AAW with the goal being to reduce the excess burden of breast cancer experienced by AAW (Underwood, 2007a). These studies have provided a wealth of information regarding the attitudes, beliefs, and perceptions of AAW relative to breast cancer screening, and have identified issues regarding barriers to access and utilization of breast cancer screening services.

These data led to the development of several programs aimed at increasing breast cancer screening rates among AAW and research studies aimed at identifying variables that relate to AAW compliance and acceptance of BCS activities (U.S. Department of Health and Human Services, 2005; Underwood & Dobson, 2004). With a few exceptions (Ahmed, Fort, Elzey, & Belay, 2005; Klassen, Smith, Shariff-Marco, & Juon, 2008), the majority of these studies have focused on low-income AAW who were noncompliant with breast cancer screening guidelines. Yet, even with these studies, the gap in the mortality rates between AAW and WW continues to widen with minimal
explanation as to why. This is indicative of an apparent gap in research in this body of knowledge.

A number of studies have explored BCS activities among AAW while measuring different variables including: attitudes, beliefs, and perceptions (Barroso et al., 2000; Beckjord & Klassen, 2008; Champion, Ray, Heilman, & Springston, 2000; Dibble, Vanoni, & Miaskowski, 1997; Graham, Liggons, & Hypolite, 2002; Green McDonald, Thorne, Pearson, & Adams-Campbell, 1999; Grindel, Brown, Caplan, & Blumenthal, 2004; Haggstrom & Schapira, 2006; A. R. Jones et al., 2003; Kinney, Emery, Dudley, & Croyle, 2002b; Klassen et al., 2008; Phillips, Cohen, & Moses, 1999b; Phillips, Cohen, & Tarzian, 2001; Russell, Champion, & Skinner, 2006; Russell, Monahan, Wagle, & Champion, 2007; Sadler et al., 2007; Simon, 2006; Thomas, 2004; West et al., 2003); barriers (Adams, Becker, & Colbert, 2001; American Cancer Society, 2010a; Champion & Springston, 1999; Champion et al., 2000; Fowler, 1998; Guidry, Matthews-Juarez, & Copeland, 2003; Lambert, Newton, & deMeneses, 1998; Mayo, Ureda, & Parker, 2001; Peek, Sayad, & Markwardt, 2008; Phillips, Cohen, & Moses, 1999b; Powe, Hamilton, & Brooks, 2006; Spurlock & Cullins, 2006b; Underwood et al., 2005; Young & Severson, 2005); psychosocial influences (Duffy, Wood, & Morris, 2001; Fowler, 2007a; Underwood, 1999b) and religiosity and spirituality (Gullatte, 2006; Holt, Clark, Kreuter, & Rubio, 2003; Holt, Lukwago, & Kreuter, 2003; Holt, Lee, & Wright, 2008; Kinney, Emery, Dudley, & Croyle, 2002b; Mitchell, Lannin, Mathews, & Swanson, 2002b; Underwood & Powell, 2006a).
In a review of theories, models, and frameworks used by researchers in studies focused on BCS among AAW, Underwood (2007b) identified the most frequently cited theoretical models and frameworks of health behavior. The Health Belief Model was most often cited in the nursing literature, followed by Health Locus of Control, Theory of Reasoned Action/Theory of Planned Behavior, Transtheoretical Model, Bandura’s Social Cognitive Theory, Transactional Model of Stress and Coping, Extended Parallel Process Model, Critical Social Theory and Feminist Perspective, Symbolic Interactionalism, Persuasive Health Message Framework, Anderson’s Behavioral Model for Health Services Utilization, Powe Fatalism Model, and the Giger and Davidhizer Transcultural Assessment Model. Pasick and Burke (2008) reported similar findings with the health belief model (HBM) being the most frequently cited theory in studies of mammography use in diverse groups. This was followed by the use of combinations of two or more theories including the trans-theoretical model (TTM), the theory of planned behavior (TPB), social support theory, the social cognitive theory and PRECEDE-PROCEED which in contrast to the previously cited theories is a conceptual framework for planning and practice rather than a model that identifies predictors of behavior and is most often used for multilevel health promotion.

Few researchers have used Antonovsky’s Salutogenic Framework (Antonovsky, 1979; Antonovsky, 1987), to study AAW. One study documented the relationship between health perception, health status, and sense of coherence (SOC) in AAW, using Antonovsky’s salutogenic framework (George, 1999; Gibson, 2003), while Gibson
(2003) explored the relationship between SOC, spirituality, and hope among AAW breast cancer survivors. No studies have explored the relationship between sense of coherence, spirituality, health perception, and social support and their impact on BCS motivation and behaviors among AAW.

Ample research has demonstrated that limited access to care (e.g., lack of insurance, no primary source of health care, and socioeconomic factors) limits mammography screening among AAW. Yet, despite these barriers and others, some AAW do access mammography and practice BCS behavior. The overall purpose of this study was to determine whether the personal attribute, sense of coherence (SOC), and general resistance resources such as spirituality, health perceptions, and social support, contribute to why some AAW surmount significant barriers and adopt BCS behaviors, while others do not.

**Theoretical Framework**

*Salutogenesis*

Salutogenesis has its origins from interviews of Israeli women with experiences from World War II concentration camps who in spite of this experience remained healthy (Antonovsky, 1979). The salutogenic theory focuses on the origin of health, which rejects the pathological or medical models; instead, it places individuals on a health ease-and-disease continuum (Antonovsky, 1979). Salutogenesis focuses on resources for health rather than risks for disease and is the opposite of the pathogenic concept which focuses
on obstacles and deficits and “it is a way of thinking, being, acting, and meeting people in a health promotion manner” (Eriksson, 2007).

In the salutogenic framework, health is seen as movement in a continuum between total ill health (dis-ease) and total health (ease) (Antonovsky, 1979; Antonovsky, 1984; Antonovsky, 1987; Eriksson, 2007), and is primarily concerned with explaining how one remains at a given point or moves up on the continuum, from wherever one is located on it at any given point in time (Antonovsky, 1979). Antonovsky (1979) presented the following situation: “if two people were confronted by an identical stressor, one has the wherewithal to successfully meet the challenge and the other does not” (p. 3). The salutogenic principle provides the framework to explore the intrinsic makeup of individuals that facilitate survival in spite of the omnipresent stressors throughout the person’s lifetime and answers the key question of what is health as opposed to what are the reasons for disease (Pathogenesis).

Salutogenesis focuses on wellness and adaptation via three concepts; problem solving/finding solutions, Generalized Resistance Resources (GRRs), and sense of coherence (SOC) (Eriksson, 2007). It posits a “recursive relation between SOC and GRR,” in that GRRs help in the development of SOC, whereas as strong SOC helps in the mobilization and utilization of GRR for the purpose of managing life challenges (Horsburgh, 2000).

Antonovsky intended this framework to be used by all professionals committed to understanding and enhancing the adaptive capacities of human beings, and believed
nurses were especially open to the salutogenic way of thinking (Antonovsky, 1987). The value of this framework for nurses is its view of health rather than illness. Nurses practicing from a salutogenic framework can add to individuals’ resistance resources and thus promote and reinforce a strong sense of coherence (Sullivan, 1989). Using the (Walker & Avant, 1995) criteria, Horsburgh (2000) found the salutogenic model to be logically and empirically adequate and expedient for use in the nursing discipline, to generate research questions and hypotheses that are relevant for nursing.

Sense of coherence. A personal attribute shown to positively motivate individuals to adopt preventive health behaviors is one’s sense of coherence (SOC). SOC is central to Antonovsky’s salutogenic theory of health, while life experiences are crucial in the development of SOC (Antonovsky, 1979). From birth, individuals constantly experience situations of challenge, response, tension, stress, and resolution (Antonovsky, 1979; 1987). “The more these experiences are characterized by consistency, participation in shaping outcomes, and an underload-overload balance of stimuli” (Antonovsky, 1979, p. 187), the more the individual can view the world as being coherent and predictable. SOC is an individual’s enduring view of the world and is posited to explain why individuals in adverse situations stay well and are even able to improve their health (Antonovsky, 1987). SOC is a relatively stable psychological attribute and is defined as the extent to which an individual’s life is comprehensible, manageable, and meaningful. SOC has been compared to similar concepts such as hardiness and locus of control in that the three components of SOC have similarity to the three counterparts in hardiness and locus of
control. Although, each construct was inspired by different theoretical traditions they are similar in focus on explanations of successful health maintenance (Antonovsky, 1987; 1991; Kravetz, Drory, & Florian, 1993; Schaubroeck & Ganster, 1991). Theoretically, SOC strengthens resilience, facilitates coping with stressors, enhances resource utilization which is very relevant to this study and, thus, contributes to health maintenance (Antonovsky, 1987).

SOC was originally defined in 1979; however, Antonovsky (1987) redefined SOC as the following:

A global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (a) the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable; (b) the resources are available to one to meet the demands posed by these stimuli; and (c) these demands are challenges, worthy of investment and engagement (p. 19).

SOC consists of three major components: comprehensibility (the extent to which life events make sense); manageability (the extent to which resources are available and adequate to handle life’s events); and meaningfulness (the extent to which individuals find meaning in life’s challenges, find them worthy of their time and energy and are motivational) (Antonovsky, 1987; 1996). Individuals with a strong sense of coherence manage stress effectively and are able to utilize available resources to maintain health.

**Generalized resistance resources.** Antonovsky (1979) defined a generalized resistance resource (GRR) as “any characteristic of the person, the group, or the environment that can facilitate effective tension management” (p. 99). GRRs are potential resources, which individuals with a strong SOC can utilize when seeking
solutions to problems (Antonovsky, 1987). The extent to which our lives provide us with GRRs is a major determinant of our SOC (Antonovsky, 1979). In AAW facing barriers to BCS, GRRs contribute to a strong sense of coherence and act in motivating them to take advantage of available resources and practice BCS behaviors. Antonovsky posited health perception, spirituality, and social support as GRRs that could contribute to SOC (Antonovsky, 1987).

Health Perception. Health perception is defined as the individual’s own reports of her medical symptoms or her general health (Suchman, Phillips, & Strieb, 1958), which is reflective of her present state of health and not according to what she would like her health to be. Yet it may not be accurate or in-line with a medical person’s perception. Representative components of health status include presence or absence of pain, limitations in activity of living, current health status, and health-related actions that are necessary to manage health problems (George, 1999).

Spirituality. Spirituality and religiosity are terms that are frequently used interchangeably, yet are distinctly different. Religiosity is defined by many researchers as “organized worship involving services and structured activities” (Holt, Kyles, Wiehagen, & Casey, 2003), “adherence to the beliefs and practices of an organized church or religious institution” (Jackson-Lowman, Rogers, Zhang, Zhao, & Brathwaite-Tull, 1996), and behavioral doctrines associated with “denominational characteristics” (Gullatte, 2006). In contrast, Tanyi (2002) defined spirituality as an “inherent component of being human… subjective, intangible, and multidimensional” (p.500) and as common
to all humans. Transcendence, connectedness, meaning and purpose in life, higher power, belief system, search for purpose, and sense of relatedness are constructs used to describe spirituality by nursing authors (Burkhardt, 1989; Delgado, 2005; Reed, 1992).

In a qualitative study in which AAW were asked to define spirituality, 53% of the respondents defined spirituality as a “connection to and/or a belief in a higher external power” (Mattis, 2000). Spirituality is a major construct of the African American (AA) culture and should be considered in any study of AA population, which is a position supported by multiple studies of the AA population that found spirituality “influences virtually every domain of AA life” (Mattis, p. 102). Much of the literature substantiates the value of including spirituality as a variable in studies of AAW (Bourjolly, 1998; Gibson, 2003; Holt et al., 2003; Holt et al., 2008; R. L. Jones, 1996; Kinney, Emery, Dudley, & Croyle, 2002b). For the purpose of this study, spirituality refers to “a broader search for meaning and purpose in life, involving faith in a higher power, that may or may not involve religiosity” (Holt, Kyles et al., 2003) and is “nondenominational and non-institutional” (Gullatte, 2006).

**Social Support.** Social support is described as psychological and material resources that benefit individual’s ability to cope with stress (Cohen, 2004). Antonovsky identified social support as one of the interpersonal-relational general resistance resources and suggested that the extent to which one is embedded in social networks to which one is committed is crucial to the development of one’s SOC (Antonovsky, 1979). Hogan and Schmidt (2002) defined social support, specific to bereavement, as having at least one
non-judgmental person who takes time to listen as the bereft express their thoughts and feelings. Studies indicate that social support is an important facilitating factor in promoting BCS among AAW. Study participants described social support as having someone offer to drive them to appointments and having someone to talk to about cancer and cancer screening (Farmer, Reddick, D'Agostino, & Jackson, 2007; Gibson, 2008; Lukwago et al., 2003). Providers of social support can include family, friends, and the community.

**Background**

*Risk factors for breast cancer in African American women.* Breast cancer is cancer that forms in the tissues of the breast, usually in the ducts (tubes that carry milk to the nipple) and lobules (glands that make milk) (National Cancer Institute, 2009). Breast cancer occurs in both men and women, although breast cancer in men is considered rare (National Cancer Institute, 2009). The exact causes of breast cancer are unknown; however, research has shown that women with certain risk factors are more likely than others to develop breast cancer. According to the National Cancer Institute (2006), risk factors known to increase a woman’s chances of developing breast cancer include; sex, age, personal history of breast cancer, family history of cancer, certain cellular breast changes, genetic changes, reproductive history including age at first childbirth, menstrual history including age at menses and menopause, race, radiation therapy to the chest, increased breast density, taking diethylstilbestrol (DES), being overweight or obese after menopause, lack of physical activity, and drinking excessive alcohol (see Appendix A).
Breast cancer statistics for African American women. The American Cancer Society (2010) estimated that there were 19,010 new cases of breast cancer among AAW and 6,000 deaths among AAW in 2007. Breast cancer is the second most common cause of cancer death among AAW, second only to lung cancer. Breast cancer death rates among AAW increased 1.6% annually from 1975-1991 and has since declined (American Cancer Society, 2009c). The decrease is greater in women under 50 years of age (1.9%) compared to women aged 50 and older (1.1%) (American Cancer Society, 2009c). Although the decline has been steady since 1991 there has been a noticeable divergence between breast cancer mortality rates for WW (25%) and AAW (33.8%). The disparity in mortality rates (i.e., increased mortality in AAW) varies by state with Illinois, Louisiana and Nebraska having the largest ranges of disparity between White and African American women (Ries et al., 2007).

Although breast cancer impacts all racial/ethnic groups, the disproportionate burden that AAW bear when measures of mortality and length of survival are compared, demonstrate the need for ongoing research aimed at diminishing the disparity. Breast cancer screening is an important step in reducing mortality rates and increasing the length of survival, however, studies have demonstrated that disparities exist in BCS behaviors between White and AAW (U.S. Department of Health and Human Services, 2005).

Disparities in breast cancer screening. Breast cancer screening and early detection are key factors in reducing mortality; since breast cancer is more easily treated and controllable if it is found early. Mammography is the best available method to detect
breast cancer in its earliest, most treatable stage (Curry, Byers, & Hewitt, 2003). Federal programs have been implemented to assure mammograms are available to all women, with emphasis on women who have low-income, are uninsured or are underinsured.

The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) (Centers for Disease Control and Prevention, 2006; U.S. Department of Health and Human Services, 2005) is a nationwide program aimed at helping low-income, underinsured, and underserved women gain access to breast and cervical cancer screening services. The five-year summary (2000-2005) national aggregate report from the NBCCEDP indicated that of the 1,064,720 NBCCEDP-funded mammograms, WW received 40.6% while AAW received 14.1% (U.S. Department of Health and Human Services, 2005). In contrast, the data reflective of all women show that AAW age 40 years and older have more mammograms (79.8%) than WW (76.9%), yet AAW are more likely to be diagnosed at later stages of the disease, and have larger tumors, and metastases into the lymph nodes and other parts of the body (Centers for Disease Control and Prevention, 2007). One explanation for this discrepancy is that the manner in which these data are collected could bias the results. These data are collected by telephone survey, which would bias the results to AAW with telephones and potentially not capture the low-income population.

When breast cancer is detected at the more advanced stages, it is more difficult to treat and survival rates are lower (Centers for Disease Control and Prevention, 2005). The results of several nursing studies suggest that breast cancer morbidity and mortality
among AAW would be reduced if BCS recommendations were more effectively utilized (Adams et al., 2001; Barroso et al., 2000; Champion & Scott, 1997; Phillips, 1993; Phillips, 1993; Underwood & Dobson, 2004). The disparity in mammography utilization among low-income, underinsured, and underserved AAW is the information needed to support ongoing research exploring the BCS behaviors of AAW. It is also important that we understand whether middle-income, insured AAW are similar to or different from low-income, underinsured, and uninsured AAW in their attitudes, beliefs, intentions, and practices so that appropriate and effective intervention programs can be designed (Phillips & Smith, 2001).

The Morbidity and Mortality Weekly Report (MMWR) (Centers for Disease Control and Prevention, 2007) issued by the Centers for Disease Control and Prevention indicated a significant decline in the percentage of United States women age 40 and over who reported having a mammogram in the last 2 years. This is a troubling statistic for all women but especially for AAW given the disparity in the mortality rate. These data are indicators of possible unidentified barriers to BCS services.

Significance to Nursing

Nurses are challenged to provide information and care in a way that promotes and optimizes health and prevents illness (American Nurses Association, 2004). It is imperative that nurses engaged in the care of women are knowledgeable of the standards of breast care and of the availability and accessibility of breast cancer resources.
In addition, it is important for nurses to act as role models for women by demonstrating compliance with BCS guidelines themselves. Nurses are urged to promote optimal use of all three screening practices among AAW and enhance use of the BCS measures through individual and public education and encouragement (Phillips, 1993). In fulfillment of nursing’s role in health promotion and disease prevention, nurses are challenged to develop educational programs that are culturally sensitive and based on data provided by AAW across the continuum of socioeconomic, educational and cultural backgrounds. Literature and educational materials used by nurses to educate and promote practice of BCS behaviors must be evaluated for cultural sensitivity, readability and appropriateness for the target audience. As nurses continue to care for more people from diverse cultural backgrounds it is imperative that they be prepared and understand the influence of culture on preventive health behavior (Thomas, 2004).

Educating nurses, who work with AAW to assess the women for obstacles or barriers to following BCS recommendations, when implementing programs or educating AAW about BCS, can encourage a more proactive approach. Nurses are more in keeping with the salutogenic theory, when they avoid making assumptions about barriers and instead encourage the women to identify what it would take to facilitate them having a mammogram. Enabling women to become more engaged in their breast health activities and taking an active role in securing access to services, and helping them navigate the health care system, empowers AAW to take a more vested interest in their personal
health outcomes. Program participants will perceive the nurse as being more vested in their success as opposed to focusing on noncompliance (Lutfey & Wishner, 1999).

Several studies have demonstrated that lack of physician recommendation is a key factor contributing to decreased rates of BCS activities in AAW. In a study evaluating the concepts compliance and adherence, Lutfey and Wishner (1999) suggest health care professionals take a more productive role in response to patient behaviors instead of labeling them “noncompliant” and thus lowering treatment goals—in the case of low-income AAW, physician failure to recommend mammography. However, it is not enough to recommend BCS activities alone. What is needed from nurses and other health care professionals is to take additional steps to anticipate and assist AAW to address the factors that will facilitate their participation in BCS activities. The better our understanding of factors that motivate BCS behaviors, the better we can meet the social, personal and health care needs of AAW.

Conceptualization of Breast Cancer Screening

The basic principle for BCS is that it allows for early detection of non-palpable and palpable breast cancers. Breast cancer is a progressive disease and the earlier it is detected the better the prognosis and more successful the treatment (R. A. Smith et al., 2003). When breast cancer is found during screening, staging is performed. Staging is determining the extent of the cancer in the body and is based on whether the cancer is invasive or non-invasive, the size of the tumor, lymph node involvement, and if cancer has spread to other parts of the body, termed metastasis. The stage of the cancer is one of
the most significant factors in determining prognosis and treatment options (American Cancer Society, 2010a). There is an inverse relationship between staging and 5-year survival rates, in that the lower the stage of cancer the greater the 5-year survival rate (see Appendix B). It is interesting to note that in each stage, the 5-year survival rate is less in AAW than in WW (Ries et al., 2007).

The term screening refers to the testing of asymptomatic individuals for the detection of occult disease (R. A. Smith et al., 2003, p. 141). Research studies have demonstrated the efficacy of BCS and therefore most organizations that issue guidelines and recommendations endorse regular mammograms as part of preventive care. Breast cancers that are detected early are associated with reduced morbidity and mortality. It is important to note that in addition to the benefits of screening; there are limitations such as psychological harm of false-positive mammograms, the additional required evaluations and the potential overtreatment (Garber, 2003). Mammography, clinical breast examinations (CBE) by a medical practitioner, and breast self examination (BSE) are frequently identified as the three primary tools of BCS (Phillips, 1993; Underwood, 2006). Magnetic resonance imaging (MRI) is generally recommended for BCS, only in women at high risk for developing breast cancer (i.e., have a known BRCA 1 or BRCA 2 gene mutation, or have a first degree relative [parent, brother, sister, or child] with a BRCA1 or BRCA 2 gene mutation)(American Cancer Society, 2009a).

*Mammography.* Mammography is a highly accurate, low-dose x-ray procedure that allows visualization of the internal structure of the breast. Mammography, on
average, will detect approximately 80%-90% of breast cancers in asymptomatic women and is considered to be the gold standard for early detection of breast cancer (American Cancer Society, 2009a).

**Clinical breast examinations and breast self-examination.** Clinical breast examinations (CBE) are performed by health care professionals that include the visual inspection and palpation of the entire breast and surrounding lymph nodes for lumps, other changes, or abnormalities (American Cancer Society, 2010a). The breast self-examination (BSE) is a non-invasive, procedure performed by women themselves, used to detect lumps and abnormalities in the breast. The procedure involves self inspection and palpation of the breast and surrounding lymph nodes, and includes visual inspection of the breasts for abnormalities (American Cancer Society, 2010b).

**Recommendations/guidelines.** Some researchers have suggested that screening for breast cancer with mammography is unjustified and in certain cases does more harm than good (Gotzsche & Olsen, 2000; Gotzsche & Nielsen, 2006; Olsen & Gotzsche, 2001). In contrast, most well-designed clinical studies and nearly all North American health organizations support the benefit of mammography use and recommend regular mammography screening for women 40 years of age and older (Ahmed et al., 2005; Green & Taplin, 2003). Several institutions and organizations have developed recommendations and guidelines for BCS such as National Institutes, medical organizations, cancer societies, breast cancer advocacy groups, and cancer centers. These include the United States Preventive Services Task Force (USPSTF), the American
Medical Association (AMA), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), the American College of Radiology (ACR), and the American Cancer Society (ACS) (Underwood et al., 2005)(see Appendix C). The guidelines advise doctors and patients on the appropriate intervals for mammograms and breast exams for early detection of breast cancer. Guidelines and recommendations vary somewhat among the organizations and are updated periodically.

In 2003, ACS updated its guidelines based on recommendations from a formal review of research evidence (R. A. Smith et al., 2003). Recommendations for people at average risk for cancer and without any specific symptoms include yearly mammograms starting at age 40 and continuing for as long as a woman is in good health and clinical breast examinations every three years for women 20 to 30 years of age and every year for women 40 years of age and over. Beginning in their 20s, women should be informed about the benefits and limitations of BSE and should know how their breast normally feel and report any breast changes to their health care providers (R. A. Smith et al., 2003).

Cost of Delay in Breast Cancer Screening. Breast cancer poses a significant threat to women’s health. Delay in BCS results in a later stage of the disease at diagnosis with a resulting increased risk of mortality (E. R. Smith et al., 2008). Psychosocial factors, such as having higher levels of anxiety, fatalistic beliefs, misconceptions about cancer, cultural beliefs and other variables have been shown to influence AAW delay (E. R. Smith et al., 2008).
The financial burden of cancer on the insurance industry and society increases as breast cancer is diagnosed at later stages (Barron, Quimbo, Nikam, & Amonkar, 2008). The emotional toll that a cancer diagnosis places on the individual diagnosed with breast cancer and the family is immeasurable and incalculable.

Summary

Studies have identified barriers to African American women having mammograms including: cost, physicians’ failure to discuss mammography with women, misconceptions that screening is unnecessary, lack of health insurance, fear of radiation, distrust of the health care system and/or health care provider, pain, and hearing a diagnosis of cancer, limited knowledge, low level of education and income, lack of regular physician or usual source of health care, older age, and cancer fatalism, beliefs and attitudes (Adams et al., 2001; American Cancer Society, 2009d; Champion, 1999; Champion et al., 2000; Coleman & O'Sullivan, 2001; Fowler, 1998; Guidry et al., 2003; Lambert et al., 1998; Mayo et al., 2001; Papas & Klassen, 2005; Phillips, Cohen, & Moses, 1999b; Phillips & Smith, 2001; Underwood et al., 2005; Young & Severson, 2005). This has led to the development of several programs with the goal of increasing BCS rates among AAW (Underwood & Dobson, 2004).

There have been few studies exploring factors that motivate AAW’s participation in BCS(Ahmed et al., 2005; Klassen et al., 2008). Researchers have explored the relationship between SOC and various concepts such as health perception, spirituality, and social support (Delgado, 2005; George, 1999; Keating, 2007). SOC has been studied
in the African American population in very few studies (George, 1999; Gibson, 2003), however, no studies have explored the relationship between SOC, health perception, spirituality, and social support and the impact these variables have on BCS motivation and behavior in AAW. The purpose of this study is to explore that relationship.
CHAPTER TWO

REVIEW OF LITERATURE

In the vast majority of studies on BCS, the populations consist of predominantly WW. African Americans make up approximately 13% of the U.S. population (McKinnon, 2001; 2003) yet they have poorer outcomes than WW (American Cancer Society, 2009c). Researchers have justified the disparity in inclusion of AAW subjects by arguing that the percentage of African Americans is representative of the percentage in the US population (Haggstrom & Schapira, 2006). Furthermore, in a large proportion of studies on BCS in AAW, the populations consist of predominantly AAW in the lower socioeconomic status. Given the disproportionate impact of breast cancer on AAW, research that focuses exclusively on the BCS practices of AAW in lower and middle socioeconomic status is imperative (Phillips, 1993; Phillips & Smith, 2001).

Research is needed to explore the breast health behaviors in AAW and it is crucial to identify barriers, as well as motivators to utilization of available BCS programs. In addition, studies exploring the impact of race on breast health behaviors, adherence to BCS guidelines, BCS beliefs and practices, and breast cancer control are needed (Underwood et al., 2005). A significant body of literature has been published in the past 15 years describing the outcomes of studies, projects, and initiatives addressing breast health and breast cancer control among AAW, however, a dearth in knowledge of factors that motivate AAW to practice breast cancer prevention remains.
In addition to the nursing discipline; medicine, social work, public health and psychology disciplines have researched various aspects of BCS behaviors of women in general and AAW in particular. Many of the studies and research conducted by these disciplines have focused on factors influencing BCS behaviors, however, little is known about the scope, quality, and potential impact these studies have had on reducing the disparity in breast cancer mortality and morbidity experienced by AAW (Underwood et al., 2005). Researchers have identified gaps in the literature including the need for listening to what AAW themselves had to say about their decision to practice breast screening behaviors (Baldwin & Williams-Brown, 2005); (Barroso et al., 2000); (Fowler, 1998).

Few studies have examined motivation of those AAW who practice BCS (Ahmed et al., 2005; Klassen et al., 2008). Personal attributes such as one’s sense of coherence (SOC) and one’s general resistance resources (GRRs) such as health perception, spirituality, and social support are thought to motivate individuals to search for and utilize available resources for health promotion. It is suggested that AAW who are highly motivated to overcome barriers to practice breast cancer prevention and participate in health screening activities such as annual mammography will have a strong SOC as well as positive health perception and greater senses of spirituality and social support.

With this in mind, the overall purpose of this literature review was to identify studies that have focused on AAW, the major aspects of breast cancer screening behavior, and SOC as it relates to health perception, spirituality and social support.
The process of selection, review, analysis and critique used in this review was accomplished using the process prescribed by Cooper (1982). Journals found in the Cumulative Index to Nursing & Allied Health Literature (CINAHL), PubMed, MEDLINE, OVID, and PsycINFO which are databases that are primary reference tools for the journal literature for health care professionals were identified. These databases were searched using the search terms, “African American women,” and “breast cancer screening,” “sense of coherence,” “health perception,” “spirituality,” “social support” and “breast cancer screening motivation.” Additional search terms included breast neoplasms, perception, motivation, barriers, decision making, attitudes, cancer screening, beliefs, health care utilization, and culture.

The inclusion and exclusion criteria for this study are identified next. Studies were included if they were conducted in the United States between January 1, 1997 through August 31, 2010. Additional inclusion criteria were studies with exclusively AAW population; studies with a majority of AAW or a subset of AAW with the caveat that the report and comments on the findings relative to the AAW subset as part of analysis and critique. Qualitative, quantitative, and mixed methods reporting outcomes of programs, projects, or studies aimed at describing, monitoring, or addressing BCS behaviors of AAW were included. Nursing, medicine, social work, public health, medical sociology, and psychology research published in peer-reviewed professional journals were also included.
Excluded studies were identified as those studies of women of (Sub-Saharan) African, Haitian, and Caribbean Isle descent. Although these are women living in the US, if the study is focused on these descendents it is excluded from this study if they are identified as such. This was done in order to increase the cultural homogeneity within the sample of research articles. There are various projects, programs, and grants to support research on this particular population. Although these studies are important; for the purpose of this paper they will be excluded in order to specifically focus on AAW.

Studies combining BCS and cervical cancer screening are excluded. In the initial search, several research articles were found that combined BCS with cervical cancer screening. Although cervical cancer screening among AAW is an important issue; the fact that statistics indicate that breast cancer is the most common form of cancer and the second most common cause of cancer death among AAW(American Cancer Society, 2009b; American Cancer Society, 2010a; National Cancer Institute, 2006), lends credence to the urgency of identifying gaps in research on BCS behaviors of AAW and in recommending future research on this topic.

Research reviews and literature reviews were excluded. An interesting finding in the nursing literature search was the number of research studies and articles in which the primary investigator or author does not include their nursing credentials or any information that would identify them as nurses. This fact made searching for nursing literature in order to identify the state of the nursing science difficult and somewhat cumbersome. Therefore it is highly plausible that the nursing studies included in this
review did not capture all of the nursing literature that has been published on the topic of BCS behaviors of AAW. Appendix D provides a list of nursing studies included in the review.

The retrieved abstracts were reviewed next. Abstracts meeting the inclusion criteria, but not providing the level of detail of sample, targeted population, methodology, design, and results led to the full-text article retrieval. Occasionally the review of the full-text article resulted in the article being excluded from this review. The retrieved abstracts and articles were reviewed, thematically sorted, analyzed and summarized utilizing the breast cancer detection and control continuum and the research continuum identified by Underwood et al. (2005). Subsequently, the full-text articles were retrieved for all of the abstracts that were included in this review. Next, the focus, purpose, research questions and hypotheses, methods, design, sample and target population, methods of data analysis, and results of each article were critically reviewed. Finally, a commentary on the apparent gaps and limitations in this body of research, and a narrative commentary highlighting recommendations for future research are presented.

For this study, the literature was reviewed for the following concepts among AAW: sense of coherence, health perception, spirituality, social support, BCS motivation and BCS behavior. The relationship of SOC with health perception, spirituality and social support is the format for this review, followed by review of literature on factors influencing BCS and motivation among AAW. For this study, African American women are defined as the socio-cultural designation of a group of women with a “common
cultural heritage (language, customs, food, etc.), sociohistorical and political status (minority) and with ancestral ties to Sub-Saharan Africa” (Ashing-Giwa, 1999 p. 55).

**Sense of Coherence**

Sense of coherence explains why people in stressful situations and faced with numerous barriers stay healthy and in some situations improve their health. This ability is a combination of individuals’ ability to assess and understand the situation they are in, recognize and access the resources they have at their disposal, and have the capacity to find a reason to move in a health promoting direction despite the odds (Eriksson, 2007). SOC is a resource that enables people to manage stress, disadvantages, disparity and to reflect about their external and internal resources, to identify and mobilize them to promote effective coping by finding solutions and resolve these issues in a health promoting manner (Antonovsky, 1979, 1987; Eriksson).

In the salutogenic framework, individuals are located on the health ease-dis-ease continuum. The SOC is projected as a key theoretical construct in understanding and dealing with health issues and thus is viewed as a determinant of health (Antonovsky, 1984). It is hypothesized that wherever an individual is on the health ease-dis-ease continuum, the stronger the SOC, the more likely they are to maintain that location or improve it (Antonovsky). In addition, individual’s belief that life is meaningful gives them a good reason for wanting to be healthy and stay healthy in order to be able to live a life that is comprehensible, manageable, and meaningful (Antonovsky, 1984, 1987).
Thus, the individual is motivated to engage in activities that are health-promoting in nature and participate in secondary prevention activities such as BCS.

**SOC and African American Women**

Antonovsky (1984), in his own work of the salutogenic paradigm focused on concentration camp survivors, poor people, and AA in the US, sought to understand what it is that enables some of them, even though fewer than in control groups, to do well. Studies measuring SOC have been conducted in over 28 countries, with a substantial number of studies taking place in the United States (US). AAW were the targeted population in only 8 US studies, however only 6 studies met the inclusion criteria for this review. The 6 studies explored such issues as sense of coherence in: homeless women (Nyamathi, 1991; 1992; 1993), breast cancer survivors and university faculty and staff (George, 1999), (see Appendix E).

A large percentage of AAW are in the low-income socioeconomic status by US standards. When considering AAW who have lived their entire lives as members of three groups subject to discrimination in the US – African American, low-income, and women (Klassen et al., 2008); it can be speculated that AAW are under an immense amount of stress and are faced with many barriers and obstacles that place them in jeopardy for poor health and disparate health outcomes (George, 1999). A striking example that results from this disparity is the large gap in breast cancer mortality rates for AAW, compared to other women in the U.S. Yet, even with the odds stacked against them, some AAW actively participate in breast cancer education and intervention programs, early detection
programs and activities, utilize BCS programs by accessing programs that offer free mammograms, and make decisions that will maintain their health and give them an equal chance at better breast health outcomes. What is it about these women that enable them to overcome huge barriers, while other AAW in similar conditions do not? Antonovsky suggests it is their sense of coherence.

\textit{SOC and Health Perception}

Studies have demonstrated that health perception has a positive impact on BCS behavior and motivation. SOC has been strongly associated with perceived good health and appears to be a health resource promoting resilience and the development of positive subjective states of health (Eriksson, 2007). In addition, studies have found that regardless of age, sex, ethnicity or nationality, individuals with a strong SOC have a higher perception of health (Eriksson). One study exploring the relationship between SOC and health perception in AAW met the inclusion criteria for this literature review. George (1999) studying 48 AAW faculty and staff from a university, found that AAW rating themselves high on health perception demonstrated a strong SOC which is supported by Antonovsky’s (1987) supposition that individuals who have a strong SOC reinforce and improve their health status.

\textit{SOC and Spirituality}

Research has indicated that spirituality among AAW is a key factor regardless of illness or the type of disease and is a primary source of social support in AAW (Ashing-Giwa & Ganz, 1997; Underwood & Powell, 2006a). Spirituality is so imbedded in the
AA culture that any study including AA, especially AAW, should include a discussion of the spiritual component, if not, then at best include spirituality as one of the variables measured, which is a stance substantiated in the literature (Gibson, 2003; Holt et al., 2008).

A literature search of SOC, spirituality, and AAW resulted in two studies. In a study exploring the relationship between SOC, hope, and spiritual perspective and comparing the constructs in AA and White breast cancer survivors, Gibson (2003) found a significant positive relationship between SOC and spiritual perspective, and hope and spiritual perspective. There were no significant differences in the constructs between AAW and WW. Gibson suggested the results justified a larger study to explore inner resources of AA breast cancer survivors.

In a second study testing the Gibson Model of Inner Resources in 162 AA breast cancer survivors, Gibson and Parker (2003) found significantly positive relationships between SOC and hope, hope and spiritual perspective, and SOC and spiritual perspective. In measuring the relationship between the independent variables, SOC, hope and spiritual perspective and the dependent variable psychological well-being (PWB), the researchers found SOC and hope were significantly positively related to PWB. A relationship, although not significant, was found between spiritual perspective and PWB. The researchers suggested that health professionals consider strategies to enhance SOC and hope when caring for AA breast cancer survivors. The fact that there are no studies examining SOC and spirituality in AAW with regards to BCS supports the urgency in
conducting a study to explore the relationship and the potential impact these variables would have on BCS motivation and behavior in AAW.

**SOC and Social Support**

Antonovsky (1996) stated that individuals with a strong SOC, when confronted with a stressor, will “wish to be motivated to cope (meaningfulness); believe that the challenge is understood (comprehensibility); and believe that resources to cope are available (manageability)” (p. 15). SOC is not a culture bound construct, as the resources needed to address stress will vary from culture to culture and situation to situation. What matters is that one has had the life experiences which lead to a strong SOC which allows them to reach out in a given situation and apply those resources appropriately to that situation or stressor (Antonovsky, 1996). There were several studies found in the literature that explored SOC and social support; however only three were inclusive of AAW; while none of the studies focused on BCS.

In several studies, that were part of a larger study, Nyamathi (1991, 1992, 1993), explored the SOC, social availability, self-esteem, emotional distress, appraisal of threat, and high-risk behaviors of homeless, drug-abusing AAW at high-risk for HIV, and found that women with strong SOC were more likely to report less emotional distress, fewer high risk behaviors and to appraise stressful situations as less threatening than those with weak SOC. In addition, AAW with strong SOC reported high self-esteem and fewer somatic complaints.
In summary, SOC has been studied in the AA population with few focused on AAW. Of those studies exploring SOC among AAW, none have explored the impact of SOC as it relates to BCS motivation and behavior in AAW. Hence this study will contribute to the existing literature, valuable insight regarding the role of a personal attribute, SOC, and how it influences the world view of AAW and their motivation for and practice of BCS behaviors, despite considerable barriers.

**Factors Influencing Breast Cancer Screening in African American Women**

*Attitudes, Beliefs, Knowledge, and Perceptions*

The growth in research focused on AAW behaviors concerning BCS has provided the health profession with a broad base of knowledge and insight regarding the breast health attitudes, beliefs, and perceptions. Several articles in this review focused on attitudes, beliefs, knowledge, and perceptions of AAW toward BCS. Dibble et al. (1997) explored the differences in attitude and beliefs among five diverse ethnic groups toward BCS in women undergoing screening mammography. Using an adapted version of the Attitude toward Breast Cancer Procedure Scale developed by Wolosin (as cited in Dibble et al.) the primary investigator measured attitudes and beliefs about different aspects of mammography procedure, breast cancer and CBE. The findings from Dibble et al. indicated that AAW had a more positive attitude toward BCS procedures, which was a finding not reported in previous studies. One limitation of note was the fact that the participants having already made the decision to have a mammogram may have
been biased toward positive responses versus a group who had no intention of having a mammogram.

Attitudes, beliefs, and perceptions of AAW toward BCS were reported in nine nursing studies (Barroso et al., 2000; Champion & Springston, 1999; Graham et al., 2002; Kinney, Emery, Dudley, & Croyle, 2002b; Phillips, Cohen, & Moses, 1999b; Phillips et al., 2001; Russell et al., 2006; Russell et al., 2007; Thomas, 2004). Of the nine nursing studies, six were quantitative and three were qualitative in method. Barroso et al., using the Health Screening Questionnaire developed by Sugarek, Deyo, and Holmes (as cited in Barroso et al., 2000) collected self-reported data about health beliefs related to breast cancer and health locus of control among both AAW and WW. Significant differences were found between the two groups on all of the health belief scores with AAW more likely to believe in chance or to depend on powerful others for their health.

Champion and Springston (1999) used data that were collected as part of a larger intervention trial aimed at increasing BCS in low-income AAW to measure and describe the relationship of perceptions of perceived breast cancer risks and perceived benefits and barriers to mammography and stage of mammography adherence. These investigators used a scale previously developed by (Champion, 1993; 1995) in which mammography barriers were conceptually defined as “perceived negative features or attributes related to obtaining mammography for the individual” (Champion, 1995, p. 55) and included such variables as fear of pain, rude staff, fear of radiation, no transportation, high cost, etc. Four stages of mammography adherence were defined as precontemplative,
contemplative, action and relapse. Barrier scores were highest in those in the precontemplative and contemplative stage and significantly lower for AAW in action stage than those in relapse, indicating that those who were adherent with mammography perceived the fewest barriers (Champion & Springston, 1999). Graham et al., (2002) examined the relationships between health beliefs of AAW and BSE using Champions’ revised Health Belief Model (Champion, 1993). Graham reported that the regression analyses indicated that there was a relationship between health beliefs and BSE performance among AAW, and that the health belief model is stronger in determining BSE performance for individuals than were demographic characteristics. Of note, the revised Health Belief Model (Champion, 1993) used by Graham was not specific to AAW, which threatens the validity of this study. Less than half the women in this study examined their breast once a month or more.

Russell et al. (2006) explored health beliefs associated with repeat mammography screening in AAW 51 years or older over a 5-year period and found that barriers to mammography screening were the most significant predictors of repeat mammography. Utilizing the revised Health Belief Model (Champion & Scott, 1997; Champion, 1999), Russell et al. (2006) measured perceived barriers as obstacles to having mammograms, including inconvenience, time involved, forgetfulness, worry about finding cancer, embarrassment, pain, costs, and worry about radiation. The results stressed the importance of collaborating with African American communities to promote sustained mammography screening practices by increasing access to culturally appropriate
information on screening guidelines and addressing barriers to screening. Russell et al., (2007) explored the relationship between health and cultural beliefs and stage of mammography screening adoption in urban AAW. The participants were categorized into one of three treatment groups defined by stage of mammography screening adoption/readiness, which was conceptualized as precontemplation, contemplation, or action. The results showed that particular health and cultural beliefs about mammography screening differ across stages of mammography screening adoption. Precontemplators exhibited significantly more perceived barriers than did contemplators and actors, and contemplators had significantly more perceived barriers than did actors. For self-efficacy beliefs (one’s belief in one’s ability to carry out an action), women in the precontemplation stage had significantly less perceived self-efficacy than did women in the contemplation and action stage. The results suggested that addressing health and cultural beliefs of AAW and mammography may lead to interventions that will increase the rate of early detection in AAW. In both studies by Russell et al. (2006) and Russell et al. (2007) the researchers used data from previously randomized controlled trials aimed at increasing BCS activities in low-income AAW which limits the generalization of the findings to all AAW.

Kinnery et al., (2002b)examined the relationship between beliefs about God as a controlling force in adherence to BCS among high risk AAW using the God Locus of Health Control (GLHC) scale (Wallston et al., 1999). Kinney et al. found AAW to be at
increased risk for breast cancer and those with high GLHC scores may have a decreased inclination to adhere to recommended guidelines for CBE and mammography.

In one of three qualitative studies exploring the beliefs theme, Phillips et al., (1999b) explored the beliefs, attitudes, and practices related to BCS in low- and middle-income AAW during focus group sessions in which the women participants were categorized as unemployed women, low-income service workers and middle-income workers. The findings from this study indicated that fear was the predominant feeling expressed in all three focus groups and that fear was the primary reason not to engage in BCS. An interesting finding was that all participants stressed that breast cancer is seldom discussed in the African American community and the middle-income participants added that this secrecy contributed to the belief that breast cancer was a White woman’s disease. In a second qualitative study by Phillips et al., (2001) individual interviews were conducted with low- and middle-income participants. Women were included from both low- and middle-income because prior research has shown that income level influences life experiences among AAW (Phillips & Wilbur, 1995b; Phillips, Cohen, & Moses, 1999b). For example, low-income AAW emphasized the role of violence in causing cancer, whereas the middle-income AAW discussed injury and sex as causing breast cancer (Phillips et al., 1999). Only middle-income AAW discussed mammograms and early detection when talking about the term “breast cancer.” When discussing the likelihood of developing cancer, low-income women believed they were more likely to develop breast cancer than did middle-income AAW. Low-income AAW did not believe
they could be cured of breast cancer, whereas middle-income AAW believed that they could be cured with early detection and treatment (Phillips et al., 1999). The findings of Phillips et al. (2001) demonstrated that the participants varied in their experiences with BCS and expressed a desire for a more holistic approach to health. Problems with lack of access to healthcare were discussed more among low-income AAW, while more middle-income women discussed alternative and holistic therapies.

In the third qualitative study exploring the beliefs theme, Thomas (2004) cited lack of studies in the literature addressing the influence of past events on current health behaviors among AAW as the motivation behind this qualitative exploratory study. Using participant’s written narratives; Thomas examined associations between women’s memories and feelings concerning their breasts and current BCS behaviors. Thomas found that AAW’s life experiences related to their breast and BCS experiences, and the associations these experiences had on their current BCS could be summarized in 6 categories: seasons of breast awareness, womanhood, self-portraits, breast cancer and cancer beliefs, BCS experiences, and participant’s advice for change. In addition, the findings that while women are knowledgeable about BCS and value early detection, they are not consistently following recommended BCS guidelines and that this behavior is influenced by memories and feelings women have concerning their breast. These findings provide direction for further exploration of barriers to health promotion practices among AAW.
Two medical studies exploring attitudes, beliefs and perceptions of AAW were reviewed. Haggstrom and Schapira (2006) evaluated the differences in perceptions of breast cancer survival and the benefit of screening mammography among AAW and WW, and tested the accuracy of AAW’s perceptions of the risk associated with breast cancer as compared to that of WW. Breast cancer survival was measured by asking participants what the chances are of a woman living for 5 years or longer when diagnosed with breast cancer. Risk perceptions of screening mammography benefit were measured by asking study participants to estimate how much regular mammograms decrease the risk of dying from breast cancer. An accurate perception of 5-year survival was based on data from the Surveillance, Epidemiology, and End Results Program (SEER) and defined as 71% among AAW and 86% among WW. An accurate response to the question regarding perceived benefits of screening mammography was defined by the results of a meta-analysis that combined multiple studies of screening mammography. Pessimism was defined as a dichotomous variable in terms of risk perceptions, whereas, a more pessimistic perception of breast cancer survival received a score ranging from 0% to 50%, for the chance of living 5 years or longer when women get breast cancer. A more pessimistic perception about the benefit of screening mammograms was measured by asking participants if they perceived that screening mammograms decrease the risk of dying from breast cancer was 0% to 50%. A less pessimistic score ranged from 51% to 100%. The results indicated that AAW were significantly more likely than WW to accurately perceive breast cancer survival and the benefit of screening mammography.
However, AAW were also more likely to have a more pessimistic perception of mammography benefit.

The investigators offered several possible explanations for this apparent contradiction in the findings. First, that AAW may have more knowledge or information about the benefit of screening mammography. This is an intriguing assumption; however, the investigators did not provide an explanation for such an assumption. Second, that fatalism among AAW may contribute to skepticism about the chances that screening mammography will change the course of breast cancer leading to a more pessimistic risk perception. Third, mistrust among AAW of physicians may contribute to more guarded perceptions about the benefit of screening interventions recommended by physicians. The investigators, however, did not measure fatalism or mistrust in this study. The explanations offered by Haggstrom and Schapira (2006), in my opinion, do little to support the findings regarding accuracy in perception of the benefits of mammography among AAW. Another troubling feature of this study is the disparity in the study population which consisted of 31% AAW and 69% WW. In addition, overall, AAW participants were younger, more likely to have lower income, public insurance, and less education (defined as not having graduated from high school) than the White participants. The disparities among the study population were reported as being statistically significant.

Jones et al., (2003) explored whether there are age-specific differences in breast cancer related knowledge, beliefs, and screening behaviors among low-income, elderly
AAW. The subjects were separated into three groups by age, 65-74, 75-84, and 85 and over. The investigator found the youngest group was almost twice as likely as the oldest group to correctly recognize breast cancer risk factors and approximately 50% of the oldest women compared to about 20% of the youngest women believed they had no risk for breast cancer. Neither of the medical studies identified a theoretical framework or model.

Two researchers from the public health discipline examined cultural values and BCS in AAW (Beckjord & Klassen, 2008) and the impact of family history of breast cancer on screening practices and attitudes in low-income, rural AAW (West et al., 2003). Beckjord and Klassen found that cultural constructs, such as traditional African American values, as defined by the Expressed Values Scale (EVS); included planning (taking things day by day as preferable to future planning), occupational (preference for a secure job over a less certain job with promotion potential), family (one person in charge as preferable to shared authority), life (as things were in the past as preferable to life today) and health (reliance on self for management of health problems as preferable to seeking medical advice). The EVS was developed by Slaughter-Defoe (as cited in Beckjord & Klassen) specifically for “use with low-come, urban, AAW to assess expressed cultural values on multiple dimensions” (Beckjord & Klassen, 2008, p. 64). The investigators posit that the cultural constructs are associated with BCS behaviors of AAW and are important in increasing mammography utilization, thus reducing the disparities for AAW. In bivariate analyses, more traditional values were associated with
both worse screening histories and lower screening intentions. In multivariate analyses, two interactions between cultural values and age were observed. In younger women, more traditional values were associated with lower odds of having ever received a mammogram, and in older women, more traditional values were associated with lower odds of intentions to receive a mammogram in the next 2 years.

West et al., (2003) found that half of the women with family history of breast cancer did not know their relative risk of developing breast cancer. The majority of those providing a risk estimate perceived themselves at low risk compared with other women their age. The perceived relative risk was comparable between AAW with family history of breast cancer and AAW with no family history of breast cancer. The women with family history of breast cancer did not express greater worry about breast cancer, nor did they have more accurate knowledge of mammography recommendations than those with no family history. A disturbing finding of this study was that two-thirds of the women with family history of breast cancer had never had a mammogram. Similar to the studies conducted by the medical discipline, the public health discipline did not identify a theoretical framework for their studies.

Using the Health Belief Model (HBM), a psychological study evaluated breast cancer perceptions, knowledge, and screening behaviors of low-income, AAW residing in public housing (Green McDonald et al., 1999). The findings indicated that the constructs of the HBM; perceived susceptibility to breast cancer, perceived severity of the disease, perceived barriers to BCS, and the perceived benefits of mammograms; were
not significantly related to mammography or BSE; however, perceived severity and perceived barriers were found to be significantly related to CBE. Bowen, Hickman, & Powers (1997) examined AAW’s worry and beliefs about breast cancer, and their intentions to perform breast and genetic screening behaviors using the transactional or self-regulatory model which addresses health-risk communications and the use and effects of health screening. Key variables that significantly predicted willingness to participate in mammography and genetic screening were ethnic identity and attitudes toward the physician (i.e., trust in physician’s judgment and comfort with discussing anxiety about breast cancer with health care providers, emotional distress, and risk overestimation). For example, women who identified themselves as African American reported higher intentions to obtain mammography, as did women who felt comfortable discussing their anxiety with their health care provider.

Several limitations were consistently noted in the studies examining attitudes, beliefs, and perceptions. The population most frequently studied was low-income AAW which limited generalizability of any findings to AAW with higher income levels. Studies examining BCS activities relied on self-reported data, which investigators report, are typically over-reported. Lack of consistency in defining and operationalizing cultural value constructs results in inconsistency in interpreting data and generalizing data to populations not represented in the studies. Additional limitations included low participation, broad categories of measurement and the fact that some studies did not identify limitations.
Findings from these studies are indicative of the need for continued research exploring the use of community representatives to relay messages that are relevant to residents of the particular community; refinement and improvement of assessments of cultural constructs such as values and the impact of such constructs on health cancer screening behaviors; development of a theoretical framework that includes cultural, ethnic and socioeconomic diversity among all AAW; assessing and reporting of outcomes of interventions and programs aimed at impacting BCS activities, as well as developing strategies to address disparities among AAW regarding fear, fatalism, mistrust, spirituality and the impact these factors have on attitudes, beliefs and perceptions about BCS and utilization of the health care system.

*Barriers to Compliance with Mammography Guidelines among AAW*

Barriers for AAW to obtain screening mammograms have been identified through numerous sources. The barriers include: high cost, physicians’ failure to discuss mammography with women, misconceptions that screening is unnecessary, lack of health insurance, and cancer fear and fatalism (Adams et al., 2001; American Cancer Society, 2010a; Champion & Springston, 1999; Champion et al., 2000; Fowler, 1998; Guidry et al., 2003; Lambert et al., 1998; Mayo et al., 2001; Phillips, Cohen, & Moses, 1999b; Powe et al., 2006; Spurlock & Cullins, 2006b; Underwood et al., 2005; Young & Severson, 2005). Identification of barriers to BCS among AAW has led to the development of several programs with the goal of increasing BCS rates among AAW (U.S. Department of Health and Human Services, 2005; Underwood & Dobson, 2004).
Three nursing studies which focused on identifying, describing, and examining barriers to BCS behaviors of AAW are included in this review (Adams et al., 2001; Lambert et al., 1998; Spurlock & Cullins, 2006b). All three studies were quantitative. Adams et al. explored ways to enhance AAW’s participation in early detection and follow-up services for breast cancer using an investigator developed questionnaire. The investigator studied three sites in Texas, two urban and one rural. In this study, outreach coordinators asked AAW to complete a checklist about barriers to mammography screening. The Mammography Barriers Checklist was developed based upon one author’s clinical experience and the research literature and included both internal and external barriers. Women in all three geographic areas identified fear of finding cancer and mammography cost as the most important reasons for not having mammograms. The results of this study suggest that outreach strategies addressing fears related to mammography screening and helping women to find low-cost mammography resources may be more effective than those interventions focused primarily on providing information.

Lambert et al., (1998) conducted a study examining the perceived barriers to mammography and BCS education in a group of low-income, older AAW. The researchers developed a semi-structured questionnaire based on Champion’s (1987) Health Belief Model scale. No information was provided regarding validity or reliability of the questionnaire that was utilized. Findings from this study indicated that recommendations from the subject’s health care provider and previous experience with
having a mammogram were associated with intention to repeat the procedure. Reasons for not having a mammogram included cost, lack of transportation, illness, and fear of pain.

Spurlock and Cullins (2006) examined the relationships between cancer fatalism and BCS in low-income AAW using the Powe Fatalism Model (Powe, 1995) as the underlying framework for the study. Findings supported the supposition that fatalism negatively influences health promoting practices such as BCS in AAW and were a substantive barrier to BCS in low-income and less educated AAW. In fact, findings showed as the participants’ income and education increased, the perception of cancer fatalism decreased.

In addition to nursing, medicine, public health, and psychology explored the barriers that impact AAW’s BCS behaviors. Peek, Sayaa, & Markwardt (2008) conducted focus groups to explore the reasons for fear that is associated with BCS among low-income AAW. The investigators used the health belief and self-efficacy models to develop a conceptual model of fear, fatalism, and BCS among low-income AAW. Several major themes emerged during the exploration of fear and other psychosocial barriers (i.e., concerns about competing social demands, intimate partner relationships, and spirituality) to mammogram utilization. The themes were: negative health care experiences, fear of the health care system, denial and repression, psychosocial issues, delays in seeking health care, poor health outcomes and fatalism. Peek et al. concluded that fear of breast cancer among low-income AAW is multi-faceted, and reflects shared
experience of friends, relatives, and neighbors regarding mammograms within the health care system and the psychosocial context in which women live. The investigators identified the prominent roles for clinicians, particularly primary care physicians, and the health care system to address barriers to mammogram utilization within this population.

Hargreaves, Schlundt, Takizala, Brownlee, and Buchowski (2003) developed a classification system that identified obstacles to BSE and mammograms that operate at the individual level in AAW. The investigators, using obstacles and barriers interchangeably, identified two categories of barriers; psychological and environmental. Hargreaves et al. identified a total of thirteen barriers to BSE and mammography screening. Nine of thirteen barriers were mentioned in both BSE and mammogram screening methods. The psychological barriers common to both screening methods included forgetting, fear, negative emotional triggers, uncertainty about benefits and laziness. Environmental barriers included time, cultural attitudes towards medicine and work demands. Those barriers mentioned for BSE alone included lack of knowledge, never thought of it, difficulty and lack of will power, while those for mammography alone included poverty, pain, negative emotional consequences and costs.

**Decision Making**

Few studies were found that explored the decision making process and BCS behavior in AAW. Two nursing qualitative studies utilizing Grounded Theory methodology are included in this review (Fowler, 2006a; 2006b). Fowler (2006a) conducted a study aimed at developing a substantive theory to explain how AAW aged
50 and over of different socioeconomic status, make decisions about mammography. “Claiming health” was the emergent theme. This incorporated active, deliberate, and purposeful efforts to reject or integrate health care professionals’ recommendations for mammography screening in order to control the right to make one’s own decisions about health and mammography screening.

Fowler (2006b) described the social processes used by AAW ages 50 years and older in making decisions about mammography. Results demonstrated that the women’s decisions were associated with five social processes including: prior experience with healthcare providers and systems; fears and fatalistic beliefs about breast cancer and related treatments; valuing the opinions of significant others; relying on religious beliefs and supports; and care giving responsibilities of significant others.

These five social processes were further differentiated by three decision-making styles: “taking charge” decision makers included AAW, aged 52-66, who were proactive and assertive in making informed decisions about breast health; “enduring” decision makers including AAW aged 54-70, who were reactive and passive in health decision-making and valued church congregation and healthcare providers’ opinions that represented authority and competence; and “protesting” decision makers including AAW, aged 58-71, who were reactive and confrontational in attitudes about breast health. The researcher found that the “taking charge” women believed in the benefit of mammography screening and early detection through media sources (e.g., influential AAW in the media, self-help books, and inspirational speakers). The “enduring” women
relied on the church ministry and perceptions of physicians’ expert knowledge and supported mammography screening. The “protesting” women internalized negative experiences of prejudice and discrimination in healthcare systems and were less likely to participate in mammography screening. Of note, decision-making was also influenced by caregiving responsibilities, such that caregiving responsibilities took precedent over preventive health activities.

The strengths of the above qualitative studies is that they move beyond what is known about BCS behaviors of AAW to understanding the underlying social process and allows the emergence of relevant information using the voices and experiences of the AAW participants. The study population was low-income AAW, aged 50 and over, thus the results are specific to this group of women. The investigator stressed the importance of ongoing testing of the “Claiming Health” theory with a larger population of varying socioeconomic status.

Factors Influencing AAW Participation in Breast Cancer Screening

Much of the research on BCS behavior of AAW is aimed at understanding and identifying those factors which influence AAW to participate in BCS activities (Duffy et al., 2001; Fowler, 2007b; Underwood, 1999b). Duffy et al. conducted a descriptive correlational study to describe the breast health characteristics of older AAW and to determine if selected demographics, functional status and comorbidity influenced BSE proficiency in older AAW. BSE proficiency was defined as the combined variables of inspection/palpation skills and lump detection. The results indicated that older,
unmarried AAW with less education, lower income, and lower health status were more likely to score lower on BCS knowledge and BSE proficiency. Older AAW with less education but better health status and less comorbidity were more likely to have higher BSE proficiency scores but lower BCS knowledge than their counterparts.

A Grounded Theory study by Fowler (2007) examined the relationship of preventive health behaviors of blood relatives or extended kinship networks and their potential to positively or negatively influence BCS behavior of AAW. The findings showed that preventive health behaviors of blood-relatives and extended kinship networks (minister/pastor/sisterhood fellowship relationships) were key factors that influenced screening behaviors of AAW (Fowler, 2007). Although sources of information varied, AAW revealed that they made decisions interdependently, rather than dependently, with respect to mammography screening. This finding extended the results in previous studies by the same researcher (Fowler, 2006a; 2006b).

Underwood (1999) conducted an exploratory study to gain a broader understanding of BCS behaviors of AAW. She compared women with known versus no known breast cancer risk factors to identify those factors which influence compliance with BCS guidelines. In addition, she attempted to determine whether age, type of medical services used, breast cancer risk factors, or provider discussions influenced compliance. Results showed that although BCS procedures were markedly underutilized, women were more compliant if health care providers gave them information regarding their personal breast cancer risk and made personalized recommendations for their BCS.
Several limitations were identified in Fowler’s (2007) study including self-selection of a small sample of AAW. Women who had participated in a prior study by the investigator were recruited and recommended half of the participants in the current study. The findings could potentially be biased as the women in the previous studies are acquaintances of the current study population and may have become more aware of the importance of BCS by association. Underwood (1999) did not identify limitations in her study, in fact, the inclusion of a majority of AAW with private insurance, private physicians, and who were employed full-time was considered a strength of this study, however, only generalizable to this segment of AAW.

These studies are significant to nursing because they emphasize the important role that nurses have in educating and assisting AAW to gain a better understanding of the significance of BCS to survival. The studies also provide information about the importance of the social support relationships among AAW and how these relationships must be accounted for and taken into consideration when developing culturally sensitive strategies and intervention programs with the goal of increasing the BCS participation of AAW. Information from these studies can be adapted for use by nurses working in a variety of settings ranging from outpatient clinics to community health center programs. Nurses can also use the information to develop persuasive talking points for presentations aimed at elected officials with the goal of developing policies and obtaining funding for educational and intervention programs directed at the AAW population, yet, not limited to low-income, uninsured individuals.
Instrumentation Used To Explain and Predict Breast Cancer Screening Behaviors

The development and testing of culturally sensitive, valid, and reliable instruments to measure factors that can explain and predict BCS behaviors of AAW are imperative. Knowledge gained from the use of these instruments can be used in developing culturally sensitive educational and intervention programs targeting AAW. The aim of these programs would be to increase BCS compliance in order to reverse the current trends in breast cancer mortality rates in AAW, reduce the existing disparity gap, and save lives. Several of the studies reviewed used valid and reliable or standardized scales and instruments but few elaborated on the psychometric testing of these instruments among the AAW population. Given the important influence of cultural factors to shape meaning and interpretation of language, this is a major shortcoming of these studies.

Two studies elaborated on the psychometric testing of instruments for AAW populations (Champion & Scott, 1997; Fowler, 1998). Champion and Scott described the psychometric development of culturally sensitive scales to measure beliefs related to mammography and breast self-examination screening in low-income AAW. Construct validity was tested using confirmatory factor analysis and testing of theoretical hypotheses, and reliability was tested using test-retest and Cronbach’s alpha reliability coefficients. Scale reliability and validity estimates were similar to original scales used with a more heterogeneous but predominantly White middle class population. Study findings showed that participating in BCS was not related to perceived susceptibility,
which was also found with Vernon et al., (1992). AAW were more likely to perceive risk to getting mammography. Most of the change on the HBM scales revealed that there were barrier items which were more relevant to low-income AAW that were not relevant to White middle-class women. Examples of more relevant barriers for AAW were lack of understanding of the procedure for and scheduling of mammography, child care and transportation issues, concerns that health care providers might be rude, worry, embarrassment, time constraints, fear of pain, and cost.

Fowler (1998) also used the HBM in a pilot study which evaluated the reliability and validity of two scales developed by Champion (1993; 1995) measuring beliefs about breast cancer and barriers to mammogram screening in urban AAW. Content validity was determined by six experts who reviewed the scales, factor analysis and logistic regression were used to determine construct validity, and Cronbach’s alphas were used to determine reliability of the items. Results showed both scales to be reliable and valid and that barriers to BCS were predictive of the date of last mammogram. Fowler suggested further research is needed to investigate whether beliefs about breast cancer and initial and subsequent breast screening by mammography of AAW should be identified. These studies are important to gain knowledge and understanding of what motivates the AAW to follow the established guidelines for BCS and to identify strategies that are crucial in maintaining BCS of AAW who currently participate in BCS behaviors in accordance with the guidelines. In addition, it is imperative that nurses have valid and reliable tools for measuring BCS behaviors of AAW.
Interventions and Educational Programs

Culturally sensitive interventions and educational programs are needed to reach AAW and positively impact AAW’s compliance with BCS guidelines. Numerous research articles that focused on education and outreach interventions to increase awareness, knowledge and compliance with BCS guidelines among AAW were identified in the literature (Adderley-Kelly & Green, 1997; Champion et al., 2000; Champion et al., 2006; Coleman et al., 2003; Coleman, Lord et al., 2003; Fowler, Rodney, Roberts, & Broadus, 2005; Grindel et al., 2004; Hall et al., 2005; Kelley, 2004; Underwood & Dobson, 2004). In a pilot study using a control and intervention group, Adderley-Kelly & Green (1997) sought to determine if an educational intervention designed to enhance breast cancer knowledge of subjects, their level of confidence when performing BSE, and individual instruction, one-to-one practice and feedback on performances made a difference in BCS practices among older, low-income AAW. The results indicated that self-efficacy was enhanced by group and one-to-one teaching and that these interventions fostered mastery of BSEs.

Champion et al. (2000) conducted a randomized experimental trial to assess the effectiveness of a tailored in-person screening intervention based on variables of the HBM to increase compliance with mammography. Study results showed that women in the experimental group were significantly more likely than women in the control group to become compliant. In 2006, Champion et al. conducted a prospective randomized intervention trial to identify more effectual methods of promoting routine mammography
screening in underserved low-income AAW. The results demonstrated that an interactive computer intervention program produced the greatest level of adherence to mammography when compared to interventions utilizing videos and written pamphlets.

Coleman et al. (2003) conducted a mixed method pre-and-post test to develop and evaluate appropriate lay literature for AAW with low literacy. The results indicated that the literature was effective in increasing women’s knowledge and intent to follow BCS guidelines and teaching BSE techniques. Fowler et al. (2005) described phases of a collaborative breast health intervention designed for AAW to increase mammography screening and found that breast health interventions delivered by trained community health advisors increased screening and knowledge of breast health and mammography screening in AAW. Grindel et al. (2004) evaluated various types of BCS messages on knowledge, attitudes, perceived risk for breast cancer and mammography screening of AAW in rural counties in the south. These investigators concluded that affective tones in educational videos did not make a difference in mammogram screening, attitudes, and knowledge of BCS.

Hall et al. (2005) attempted to determine the effectiveness of a multifaceted, culturally sensitive breast cancer education program for AAW in the Arkansas Mississippi River Delta region, using post-test only control groups methodology. The findings showed that the experimental group’s breast cancer knowledge scores were significantly higher than the control group’s. Kelley (2004) provided a culturally specific intervention program for AAW to alter selected behavioral risk factors, psychosocial
responses, and breast self care variables using two-group, partially blind, pre-and post-test controlled clinical trial with AAW in rural Mississippi. The findings demonstrated that use of culturally appropriate educational intervention has the potential to increase compliance and proficiency with BSEs.

Numerous studies were conducted by a variety of disciplines to measure the effectiveness of community based programs in increasing BCS activities of AAW (Adams, 2007; Altpeter, Mitchell, & Pennell, 2005; Bailey, Erwin, & Belin, 2000; Belin, Washington, & Greene, 2006; Coleman et al., 2003; Danigelis, Worden, Flynn, Skelly, & Vacek, 2005; Earp et al., 2002; Frisby, 2006; Hendricks, 2000). The community settings included churches, hair salons, and community centers. Outcomes reported most often were positive for increasing mammography screening among AAW.

The only intervention study conducted on AAW that was not targeted to low-income, low literacy population was done by Underwood and Dobson (2004) who assessed the potential impact of breast cancer education programs designed to reach AAW in community based settings, such as faith-based institutions, hair/beauty salons, and community based centers. The researchers used randomized recruitment from multiple community based settings within a large urban community in the Midwest. The study findings indicated that a greater percentage of AAW preferred faith-based settings as the venue of choice for breast cancer education and outreach programs, when compared to salons and social service centers. In addition, data suggest that the impact of
the breast cancer education and outreach programs is greater when facilitated by health care providers.

Several of these studies have indicated that the interventions and educational programs have been put into practice and have demonstrated positive results. The most frequently cited limitation to the intervention studies is that they were limited to low-income, less educated AAW; therefore the results were not generalizable to AAW with higher SES. Underwood and Dobson (2004) suggested that when planning education and outreach programs for women in the African American community, “impact” is a dimension worthy of thoughtful consideration and careful assessment, as impact is a critical element to the measure of success of the programs. Impact is defined and measured in terms of the size of the target population, the receptivity of the target population and the preferences of the target population relative to program facilitation (Underwood & Dobson).

Hargreaves, Schlundt, Takizala, Brownlee, and Buchowski (2003) found that targeting minority groups with culturally sensitive advertising and educational campaigns did not induce the changes predicted in the individuals screening behaviors. Having found a separation in the categories of barriers, i.e., psychological and environmental; Hargreaves et al. posits psychological barriers require interventions focused on the individual, while environmental barriers are better addressed by policy, community action and environmental interventions.
A summary of the findings in the intervention studies indicate that few of the researchers measured the impact of the intervention. They simply measured and reported the results of their individual study population. Therefore it is difficult to assess whether or not the programs should be put into practice. Prior to implementing a breast cancer intervention or educational program targeted for AAW in a community based setting, it is important that the researcher solicit input from clinicians, educators, researchers and community advocates who are intimately familiar with the culture, climate and character of the targeted community and population (Underwood & Dobson, 2004). It is also important to engage the members of the targeted community to get an accurate assessment of their perceived needs, beliefs, knowledge, and desire for such programs. In addition, the targeted population should be queried as to their preference of venue, the content, and facilitator of the proposed intervention or education program.

**Utilization of Breast Cancer Screening Services**

Most studies evaluating BCS behaviors of AAW were aimed at the transparent goal of increasing utilization of BCS services. Three studies in this review were focused on the utilization theme (Baldwin & Williams-Brown, 2005; Champion & Menon, 1997; Champion, Menon, McQuillen, & Scott, 1998). Baldwin and Williams-Brown (2005) explored homeless AAW’s knowledge of breast cancer and their use of BCS services using focus group methodology. Four categories emerged: women’s personal experiences with cancer, their knowledge of breast cancer, their experiences using the screening services, and their motivations as related to BCS. These categories can be
useful in providing access to care and in addressing cancer education, screening behaviors, and program planning in homeless AAW.

Champion and Menon (1997) set out to identify significant predictors of mammography use, BSE frequency and BSE proficiency in low-income AAW using data collected as part of a larger intervention trial to increase BCS. The study provided empirical support for continued use of the Utilization of Health Services Model (Aday & Andersen, 1974) to identify variables that predict mammography utilization and BSE behavior among low-income AAW. Aday and Andersen proposed that a variety of individual, environmental, and provider-related variables are associated with healthcare access and utilization and identified three key variables: “predisposing” which includes attitudes, knowledge and demographic/experiential factors; “enabling” variables including personal, family and community resources; and “need” variables including perceived health and evaluated health. Champion et al. (1998) used data collected as part of a larger intervention trial to increase BCS to compare self-reported mammography versus medical record documentation of mammography in low-income AAW. Of the women reporting having had a mammogram, only 48.4% were confirmed via medical records. This large difference emphasizes the need for researchers to be cautious when relying on self-reported data.

**Spirituality and Religiosity**

Several investigators have explored the influence of spirituality and religiosity on BCS behaviors of AAW (Gullatte, 2006; Holt et al., 2003; Holt et al., 2003; Holt et al.,
Gullatte (2006) acknowledged that the HBM and modified versions like the Champion HBM are the most frequently used models to understand preventive health practices. Gullatte points out that neither of these models includes spirituality or religiosity. In her study, Gullatte explored the utility of applying the Theory of Reasoned Action and Planned Behavior (TRA/TPB) (Ajzen & Fishbein, 1980) as the theoretical framework for determining cultural relevance of spirituality and religiosity to screening delays among AAW. This investigator found the TRA/TPB to be useful in understanding and predicting BCS intention and behavioral outcomes for AAW and in measuring religiosity and spirituality and their influence on decision making relative to adherence to BCS guidelines. The TRA/TPB is also useful when studying the sociocultural influence of adherence to BCS among AAW and guiding future interventions aimed at improving screening, reducing patient delays and reducing the incidence of late stage of breast cancer presentation (Gullatte 2006).

The public health discipline has conducted several studies examining the relationship between spiritual health locus of control, breast cancer beliefs, and mammography utilization. Overall, the results of these studies show that these variables have both a positive and negative impact on the BCS behaviors of AAW (Holt et al., 2003; Holt et al., 2003; Holt et al., 2008). Kinney et al. (2002) concluded that AAW may have a decreased inclination to participate in BCS because of their belief in God. These
findings were similar to those found by Mitchell et al. (2002) and Underwood and Powell (2006).

Theoretical Frameworks Examining Breast Cancer Screening Behaviors of AAW

There has been a great effort throughout the United States dedicated to reducing breast cancer mortality rates in AAW, increasing utilization of BCS services, identifying and understanding attitudes, beliefs, and perceptions, and barriers that influence decision making among AAW regarding BCS adherence; developing and implementing educational and outreach interventions; and developing instruments to measure the effects of aforementioned activities and factors. Several studies have been based on theoretical models and frameworks of health behavior including the most frequently cited HBM, as well as, Health Locus of Control, the Theory of Reasoned Action/Theory of Planned Behavior, the Transtheoretical Model, Bandura’s Social Cognitive Theory, the Transactional Model of Stress and Coping, the Extended Parallel Process Model, the Critical Social Theory and Feminist Perspective, Symbolic Interactionalism, Persuasive Health Message Framework, Anderson’s Behavioral Model for Health Services Utilization, the Powe Fatalism Model and the Giger and Davidhizer Transcultural Assessment Model. Underwood (2007b) provided an extensive overview and evaluation of theories, models and frameworks utilized by researchers in studies of BCS in AAW. Nevertheless, in less than half of the studies reviewed for this paper, primary investigators did not identify a theory, model or framework guiding the study.
The three most widely used theoretical models for explaining health-related behavior and identifying variables in the performance of health behaviors are, the HBM, Theory of Reasoned Action, and Social Cognitive Theory (Simon, 2006). The Utilization of Health Services Model is a fourth framework that is frequently used. Although each theory is different, there are three common core constructs identified as key determinants of health behavior: 1) attitudes, 2) perceived norms, and 3) personal agency (Institute of Medicine., 2002). Attitude refers to the extent to which one likes or dislikes a given behavior. Perceived norms are the degree to which individuals perceive that a given behavior is viewed as appropriate or inappropriate by members of the individual’s social network or society at large (IOM). Personal agency is a belief that one has the necessary skills and abilities to perform the behavior in question, specifically self-efficacy and personal control (IOM). The theories reviewed in this paper include the Health Belief Model, the Theory of Reasoned Action, and the Utilization of Health Services Model. See Appendix F for a summary of key components of each theory. There were no studies found that utilized the salutogenic framework for this phenomenon. This researcher proposes using the Salutogenic framework to explore this phenomenon.

The Institute of Medicine (2002) stated “one way to predict whether or not a given person will engage in a given health behavior is to ask” (IOM, p. 31). In addition, individuals are accurate predictors of their own behavior. The best predictor of the likelihood of an individual performing a behavior is via an appropriate measure of
intention (Ajzen, Albarracin, & Hornik, 2007; Institute of Medicine, 2002), including
AAW who participate in BCS, we can go beyond intent to examine motivational factors.

Finally, a considerable portion of the literature on BCS behavior of AAW has focused on low-income and older women (Adderley-Kelly & Green, 1997; Baldwin & Williams-Brown, 2005; Champion & Menon, 1997; Champion et al., 1998; Champion et al., 2000). Several primary investigators in the articles for this review identified the AAW population as having low-income. Relatively few studies have been conducted with the intended purpose of including middle-income AAW (Dibble et al., 1997; Phillips, 1993; Underwood & Dobson, 2004). Those studies directed at the low-income population have limited generalizability with respect to barriers, as barriers for low-income participants may be different than those identified by middle-income participants (Champion & Scott, 1997; Phillips, 1993). National data indicate that AAW, from 50 years of age or older, and of middle-income socioeconomic status, have higher rates of mammography screening compared to WW of a similar age (Centers for Disease Control and Prevention, 2009). Yet AAW continue to experience higher mortality rates and excess risk for later-stage discovery and poorer survival rates from breast cancer. These troubling statistics are further evidence of breast health disparities that some researchers have attributed to later delays in mammography screening (Fowler, 2007b).

Implications for Education, Practice, and Research

Results from studies on AAW BCS behaviors have demonstrated that lack of provider recommendations, distrust of the healthcare delivery system, minimal
understanding of the significance and elements of research, preference for natural or religious interventions, perceptions of non-caring attitudes from investigators are factors in determining AAW’s participation in research studies (Linden et al., 2007; Mouton, Harris, Rovi, Solorzano, & Johnson, 1997; Phillips, Cohen, & Moses, 1999b; Y. R. Smith et al., 2007). The information from these data and ongoing nursing research can be used to expand and strengthen the body of knowledge focused on BCS behaviors of AAW which have implications for education, practice, and research. Education in schools of nursing should emphasize the importance of BCS, adherence to guidelines and should be culturally sensitive to BCS behaviors of AAW.

Health care providers can use the information gleaned from future nursing research to develop culturally based strategies and take a more active and effective role in educating their AAW patients on the importance of BCS, and incorporating BCS programs into their practice. Finally, this review presents many opportunities for nurse researchers committed to reducing the disparity in breast cancer mortality trends between AAW and WW to design and evaluate culturally sensitive strategies and programs of research aimed at improving and sustaining utilization of BCS services by AAW. In addition, the information from the studies included in this review can be used to assist in designing culturally sensitive educational information and community-based intervention programs aimed at increasing AAW knowledge of breast cancer risk factors and preventive strategies, and assist nurses in becoming culturally sensitive to the needs of AAW regarding breast cancer control and screening activities.
Summary

The goals of this chapter are to review and summarize the accumulated state of the science and knowledge concerning SOC, health perception, spirituality, and social support and BCS motivation and behavior of African American women, and to highlight important issues that research has left unresolved. The review revealed that research has contributed valuable information pertaining to the attitudes, beliefs, and perceptions of AAW with respect to BCS. The body of research has also contributed much to the knowledge pertaining to perceived and actual barriers to AAW participating in BCS activities. In addition, this research has provided information about the development, implementation, and evaluation of measurement instruments, educational and outreach programs designed to increase BCS compliance in AAW. Lastly, the research has provided information about various theoretical models and variables studied in the attempt to understand BCS behaviors of AAW.

Yet, in spite of the contributions of various bodies of research, gaps and limitations in the studies are evident. Among them are gaps relative to research addressing breast health needs and concerns of AAW across the socioeconomic stratum; gaps relative to identifying AAW at risk for developing breast cancer; gaps relative to identifying and addressing the breast health needs of younger AAW; gaps in research aimed at identifying and addressing the fears, misperceptions, distrust of the healthcare providers and system, and reluctance of AAW to discuss breast health; gaps in research aimed at understanding and addressing the BCS knowledge deficits of AAW across all
spectrum of income and education level; gaps in research aimed at explaining and addressing the disparity in care and recommendations of health care providers; gaps in research aimed at understanding why AAW chose not to participate in BCS procedures and research studies; gaps in studies measuring timeliness of access to free mammograms for low-income, underinsured and uninsured AAW; and finally, gaps in research to explain why those AAW who are compliant with BCS guidelines do not experience lower mortality rates. Last, but not least, gaps in research exploring the intrinsic characteristics that motivate some AAW to overcome barriers in order to take advantage of available screening services is clearly needed and will be addressed in this study. These findings are similar to those reported by Underwood et al., (2005). The limitations identified in the review of research include those relative to design and methods, sampling, psychometric testing and reporting for instrumentation, data analysis, and threats to validity and reliability of the studies’ results, and generalizability, which are also comparable to those limitations reported by Underwood et al.

There has been a proliferation of studies focused on AAW’s breast health behaviors and cancer screening activities over the past 15 years which have resulted in culturally sensitive interventions aimed at increasing AAW utilization of BCS services. Yet much work remains if researchers are to make a sustained difference in reducing breast cancer mortality in African American women.

There have been studies based on the salutogenic framework and those measuring SOC, health perception, spirituality, and social support in a variety of populations with
differing disease processes. No studies reported in the literature used the salutogenic framework to measure SOC, health perception, spirituality, and social support and the impact on BCS motivation and behaviors in AAW. The current study provides this investigator the opportunity to explore the phenomenon that is BCS in AAW from a unique perspective using variables not commonly used when studying this population. One purpose of nursing research is to contribute to the knowledge base of the phenomenon under study. It is this researcher’s hope that at the end of this study the information will contribute to and expand nursing knowledge and can be used to ultimately reduce the breast cancer mortality rate in AAW. It is the purpose of this newly initiated study to determine whether, the personal attribute, sense of coherence (SOC), contributes to why some AAW surmount significant barriers and adopts breast screening behaviors, while others do not. Upon completion of this investigation, the findings will provide valuable insight regarding the role of a personal attribute, SOC, and how it influences the world view of AAW and their motivation for and practice of BCS behaviors, despite considerable barriers. In doing so, nursing can use this new found understanding and knowledge to design culturally-specific community-based programs to motivate and improve compliance of AAW with BCS guidelines.

Ultimately the results of this study will impact and hopefully reduce the large disparity in breast cancer mortality in AAW.
CHAPTER THREE

METHODOLOGY

Study Purpose, Aim and Hypotheses

The overall purpose of this study was to evaluate the contribution of SOC to BCS (BCS) motivation and behaviors in AAW. This study was guided by Antonovsky’s (1979) salutogenic theory of health. Antonovsky developed the salutogenic theory while studying concentration camp survivors, poor people, and African Americans to determine what it is that enables some of them to do well under adverse conditions (Antonovsky, 1984, p. 117). Many AAW have lived their entire lives as members of three groups subject to discrimination and thus have confronted many barriers and obstacles that place them in jeopardy for poor health and disparate health outcomes: namely, they are women, they are African American, and they are poor. The salutogenic theory offers a framework to understand those personal forces/factors that allow some individuals of an oppressed group, like AAW, to rise above adversity and to succeed against the high odds stacked against them. Further, salutogenesis provides a theoretical framework of health, which focuses on factors that support and increase well-being and positive health behaviors, rather than factors that cause disease. SOC is central to salutogenesis in that it determines how people perceive their lives and use the resources available to them. Antonovsky hypothesized that the stronger an individuals’ SOC, the more likely they are to engage in activities that are health-promoting.
SOC has three components: comprehensibility, manageability, and meaningfulness. Individuals who are high on comprehensibility and meaningfulness, but low on manageability are strongly motivated to search for resources that will enable them to make life manageable (Antonovsky, 1984, p. 120). Evidence suggests that a strong SOC promotes a better perception of health and enables an individual to take advantage of available resources and to engage in positive health behaviors (George, 1999). Given this, the current study determined whether health perception mediates the effect of SOC on BCS motivation and behavior in AAW. Bennett (2000) defined a mediator as a variable that explains how the association between the independent and outcome variables occurs, while Antonovsky (1987) defined mediators as buffers or as direct contributors to the relationship between the independent variable and the level of the outcome variable.

Core components of Antonovsky’s salutogenic theory of health, are the GRRs, which he defined as potential agencies to facilitate coping with life’s experiences (Antonovsky, 1984). In essence, GRRs serve as potential resources for individuals and are major determinants of a person’s SOC (Antonovsky, 1979). GRRs enable individuals to make sense of and to manage events in their life; hence, strengthening their SOC. Further, GRRs promote life experiences that lead to a strong SOC, “a way of perceiving life and the ability to successfully manage the infinite number of complex stressors encountered in the discourse of life” (Lindstrom & Eriksson, 2006, p. 241). In turn, individuals with strong SOC can utilize GRRs when seeking solutions to problems
Antonovsky identified spirituality and social support as potential GRRs and both spirituality and social support were evaluated in this study.

As noted above, an individual’s sense of spirituality can contribute to one’s SOC. Yet research findings suggest that the lack of success of health promotion interventions on health behaviors in AAW is largely limited because these programs did not consider the strong role spirituality plays in the life of AAW and, in turn, their adoption of health promoting behaviors (Chester, Himburg, & Weatherspoon, 2006). Spirituality is a major construct of the African American (AA) culture and a key factor regardless of illness or disease type. Further, spirituality is a primary source of social support in AAW (Ashing-Giwa & Ganz, 1997; Underwood & Powell, 2006a). Much of the literature substantiates the value of including spirituality as a variable in studies of AAW (Bourjolly, 1998; Gibson, 2003; Holt et al., 2003; Holt et al., 2008; R. L. Jones, 1996; Kinney, Emery, Dudley, & Croyle, 2002b). As a result, there was strong rationale to include an evaluation of spirituality in the current study.

Social support has been identified in the literature as a major variable influencing cancer screening behaviors among the AA population. A key finding from a study of focus groups composed of AA men and women was that the group members expressed the need to rely on their social network to provide support to obtain cancer screening. In that study AAW described various types of support for screening, such as having someone to talk to about cancer and cancer screening (Jernigan, Trauth, Neal-Ferguson, & Cartier-Ulrich, 2001). These findings were further substantiated in similar studies.
Given the importance of spirituality and social support in the AA culture, these GRRs were evaluated as effect modifiers in this study. Bennett (2000) defines a moderator as an independent variable that changes the strength or direction of the association between another independent variable and an outcome variable. Spirituality and social support may strengthen SOC, as well as independently influence BCS motivation and behaviors.

A theoretical model of the relationships among SOC, spirituality, social support, health perception and BCS motivation and behaviors is depicted below (Figure 1).

Figure 1. Theoretical Framework

Based on the extant literature, it is posited that SOC will increase BCS motivation and behaviors in AAW. It is posited that this relationship will be mediated (i.e., explained) by health perception. Further, based on the salutogenic framework, two GRRs are proposed to modify (i.e., change) the relationship between SOC and breast cancer
motivation and screening behaviors; namely, social support and spirituality. Several factors will influence these relationships and were evaluated as covariates: age, SES, barriers to BCS, and individual breast cancer risk factors such as age, family history of breast cancer, reproductive and menstrual history including a history of taking hormone replacement therapy (see Appendix A). The theoretical model below guided this research.

Theoretical Model

The salutogenic theory of health was used to evaluate the contribution of SOC to BCS motivation and the adoption of BCS behaviors by AAW. This model was used to explore the impact of general resistance resources (i.e., spirituality and social support) on the levels of SOC in AAW and how the level of SOC directly impacts BCS motivation and BCS behaviors. Given that AAW from low-income areas have historically identified barriers associated with income, lack of insurance, fear and fatalism and pain as reasons for not being compliant with BCS behaviors (i.e., BSE, CBE and mammograms) it is believed that it will take a strong SOC that is bolstered by high levels of spirituality and social support and greater level of health perception to motivate them to move beyond the barriers and adapt healthy behaviors (see Figure 1).

This study addressed the following specific aims and hypotheses.

Specific Aims:

1. To determine if there is a direct relationship between SOC and BCS motivation and BCS behaviors of AAW.
2. To determine if health perception mediates the relationship between SOC and BCS motivation and BCS behaviors in AAW.

3. To determine if spirituality modifies the relationship between SOC and BCS motivation and BCS behaviors of AAW.

4. To determine if social support modifies the relationship between SOC and BCS motivation and BCS behaviors of AAW.

5. To evaluate whether there is a difference in SOC, health perception, spirituality, and social support in AAW who take advantage of free mammography programs compared to AAW who do not.

Hypotheses:

1. SOC is positively related to BCS motivation and behaviors of AAW.

2. Health perception mediates the relationship between SOC and BCS motivation and behaviors in AAW.

3. Spirituality modifies the relationship between SOC and BCS motivation and behaviors in AAW.

4. Social support modifies the relationship between SOC and BCS motivation and behaviors in AAW.

5. AAW who utilize free mammogram screening programs will have a stronger SOC, greater spirituality, and increased social support than AAW who do not utilize free mammogram screening programs.
The findings from this study will provide much-needed insight into the role of a personal attribute, SOC, and how it influences the world view of AAW and their motivation for and practice of BCS behaviors; despite considerable barriers. Furthermore, the findings from this study can serve to guide the development of culturally-specific community-based programs to motivate and improve compliance of AAW with BCS guidelines. Ultimately the results of this study will contribute to understanding the large disparity in breast cancer mortality in AAW.

**Study Design**

A cross-sectional study was used to accomplish the study aims. The study enrolled a sample of AAW who take advantage of free mammography programs, as well as a sample of AAW who do not utilize these mammography programs. Data were collected using the following approaches, which varied across participants: one-time face-to-face self-administered questionnaires, mailed questionnaires or one-time structured telephone interview guided by the questionnaires. The limitations to this mixed-method data collection approach may include participants responding differently when face to face with the investigator versus mailed and telephone responses. Moreover, for the mailed questionnaires there is a higher likelihood of getting incomplete questionnaires returned and for the telephone interview guided questionnaires, there is a possibility that the interviewers tone or manner of asking the question could potentially influence the participant’s response.
Sample

Inclusion criteria

A purposive stratified sample of AAW was recruited to provide 2 groups of AAW: those who participate in free mammography screening programs and those AAW who did not utilize the free mammography screening programs. Women for both groups were recruited from four zip codes in the Metropolitan Chicago area. Sampling from multiple settings ensured the representation of women of varying educational, economic, occupational and religious backgrounds. The communities of interest included three zip codes from the near western suburb of Metropolitan Chicago and one zip code from the city of Chicago. One community is predominately an African American community composed of 26,987 persons with long-term residents and new immigrants from Mexico. It is 82% African American; 11% Hispanic and 6% White. Approximately 35% of residents have incomes below 200% of the poverty level; 27% of households consist of mother-only family (Cook County Department of Public Health, 2008). The remaining communities are similar in composition in that they are predominantly African American (> 75% of population), 17% to 31% have incomes below 200% poverty level; 20% to 22% of households consist of mother-only family (Cook County Department of Public Health, 2008).

Eligible women were between 45-85 years of age, English speaking and reading, able to give consent, and have access to mammograms. The age limit of 45 years was established to allow women at least five years to have had a mammogram. Setting the
terminal age limit at 85 years allowed for capture of those women who remain in reasonably good health and would be candidates for cancer treatment. Additional inclusion criteria for IBCCP women required eligible participants to have received a mammogram via the IBCCP program during a four year time period, 8/1/2006 through 8/1/2009 and whose year of birth was between 1924 and 1964.

**Exclusion criteria**

Women with a prior diagnosis of breast cancer and those referred for a screening mammogram as follow up for a previously detected breast abnormality were excluded from this study. In addition, women were excluded if they were unable to read and understand English well enough to complete the questionnaires and sign the informed consent; if they were confused, cognitively impaired, or mentally incompetent.

To address Hypothesis 5, women were stratified based on whether they were enrolled in the Illinois Breast and Cervical Cancer Program (IBCCP) and utilizing a free mammogram or not enrolled in this program (non-IBCCP). Non-IBCCP women were further stratified into groups according to health care insurance status and compliance status with BCS guidelines. Stratification was done to capture differences between the groups of women in the study with respect to the variables being measured. The assumption is, women utilizing free mammography services will typically be low-income, uninsured or underinsured, and unemployed. Thus these women would have more barriers and obstacles to surmount to comply with established BCS guidelines.
Therefore they were assumed to be more motivated to take advantage of free mammography programs.

**Determination of Sample Size**

According to (Kline, 2005) a minimum of 5-10 participants for each estimated parameter in the model is needed for the sample size. Based on a power analysis using a medium-effect size of 0.30, power of 0.80, and a p = < .05, one tailed test of significance a desired sample size of 67 was calculated (Hulley, 2007p. 89). Furthermore, sample size estimate was also calculated for hypothesis 5 using prior data. That data reported significant differences, based on SOC, in the quality of life (including health and functioning) of women cancer survivors (Keating, 2007). Based on these data, it was estimated that a sample size of 34 women per group would provide adequate power to detect differences with 80% statistical power. To adjust for missing data, the investigator over-enrolled by 15%. Thus, to ensure adequate statistical power, the targeted sample size was 80 women (40 per group).

**Recruitment Sites**

AAW living within the specified four Metropolitan Chicago area zip codes that were enrolled in the Illinois Breast and Cervical Cancer Program (IBCCP) were recruited via the Illinois Department of Public Health, Office of Women’s Health, which administers the IBCCP program in Illinois. The program provides free mammograms and clinical breast exams to uninsured women 35 to 64 years of age, residing in Illinois. IBCCP is a grantee of the federal Breast and Cervical Cancer Early Detection program.
(BCCEDP). A five-year summary, 1/2004 to 12/2008, of women served through the IBCCP reports that 38,721 women received mammograms, of those, 22% were AAW (Centers for Disease Control and Prevention, 2009). The distribution by age for those served reported 20% were 40-49 years of age, while 3.6% were 50-64 years of age and 1.6% was 65 years of age or over (CDC, 2009).

Women not utilizing the IBCCP (non-IBCCP) were recruited from community churches, hair salons, libraries, grocery stores and other community-based settings within the four specified zip codes in the Chicago Metropolitan area. Study flyers and brochures were provided for distribution at each location (see Appendix G). These materials instructed women meeting the inclusion criteria of the study and interested in participating to contact the investigator at a designated telephone number with a confidential voicemail box or via email.

**Research Procedures**

**IBCCP Participants**

After receiving approval of Loyola University Chicago Institutional Review Board (IRB)(see Appendix H), the Illinois Department of Public Health (IDPH), Office of Women’s Health was contacted to seek access to the mailing list of AAW who had received a free mammogram. To facilitate obtaining access to the list, the investigator completed a request form for access to data and to obtain approval from the Illinois IRB (see Appendix I). Once approval was obtained, the IBCCP generated a list of 231 unique identification numbers representing women meeting the inclusion criteria of the study.
Three numbers on the list were duplicates resulting in a list of 228 identification numbers. A total of 120 numbers were randomly selected from the list of 228 unique identification numbers (Urbaniak & Plous, 2008) and assigned a study participant code number. One hundred and twenty study packets consisting of a stamped outer envelope, a letter of introduction from IDPH (see Appendix J), informed consent document, questionnaire booklet, and a self-addressed stamped envelope were assembled and stamped with unique participant code numbers. The assembled study packets were delivered to the IDPH representative who generated 120 address labels for the selected random sample list and affixed the labels to the study packets which were then mailed to potential participants. The IDPH return address was used on the outer envelope. This process was employed to maintain confidentiality of IBCCP participants according to Health Insurance Portability and Accountability Act (HIPAA) (an act designed to protect participants from inappropriate use of and access to protected data). In the event that a packet was undeliverable, it was returned to the IDPH. IBCCP participants were only known to the investigator upon completion and return of the questionnaire packet in the self-addressed stamped envelope or if the participant telephoned the investigator.

Using the modified Dillman technique (Dillman, 2007) non-respondents received up to two additional mailings, all of which included the IDPH cover letter, questionnaire booklet, consent form, investigator reminder letter and self-addressed stamped return envelope. The Dillman (2007) technique recommends follow up mailings for non-respondents within 2 weeks of the previous mailing. Four mailings occur including the
initial questionnaire mailing, a postcard follow-up to remind participants to return the questionnaire, a second questionnaire mailing with a cover letter, and a third questionnaire mailing with a revised cover letter. Dillman also recommends cash incentives prior to initial responses. Modifications to the Dillman technique for this study included 3 mailings and monetary incentive upon completion and return of the questionnaire.

Non-IBCCP Participants

Administrators of targeted community facilities were contacted to obtain approval to access their population. With approval, the staff at such facilities and organizations was asked to post and/or distribute study flyers and brochures recruiting participants for the study. Potential participants were instructed to call the designated telephone number and leave a message on the confidential voicemail box assigned to the investigator by the faculty advisor. The investigator called potential participants who had left call back telephone numbers. Upon making contact with potential participants, the investigator explained the procedures for participating in the study, conducted a secondary screening to confirm that potential participants met inclusion criteria, and determined the preferred method (i.e., face-to-face, mailed or telephone) of completing the questionnaires. In addition, potential participants were encouraged to refer friends and family members for participation in the study.

An alternative process involved the investigator obtaining permission to establish an onsite location at facilities to recruit participants face-to-face. This included the
investigator staffing temporary kiosks at specific locations to recruit potential participants directly and speaking at women’s programs and health promotion affairs in the communities. The investigator approached potential participants, provided study brochures, explained the study, and screened individuals for inclusion criteria. Participants recruited in this manner were offered the opportunity to complete the questionnaire booklet face-to-face, provided a questionnaire booklet and a self-addressed stamped envelope for mailed questionnaires, or scheduled a time and place for completion of questionnaire by telephone or at a later date. Each participant received a monetary stipend of $25 for a completed questionnaire.

**Ethical Consideration**

This quantitative study was initiated after receiving approval from the Institutional Review Board (IRB) at Loyola University Chicago and the IDPH IRB. The informed consent includes a statement of risks and that there is no coercion involved, no penalty for withdrawing, and the rights and confidentiality of the participants will be respected at all times throughout the study and within any future publication of the study results. There is minimal risk discussing breast health and breast screening with women 45 years and older. As the principle investigator is an African American nurse, participants will likely feel comfortable talking about breast health and screening activities. Free and reduced cost mammography information from the American Cancer Society (ACS) and the Illinois Breast and Cervical Cancer Program (IBCCP) were provided to the participants only upon request.
Variables

Independent Variables

The independent variable for this study is sense of coherence. Perception of health, was evaluated as a mediator variable (i.e., a variable posited to explain how and why SOC and the dependent variables are associated), while spirituality, and social support were evaluated as effect modifiers (i.e., these variables are posited to influence the relationship between SOC and the study’s dependent variables). SOC, Health Perception, Spirituality, and Social Support were measured using Antonovsky’s Orientation to Life Scale (OLS) also known as the SOC-29, Ware’s SF-12v2 Your Health and Well-Being Survey, Reed’s Spirituality Perspective Scale, and Hogan and Schmidt’s Inventory of Social Support, respectively. Authorizations to use these instruments in this study were obtained from first authors of the instruments with the exception of the SOC = 29 which is public domain (see Appendix K).

Sense of Coherence. SOC is conceptually defined as a general orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that life’s events are comprehensible, manageable, and meaningful (Antonovsky, 1987). SOC is operationally defined in terms of scores on the 29-item Orientation to Life Questionnaire, more commonly known as the SOC-29 (Antonovsky, 1987).

Health Perception. Health perception is conceptually defined as the individuals own reports of general health which is reflective of the individual’s present state of
health and not according to what they would like their health to be (Suchman et al., 1958). Health perception is operationally defined in terms of scores on the SF-12v2 Your Health and Well-Being Survey (Ware & Sherbourne, 1992).

**Spirituality.** Spirituality is conceptually defined as a broader search for meaning and purpose in life, involving a higher power that is not dependent on denomination or church membership (Gullatte, 2006; Holt, Kyles et al., 2003). Spirituality is operationally defined in terms of scores on the Spirituality Perspective Scale (SPS) (Reed, 1992).

**Social Support.** Social support is conceptually defined as psychological and emotional resources that benefit an individual’s ability to cope with a stressful life event expressed in the extent that an individual has at least one non-judgmental person who takes time to listen to the individual as they express their thoughts and feelings (Hogan & Schmidt, 2002). Social support is operationally defined in terms of scores on the Inventory of Social Support (ISS) (Hogan & Schmidt, 2002).

**Dependent Variables**

Dependent variables for this study include BCS motivation and BCS behaviors.

**Breast Cancer Screening Motivation.** Breast cancer screening (BCS) motivation is conceptually defined as an attitude and belief that induces a woman to undertake a suitable course of action that will result in her participation in mammography, clinical breast examinations and self breast examinations (Audi, 1999). BCS motivation is
operationally defined in terms of scores on the Index of Positive Motivation for Screening (IPMS) (Klassen et al., 2008).

_Breast Cancer Screening Behaviors_. Breast cancer screening (BCS) behavior is conceptually defined as actions taken by women that include having a mammogram, clinical breast examination and performing a self breast examination according to ACS established guidelines as well as women’s intent to perform these activities in the future. BCS behavior is operationally defined in terms of scores on an investigator developed Breast Cancer Screening Behavior Survey (BCSBS) (R. Conway-Phillips, 2008; Phillips, 1993).

_Covariates_

Studies have suggested additional factors that influence breast cancer screening behavior and motivation, such as age, socioeconomic status (SES), barriers and breast cancer risk factors (Deshpande, Sanders Thompson, Vaughn, & Kreuter, 2009; Hailey, Carter, & Burnett, 2000; Halbert et al., 2006; Jennings-Sanders, 2009; Katapodi, Lee, Facione, & Dodd, 2004; Katapodi, Dodd, Lee, & Facione, 2009; Phillips & Wilbur, 1995a; Rosenberg, Wise, Palmer, Horton, & Adams-Campbell, 2005; Williams, Mabiso, Lo, & Penner, 2010). Covariates were evaluated in the proposed statistical models and include age, SES (income and education), barriers to BCS, and breast cancer risk factors. Barriers and risk factors were assessed using an instrument that was developed by the investigator.
Instrumentation

Sense of Coherence: Orientation to Life Questionnaire (SOC-29)

The Orientation to Life Questionnaire (Antonovsky, 1987) is also known as (SOC-29) and (SOC-13), which is a shorter version of the SOC-29 and consists of items taken directly from the SOC-29 instrument. The SOC-29 was used for this study; a copy is attached in Appendix L. The SOC-29 is a questionnaire designed to measure sense of coherence. It consists of three subscales; comprehensibility, manageability and meaningfulness and can be used both for interview and self-completion. Feldt and Rasku (1998) further explained the three interrelated components as cognitive (comprehensibility), instrumental (manageability), and motivational (meaningfulness). The SOC scale consists of 29 five-facet items on a 7 point semantic differential scale with two anchoring phrases which vary per each of the 29 items. There are 11 comprehensibility, 10 manageability and 8 meaningfulness items. Thirteen of the items (items 1, 4, 5, 6, 7, 11, 13, 14, 16, 20, 23, 25, and 27) are negatively worded and must be reverse scored so that a high score always expresses a strong SOC (Antonovsky, 1987; 1993). The scores for each item are added for the total SOC score. The theoretical range on the 29 item, seven point questionnaire is 29 (weak SOC) to 203 (strong SOC). The total score on the measure indicates the strength of an individuals’ SOC.

Studies have found the SOC-29 to be a feasible (Antonovsky, 1993), valid (Antonovsky, 1993; Eriksson & Lindstrom, 2005; Eriksson, 2007; Flannery, Perry, Penk, & Flannery, 1994) and reliable instrument (Antonovsky, 1993). The SOC-29 can be
completed in less than 15-20 minutes. Antonovsky reported establishment of content, face, consensual, construct, and criterion validity of the SOC scale (Antonovsky), which were findings supported by Horsburgh (2000) and Eriksson and Lindstrom (2005).

Antonovsky (1993) reported Cronbach’s alpha for 26 studies using SOC-29 ranging from 0.82 to 0.95, while Eriksson and Lindstrom (2005) reported Cronbach’s alpha for 124 studies ranging from 0.70 to 0.95. Antonovsky (1993) reports relatively few test-retest results. Of those reported, test-retest correlations ranged from 0.52 and 0.56 for an Israeli retirees study with a kibbutz control group; while a study of 189 United States male patient’s at veterans’ medical center clinics found 6-month test-retest correlation of 0.80 for the SOC-29. Eriksson and Lindstrom (2005) reported test-retest correlations that demonstrated stability with correlations ranging from 0.78 after 1 year to 0.54 after 10 years. These researchers found that after 10 years SOC seems to be comparatively stable, but not as stable as Antonovsky initially assumed, as the SOC tends to increase with age (Eriksson & Lindstrom, 2005). In contrast, Delbar and Benor (2001) suggest that SOC levels can be affected by structured nursing interventions in cancer patients.

The SOC has been widely adopted in health and well-being research, translated in at least 33 languages, and applicable in many cultures and ethnic groups (Antonovsky, 1993; Eriksson & Lindstrom, 2005). The SOC has been used in research on various illnesses including cancer and more specifically breast (Bruscia, Shultis, Dennery, & Dileo, 2008). The SOC has been found to be applicable to the discipline of nursing
(Antonovsky, 1979; Antonovsky, 1987; Sullivan, 1989) and suitable for use among AAW (Antonovsky, 1979, 1987; George, 1999; Nyamathi, 1991, 1993). In addition, Antonovsky (1993) reported no apparent difficulty with the scales use in telephone interviews.

A post-hoc analysis was performed using the SOC-13 in order to compare the results on the shorter form to those obtained from the longer SOC-29. This was done to observe if one tool explained more of the variance in the model over the other. If the SOC-13 was found to be more reactive than the SOC-29 than future studies can decrease the participants’ burden with fewer questions yet maintain reliability in the findings.

**Health Perception: SF-12v2 Your Health and Well-Being Survey**

The SF-12v2 Health and Well-Being Survey was developed using normative data from the SF-36 Health Survey form which was constructed to survey health status in the Medical Outcomes Study (MOS) (Ware & Sherbourne, 1992) and was designed for use in clinical practice and research, health policy evaluations, and general population surveys. A copy of the standard SF-12v2 Your Health and Well-Being Survey is attached in Appendix L. The SF-12v2 consists of 12 items from the SF-36 and is a one multi-item scale that assesses eight health concepts including: two questions concerning physical functioning, two questions on role limitations because of physical health problems, one question on bodily pain, one question on general health, one question on vitality, one question on social functioning, two questions on role limitations because of emotional problems, and two questions on general mental health (psychological distress and
psychological well-being) (Ware & Sherbourne, 1992; Ware, Kosinski, & Keller, 1996) and was adapted from instruments that have been used for 20 to 40 years or longer. The SF-12v2 yields scores for all eight health domains as well as for both the Mental Component Summary (MCS) and the Physical Component Summary (PCS) summary scores. The SF-12v2 items are scored so that “a higher score indicates a better health state” (Ware et al., 2002; Ware, Kosinski, Turner-Bowker, & Gandek, 2002).

Factor analysis has confirmed physical and mental health factors that account for 80-85% of the reliable variance in the eight scales of the SF-36. Studies replicating these results have been conducted in more than a dozen countries (Ware, 2007). The survey was constructed for self-administration by persons 14 years of age and older and can be administered in person or by telephone (Ware, Jr. & Sherbourne, 1992). Each item has a five-level response scale with the exception of the physical function domain item which has a three-level response scale.

Extensive psychometric testing has been conducted. Ware, Jr., (2007) reports all items have been shown to correlate substantially (greater than 0.40, corrected for overlap). Reliability has been estimated using both internal consistency and test-retest methods, with a few exceptions, published reliability statistics have ranged from 0.70 to 0.80 (Ware, Jr., 2007). Studies to date using the SF-36 have yielded content, concurrent, criterion, construct, and predictive evidence validity. Use of the SF-12 accomplishes three objectives; reproduction of more than 90% of the variance in SF-36 measures, accurate reproduction of average scores for both SF-36 summary measures, but less
accurately for the eight-scale profile, and reduction of participant burden by shortening the length of time to administer the test from 5-10 minutes to 2 minutes or less (Ware et al., 1996). SF-12v2 retained the same questions but with improvements in item wording, instructions and format which demonstrated theoretical improvements in the scales which translated into practical advantages in the psychometric performance of the survey (Ware et al., 2002).

**Spirituality: Spirituality Perspective Scale**

The Spirituality Perspective Scale (SPS) (Reed, 1987) is adapted from the Religious Perspective Scale (Reed, 1986). The 10-item SPS was designed to measure individuals’ perspectives on the extent to which spirituality pervade their lives and they engage in spiritually related interactions (Reed, 1987); a copy is attached in Appendix L. The SPS is administered as a structured interview or self-administered questionnaire. Responses to each item are based on a 1 to 6 scale with descriptive words, corresponding to each number. Item response ranges from 1 – not at all/strongly disagree to 6 – about once a day/strongly agree. The participant responds based on their personal understanding of spirituality (Reed, 1987). The SPS is scored by calculating the arithmetic mean across all items. Possible scores range from 1 to 6, with 6 indicating greater spiritual perspective.

Acceptable reliability and validity scores have been reported for the SPS in research in terminally ill and healthy adults (Reed, 1986), AAW and health-promoting behavior (Chester et al., 2006), pregnant AAW (Dailey & Stewart, 2007), and in AAW
breast cancer survivors (Gibson, 2003; Leak, Hu, & King, 2008). Reed (1987) reported reliability of the SPS when comparing three groups as measured by Cronbach’s alpha. An estimate of internal consistency ranged from 0.93 to 0.95, with average inter-item correlations ranging from 0.57 to 0.68 across groups. Evidence for construct validity was found in previous research in that those who reported having a religious background scored higher on the SPS.

*Social Support: Inventory of Social Support*

The Inventory of Social Support (ISS) (Hogan & Schmidt, 2002) is a 5 item self-report questionnaire that instructs respondents to identify their level of agreement or disagreement with each item using anchors ranging from “does not describe me at all” to “describes me very well.” A copy of the questionnaire is attached in Appendix L. The five items are summed to arrive at a total social support value.

Hogan and Schmidt (2002) developed the ISS with data from a grounded theory study of bereaved adolescents and adults. Item content measured the degree to which the bereft believes there is at least one person who will take the time to listen nonjudgementally to them while they openly and honestly express their thoughts and feelings of grief (Hogan & Schmidt). Cronbach’s alpha internal consistency for this scale was 0.76, test-retest was assessed using 29 undergraduate nursing students who were asked to think of a time they had experienced a significantly stressful event and rate the extent to which the items of the ISS helped with their coping of that event. Correlations between responses over time was 0.86, p<.001. Criterion validity was assessed through
correlations of the ISS with the Impact of Event Scale (IES) avoidance factor and the Beck Depression Inventory (BDI-II) scale. The researchers predicted negative relationships between the ISS and the other factors. Both relationship were in the direction predicted and significant at p<.001 (avoidance r= -0.38; depression r= -0.27) (Hogan & Schmidt). An exploratory factor analysis using principal axis factoring revealed one factor, with 52% of the variance explained and factor loadings ranged from 0.47 to 0.74 (Hogan & Schmidt). For the purpose of this study, the investigator consulted with an author of the scale Dr. Nancy Hogan, to revise the ISS wording to be applicable in exploring social support in African American women with regard to their SOC.

*Breast Cancer Screening Motivation: Index of Positive Motivation for Screening*

The Index of Positive Motivation for Screening (IPMS) (Klassen et al., 2008) is an 11-item questionnaire that instructs respondents to identify their level of agreement with each item using anchors ranging from “big effect” to “no effect” on how much each item explains whether a woman gets breast cancer, based on a 4 point Likert scale. A copy is included in Appendix L. The respondents’ answers to questions regarding breast cancer and screening are summed.

The IPMS was developed to operationalize the attitudes and beliefs of AAW about the secondary prevention of cancer, as screening related motivation is viewed as an important psychological component of health behavior (Klassen et al., 2008). The researchers theorize that women with high scores have an understanding of breast cancer and mammography compatible with cancer control strategies publicized by the medical
community, and a willingness to use the majority culture medical system as a partner in managing their health (Klassen et al.).

Klassen et al., (2008) reported the IPMS as having a Cronbach’s alpha of 0.71, which indicated a moderate reliability consistent with its use in an exploratory analysis. The researchers also found that the responses were predictive of mammography behavior, which was consistent with literature demonstrating the link between prevention attitudes and behaviors. Construct validity was supported in that the researchers found the IPMS to be significantly and positively correlated with both time since last mammogram and intention to receive future mammograms (Klassen et al.).

**Breast Cancer Screening Behavior: Breast Cancer Screening Behavior Survey**

The Breast Cancer Screening Behavior Survey (BCSBS) (Conway-Phillips, 2008) is a questionnaire developed for a pilot project in fulfillment of a multivariate statistics course. The BCSBS is a 14-item multiple option response questionnaire. The questionnaire was not psychometrically tested, however items were constructed based on extensive review of the literature on BCS behaviors of AAW (R. Conway-Phillips, 2008; 2009; Phillips, 1993; 1995b). A copy is attached in Appendix L. Barriers to breast cancer screening were identified through an open ended question on the Breast Cancer Screening Behavior Survey (BCSBS), item 11, in which participants were asked to explain why they had never had a mammogram. Breast cancer risk factors were identified via items 1a through k on the BCSBS instrument which included the participant’s age at first
menstrual period, current menstrual status, number of children, age at first child birth, birth control pill and hormone replacement usage, and family history of breast cancer.

**Limitations and Threats**

Several limitation and threats to this study were anticipated; yet, several mechanisms were put in place to reduce potential threats to the study integrity. Recruiting AAW from churches presented a potential confounder bias regarding the spirituality scale in that it can be assumed that individuals who belong to and/or attend church services would have a greater sense of spirituality than those who do not attend or participate in church services. Given that participants were recruited from non-religious facilities as well, was theorized to offset this potential confounder bias. In addition, several studies confirm that churches are an excellent setting to access AA samples for the purpose of research (Underwood & Dobson, 2004).

A potential threat to the internal validity of the study was response bias and/or social desirability. That is, women may be aware of mammogram guidelines and may have stated they were in compliance with them when in fact they were not. Such responses may emanate from their desire to appear compliant and to avoid potential embarrassment or shame. To reduce this threat the investigator assured study participants that their responses were in no way being judged, but evaluated to garner an understanding of AAW BCS behaviors and reasons why women do and do not follow guidelines, and to identify those women potentially at risk for breast cancer mortality.
Threats to external validity included the limitation of generalizability of the findings outside of the Metropolitan Chicago area. Yet, in this area of the U.S., AAW have some of the worst outcomes from breast cancer mortality (Metropolitan Chicago Breast Cancer Task Force, 2007) and hence, the setting for this study would likely garner useful information that can be translated to better understand the lack of compliance with BCS among AAW. Use of six different questionnaires with a total of 84 items and the length of the questionnaires posed an additional threat. To address this, a pilot test utilizing the complete set of six questionnaires was conducted with sample participants of various educational backgrounds so that an accurate estimate of time to complete all questionnaires was determined. This allowed the investigator to advise potential participants of the approximate time commitment in advance. Pilot testing revealed the average length of time to complete the six questionnaires was approximately 30 minutes.

In addition, to increase the response rate each participant received a $25 stipend for completion and return of the questionnaires.

Low questionnaire return rate for those mailing the questionnaires was identified as a potential threat to the study as mailed questionnaire response rate is typically low (Dillman, 2007). To encourage participation and assure adequate numbers of study participants, a reminder notice with the questionnaire booklet and a stamped self-addressed envelope was mailed to non-responders one month after the initial mailing and the second reminder notice including the questionnaire booklet and a stamped self-addressed envelope was mailed one month after the first reminder notification. For
participants who expressed a desire to complete the questionnaires via a telephone interview, the investigator made two follow-up telephone call reminders to schedule the interview, the first telephone reminder was two weeks after the initial response and the second reminder, two weeks after the first reminder. A final threat to the study was receipt of incomplete questionnaires and the possibility that such threat of missing data might require the removal of the questionnaire from the data set. This was determined with the assistance of a statistician.

**Analysis Plan**

*Descriptive Statistics*

Data were entered into a database and analyzed using the Statistical Package for the Social Sciences (SPSS) Predictive Analytic Software (PASW 18.0). Descriptive statistics were used initially to analyze demographic data and other participant characteristics important to the outcomes of this study. Frequencies, means, distribution, ranges and percentages, were used to characterize ages, education level, source of health care insurance coverage, age when having first mammogram, history of mammograms, risk factors, and socioeconomic status and religious affiliations of the participants. Data comparisons using the appropriate statistical analysis (t-test for continuous variables, chi-square for categorical variables and non-parametric tests for ordinal and non-normal variables) of measurements were done to identify variables that are differentially distributed and potential outliers. Alpha was set at 0.05 for all analyses. Tukey’s Honestly Significant Differences (HSD) test was used for multiple post-hoc comparisons.
Hypotheses 1, 3, and 4

Multiple regression models were used to test the relationship between SOC and the study’s two outcome variables: BCS motivation and behaviors. The basic formulation of the regression model followed a multi-level approach that includes the evaluation of effect modifiers and covariates. Two effect modifiers will be evaluated in the regression model; these were social support and spirituality. Potential confounders (covariates) that influence the association between SOC and outcomes have been identified a priori based on the extant literature. These include: age, SES, barriers to BCS, and breast cancer risk factors.

Hypothesis 2

Analysis of Mediational Model. The primary goal of the mediation analysis was to determine whether the effect of SOC on BCS motivation and behaviors were mediated (explained) by health perception. To test mediation, investigator followed Baron and Kenny’s (1986) recommendations, by assessing the statistical significance of the association between: (i) measures of SOC and the outcome variable (BCS motivation and behaviors) and (ii) potential mediating variable (health perception) and the outcome variable (BCS motivation and behaviors) (Baron & Kenny, 1986; Holmbeck, 1997; MacKinnon & Dwyer, 1993). The investigator also determined the statistical significance of mediational effects in the path model (Sobel, 1988). Of note, more recently Shrout and Bolger (2002) have introduced the use of computer intensive
methods (i.e. bootstrap simulation) for testing of mediation effect and these methods were applied when applicable.

_Hypothesis 5_

Differences in SOC, spirituality, and social support between AAW who utilize free mammogram screening programs and those who do not were determined by independent t-tests and logistic regression.

_Post hoc Analyses_

Post hoc analyses using the SOC 13 to assess BCS behaviors and to evaluate if there were differences in the results observed using the longer SOC 29. A second post hoc analysis was run incorporating BCS motivation as a predictor variable for the six BCS behaviors given that motivation is purported to influence behaviors. A third analysis was conducted to explore the differences between four subgroups that emerged from the non-IBCCP participants. Finally, a fourth analysis was conducted to analyze qualitative data that was provided in response to an open ended item on the SPS scale.
CHAPTER FOUR
RESULTS AND ANALYSIS

Results

Participants

One hundred and thirty four African American women participated in the study (mean age = 57, SD = 8.4). These women were stratified into two groups, those participating in the IBCCP, N = 53 and those not participating (non-IBCCP), N = 81. Of the 120 packets mailed to IBCCP eligible participants, 19 (16%) were returned to IDPH because of expired postal forwarding orders. Packets that were returned were not replaced as the eligible population was oversampled. A total of 101 eligible IBCCP participants remained. Fifty-one of the 101 eligible IBCCP women returned the questionnaires for a 50% response rate. Two participants originally recruited as non-IBCCP participants were later reclassified as IBCCP as they indicated during the eligibility screening process that they had received mammograms via the IBCCP program. Thus the total number of IBCCP participants was 53. All of the IBCCP participants completed and returned the questionnaires by mail although they were offered the options of completing the questionnaires face-to-face or via telephone.

Of the 87 non-IBCCP participants who received a questionnaire packet, 81 responded for a 93% response rate. Seven (9%) of the participants completed the questionnaires in face-to-face interviews, eight (10%) completed the questionnaires by
telephone, and 66 (81%) completed the questionnaire and returned them by mail. In addition, among the non-IBCCP participants there were four sets of sisters and three mother/daughter sets. There was no way to determine if any of the IBCCP participants were related. Table 1 lists the demographic characteristics of the study participants which included age, education, income, religion and health care insurance status.

Women in the IBCCP group were younger than the women in the non-IBCCP group (56 ± 5.8 and 58 ± 9.7 respectively). There were not significant differences in demographics noted between the two groups.

**Education.** Three participants (1.7%) listed grade school as the highest year of school completed, 30 participants (17.2%) indicated that they had completed some high school, 44 participants (25.3%) indicated that they had graduated high school, 20 participants (11.5%) indicated that they had completed some college, 14 participants (8%) held Associate’s degrees, 18 participants (10.3%) held Bachelor’s degrees, and three participants (1.1%) held graduate degrees.

**Income status.** Of the participants, 76 (43.7%) had a household income less than or equal to $30,000 per year, 11 participants (6.3%) had a household income between $31,000 and 40,000 per year, two participants (1.1%) had a household income between $41,000 and $50,000 thousand dollars per year, two participants (1.1%) had a household income between $51,000 and $60,000 per year, two participants (1.1%) had a household income between $61,000 and $70,000 per year, four participants (2.3%) had a household income between $71,000 and $80,000 per year, and five participants (2.9%) had a
household income of $81,000 or more per year. Sixteen (30.2%) of the IBCCP participants did not respond to the income item while sixteen (19.8%) of the non-IBCCP participants did not respond to the item. Participant failure to respond to income questions has been well documented in the literature (Park, Buist, Tiro, & Taplin, 2008; Qureshi, Thacker, Litaker, & Kippes, 2000).

Religion. Seventy-four participants (42.5%) self-identified as Baptists, five participants (2.9%) self-identified as Catholics, three participants (1.7%) self-identified as Methodists, one participant (0.6%) identified as a Seventh Day Adventist, 18 participants (10.3%) indicated that their spiritual beliefs were non-denominational, one participant (.6%) belonged to the Church of Jesus Christ and the Latter Day Saints, and eleven participants (6.3%) indicated that their spiritual beliefs were of a category not listed as an option in this study.

Health insurance. Sixty-three participants (47.4%) indicated that they were uninsured; 19 participants (14.3%) indicated that they were on public aid/Medicaid, 21 participants (15.8%) had Medicare, six participants (4.5%) had private self-pay insurance, 21 participants (15.8%) had private employer-paid health insurance, and three participants (2.3%) indicated other as the source of health insurance.

Reproductive characteristics. Table 2 lists the reproductive characteristics of the sample population. IBCCP participants were older at menses, had more children, and took birth control pills for a longer period of time than did non-IBCCP women. While non-IBCCP women were older in age at the birth of their first child, older at the time of
first mammogram and used hormone replacement therapy almost twice as many years as that of IBCCP women, the differences were not statistically significant.

**Measures**

*Sense of Coherence.* Sense of coherence was measured with the SOC 29 questionnaire. Participants responded to the complete 29 item questionnaire. A higher score indicates a strong SOC. Before calculating a total score, thirteen items in the scale were reversed. The value of Cronbach’s alpha for the 29-item scale indicated adequate internal consistency (α = .90). For the purposes of analysis, the 29-item SOC scale was summed to create a total SOC score ($M = 148.30, SD = 27.52$) with participant scores ranging from 80 to 197 while the range of possible scores was 29 to 203. While the SOC 29 was the primary instrument utilized in this study the scoring instructions contains a shorter version of the questionnaire (SOC 13) which is composed of 13 items from the longer SOC 29 version. The value of Cronbach’s alpha for the 13-item scale also indicated acceptable internal consistency (α = .85). For the purposes of analysis, the 13-item SOC scale was summed to create a short version of a total SOC score ($M = 63.58, SD = 14.63$) with participant scores ranging from 25 to 91 while the range of possible scores was 13-91.

*Social support.* Social support was measured with the 5–item Inventory of Social Support (ISS). The value of Cronbach’s alpha suggested that the items had slightly less than desirable internal consistency (α = .63). Briggs and Cheeks (1986) recommend calculating and reporting the mean inter-item correlation for scales with less than 10
items with optimal mean inter-item correlation values ranging from .2 to .4. The ISS mean inter-item correlation was $r = .3$ which suggests adequate internal consistency of the ISS scale. For purposes of analysis, the ISS items were summed to create a total social support score ($M = 20.39, SD = 3.29$) with participant scores ranging from 9 to 25 while the range of possible scores was 5 to 25 with a higher score indicating a greater sense of social support.

**Spirituality.** Spirituality was measured by the 10–item Spiritual Perspective Scale (SPS). The value of Cronbach’s alpha suggested that the items had adequate internal consistency ($\alpha = .91$). For purposes of analysis, the SPS items were summed to create a total social spirituality score ($M = 5.3, SD = .79$) with participant scores ranging from 1.1 to 6.0 while the range of possible scores was 1.0 to 6.0 with a higher score indicating a greater sense of spirituality. At the end of the SPS questionnaire, participants were asked to describe how they define spirituality and invited to provide comments to the researcher. Forty-seven (35%) of the 134 participants provided written definitions of spirituality. Findings are reported in the analysis section of this chapter.

**Health perception.** General health perception was measured with the 12–item SF-12v2 Health Survey Items. The value of Cronbach’s alpha suggested that the items had adequate internal consistency ($\alpha = .87$). For the purposes of analysis, the SF-12v2 items were summed to create a total health perception score ($M = 533.05, SD = 156.15$) with participant scores ranging from 175 to 787.5 while the range of possible scores was 0 to 1200 with a higher score indicating a greater perception of health.
Table 1: Demographic Characteristics of Study Sample IBCCP and Non-IBCCP

<table>
<thead>
<tr>
<th>Variables</th>
<th>IBCCP</th>
<th>Non-IBCCP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=53</td>
<td>N=81</td>
</tr>
<tr>
<td><strong>Age: Mean ± SD</strong></td>
<td>56 ± 5.8</td>
<td>58 ± 9.7</td>
</tr>
<tr>
<td><strong>Education: Frequency (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade School</td>
<td>1 (1.9)</td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>Some high school</td>
<td>10 (18.9)</td>
<td>20 (24.7)</td>
</tr>
<tr>
<td>Graduated high</td>
<td>21 (39.6)</td>
<td>23 (28.4)</td>
</tr>
<tr>
<td>Some college</td>
<td>5 (9.4)</td>
<td>15 (18.5)</td>
</tr>
<tr>
<td>Associate degree</td>
<td>7 (13.2)</td>
<td>7 (8.6)</td>
</tr>
<tr>
<td>Bachelors degree</td>
<td>5 (9.4)</td>
<td>13 (16.0)</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>2 (3.8)</td>
<td>1 (1.2)</td>
</tr>
<tr>
<td>No response</td>
<td>2 (3.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Income: Frequency (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 30 K</td>
<td>32 (60.4)</td>
<td>44 (54.3)</td>
</tr>
<tr>
<td>31 – 40 K</td>
<td>3 (5.7)</td>
<td>8 (9.9)</td>
</tr>
<tr>
<td>41 – 50 K</td>
<td></td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>51 – 60 K</td>
<td></td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>61 – 70 K</td>
<td></td>
<td>2 (2.5)</td>
</tr>
<tr>
<td>71 – 80 K</td>
<td>1 (1.9)</td>
<td>3 (3.7)</td>
</tr>
<tr>
<td>≥ 81 K</td>
<td>1 (1.9)</td>
<td>4 (4.9)</td>
</tr>
<tr>
<td>No response</td>
<td>16 (30.2)</td>
<td>16 (19.8)</td>
</tr>
<tr>
<td><strong>Religion: Frequency (%)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Baptist</td>
<td>33 (62.3)</td>
<td>41 (50.6)</td>
</tr>
<tr>
<td>Catholic</td>
<td>1 (1.9)</td>
<td>4 (4.9)</td>
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<td>Methodist</td>
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<td>3 (3.7)</td>
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<tr>
<td>Non-Denominational</td>
<td>3 (5.7)</td>
<td>15 (18.5)</td>
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<td>7th Day Adventist</td>
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<tr>
<td>Latter Day Saints</td>
<td></td>
<td>1 (1.2)</td>
</tr>
<tr>
<td>Other</td>
<td>8 (15.1)</td>
<td>3 (3.7)</td>
</tr>
<tr>
<td>No response</td>
<td>7 (13.2)</td>
<td>13 (16.0)</td>
</tr>
<tr>
<td><strong>Current source of health care coverage: Frequency (%)</strong></td>
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<tr>
<td>No coverage</td>
<td>29 (54.7)</td>
<td>34 (42.0)</td>
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<td>Medicaid</td>
<td>10 (18.9)</td>
<td>9 (11.1)</td>
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<tr>
<td>Medicare</td>
<td>5 (9.4)</td>
<td>16 (19.8)</td>
</tr>
<tr>
<td>Private self-pay</td>
<td>1 (1.9)</td>
<td>5 (6.2)</td>
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<td>Private employer pay</td>
<td>4 (7.5)</td>
<td>17 (21.0)</td>
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<tr>
<td>Other</td>
<td>3 (5.7)</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>1 (1.9)</td>
<td></td>
</tr>
</tbody>
</table>

Note: IBCCP = Illinois Breast and Cervical Cancer Program
**Table 2: Reproductive History Characteristics of IBCCP and Non-IBCCP Study Participants**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>IBCCP N=53 Mean (SD)</th>
<th>Non-IBCCP N=81 Mean (SD)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age—first menstrual period</td>
<td>12.7 (1.9)</td>
<td>12.6 (1.7)</td>
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</tr>
<tr>
<td>Number of children</td>
<td>2.5 (1.8)</td>
<td>2.3 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Age—first child</td>
<td>18.4 (5.6)</td>
<td>20.2 (8.0)</td>
<td>ns</td>
</tr>
<tr>
<td>Birth control pills—years used</td>
<td>7.0 (5.6)</td>
<td>5.3 (5.5)</td>
<td>ns</td>
</tr>
<tr>
<td>Hormone replacement therapy—years used</td>
<td>4.3 (4.4)</td>
<td>8.0 (9.7)</td>
<td>ns</td>
</tr>
<tr>
<td>Age—first mammogram</td>
<td>36.1 (10.9)</td>
<td>37.9 (12.0)</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Breast screening motivation.* Participants’ motivation to engage in BCS behaviors was measured with the 14–item Index of Positive Motivation Scale (IPMS). The value obtained for Cronbach’s alpha (α=.73) indicated acceptable internal consistency of these items. For purposes of analysis, the motivation items were summed to create a total motivation score ($M=41.62$, $SD=5.76$) with participant scores ranging from 22 to 50 while the range of possible scores was 14 to 52 with a higher score indicating greater motivation for participating in breast cancer screening activities. The IPMS contains two qualitative questions asking participants “In your own words, please explain: what is a mammogram and what is the purpose of a mammogram?” Questionnaire item IPMS 8A was scored as: defines mammography as an X-ray, image, or picture of the breast: Yes/No and item IPMS 8B was scored as: defines purpose as a test for breast cancer:
Yes/No. Eighty three percent of the non-IBCCP women and 77.4% of the IBCCP received a score of “yes” for correctly defining mammography, while 91.4% of non-IBCCP women and 84.9% of IBCCP correctly described the purpose of mammography.

*Breast cancer screening behaviors.* Six dichotomous (yes versus no) BCS behaviors were explored by assessing if the woman engaged in the behavior and the woman’s intent to perform the behavior. These items included whether a woman had ever had a breast self-exam (BSE), whether a woman intended a monthly BSE, whether a woman had ever had a clinical breast exam (CBE), whether a woman intended to obtain a CBE, whether a woman had ever had a mammogram, and whether a woman intended to obtain a mammogram.

*Breast cancer screening knowledge and recommendations.* Seven dichotomous (yes versus no) questions explored whether participants had received information regarding BSE, CBE and mammograms; if they had been taught how to perform a BSE and whether a doctor or nurse had recommended BSE, CBE and mammograms. The overall majority of the study participants reported having received information about BSE, CBE and mammograms. The majority of the participants also reported having a doctor or nurse recommend a BSE, CBE, and mammogram. Lastly, the majority of the participants reported having been taught how to perform a breast self exam. Table 3 lists the frequency by group in which they had received breast cancer screening information, whether breast cancer screening activities had been recommended by health care providers and if they had been taught how to perform BSE.
Table 3: Knowledge and Recommendations of Breast Cancer Screening Activities by IBCCP and Non-IBCCP Groups

<table>
<thead>
<tr>
<th></th>
<th>IBCCP</th>
<th>Non-IBCCP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (%)</td>
<td>No (%)</td>
</tr>
<tr>
<td>BSE information</td>
<td>45 (88.2)</td>
<td>6 (11.8)</td>
</tr>
<tr>
<td>CBE information</td>
<td>48 (92.3)</td>
<td>4 (7.7)</td>
</tr>
<tr>
<td>Mammography information</td>
<td>49 (94.2)</td>
<td>3 (5.8)</td>
</tr>
<tr>
<td>BSE recommendation</td>
<td>50 (96.2)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>CBE recommendation</td>
<td>46 (90.2)</td>
<td>4 (7.8)</td>
</tr>
<tr>
<td>Mammography recommendation</td>
<td>49 (96.1)</td>
<td>2 (3.9)</td>
</tr>
<tr>
<td>BSE instructions</td>
<td>49 (92.5)</td>
<td>4 (7.5)</td>
</tr>
</tbody>
</table>

Note: There was one individual in each group that did not respond to the questions.

Although not statistically significant, fewer women in the non-IBCCP group (79.5%) compared to the IBCCP group (96.2%) reported having been recommended a BSE, while a similar results was observed for recommendations for CBE, 74.7% of non-IBCCP compared to 90.2% of IBCCP women. Overall, the women participating in the IBCCP reported greater frequencies of having received information about BSE, CBE and mammograms and greater frequency of having received recommendations from health care providers to perform BCS activities than did the non-IBCCP group.

Participants were asked how often each of the breast cancer screening activities BSE, CBE and mammography should occur. The overall majority of participants indicated that BSE should occur monthly. Five participants did not respond to the BSE question. The overall majority of participants indicated that CBE should occur yearly
while eight participants did not respond to the question. Similarly, for the question asking how often should mammography occur, the majority of women indicated yearly, while the second most frequent option indicated was every 2 years. Three participants did not respond to the question about frequency of mammography. There was a statistically significant difference between the IBCCP and non-IBCCP participants in the responses to how often mammography should occur $t(129) = 2.534, p = .01$. A greater percent of IBCCP women indicated the correct frequency of yearly mammography screening than did non-IBCCP women. Table 4 lists the results of the knowledge of frequency of BCS activity by group.

*Breast cancer screening frequency and history.* Participants were asked to provide information about how often they performed BSE and had CBE. The overall majority of participants reported examining their breast once or twice a month, followed by those who reported examining their breasts several times a year. A small percentage of women reported never having examined their breasts. There were no significant differences between IBCCP and non-IBCCP participants in how often women examined their breast.

Table 5 lists the frequency of CBE by group. Overall, the majority of participants reported having CBE annually, followed by those who reported having CBE every 2 to 3 years and every 6 months respectively. There was a statistically significant difference between the IBCCP and non-IBCCP participants in responses to how often women have CBE $t(120) = 2.187, p = .03$. Non-IBCCP women reported longer time frames for how often they had CBE compared to the IBCCP participants.
Table 4: Knowledge of Frequency of Breast Cancer Screening Activities by IBCCP and Non-IBCCP Groups

<table>
<thead>
<tr>
<th>BCS Activity</th>
<th>Frequency of Activities</th>
<th>IBCCP N=53</th>
<th></th>
<th>Non-IBCCP N=81</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
<td></td>
</tr>
<tr>
<td>How often should BSE occur</td>
<td>Yearly</td>
<td>10</td>
<td>18.9</td>
<td>17</td>
<td>21.0</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>20</td>
<td>37.7</td>
<td>35</td>
<td>43.2</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>19</td>
<td>35.8</td>
<td>22</td>
<td>27.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td>1.9</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>3</td>
<td>5.7</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>How often should CBE occur</td>
<td>Yearly</td>
<td>42</td>
<td>79.2</td>
<td>59</td>
<td>72.8</td>
</tr>
<tr>
<td></td>
<td>Every 2 yrs</td>
<td>3</td>
<td>5.7</td>
<td>9</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>Every 3 yrs</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4</td>
<td>7.5</td>
<td>8</td>
<td>9.9</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>4</td>
<td>7.5</td>
<td>4</td>
<td>4.9</td>
</tr>
<tr>
<td>How often should mammograms</td>
<td>Yearly *</td>
<td>47</td>
<td>88.7</td>
<td>57</td>
<td>70.4</td>
</tr>
<tr>
<td>occur</td>
<td>Every 2 yrs</td>
<td>3</td>
<td>5.7</td>
<td>16</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>Every 3 yrs</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td>1.9</td>
<td>6</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>2</td>
<td>3.8</td>
<td>1</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Note: * p = < .01
Table 5: Frequency of Clinical Breast Examination (IBCCP versus Non-IBCCP)

<table>
<thead>
<tr>
<th>Frequency of CBE</th>
<th>IBCCP N = 53</th>
<th>Non-IBCCP N=81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>Every 6 months</td>
<td>13</td>
<td>24.5</td>
</tr>
<tr>
<td>Once a year</td>
<td>29</td>
<td>54.7</td>
</tr>
<tr>
<td>Every 2-3 years</td>
<td>7</td>
<td>13.2</td>
</tr>
<tr>
<td>Every 5 years</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Greater than 5 years</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>5.7</td>
</tr>
</tbody>
</table>

Note: IBCCP – Illinois Breast and Cervical Cancer Program. There was a statistically significant difference between the IBCCP and non-IBCCP participants in responses to how often women have CBE $t (120) = 2.187$, $p = .03$.

Participants were asked when was the last time they had performed BSE, had a CBE and had a mammogram. Table 6 lists the results of participant responses to when they had last performed a BSE by group. Overall, the majority of participants reported having performed the last BSE within 1-3 months, followed by those reporting up to 4 weeks ago. A small percentage of women reported never having performed a BSE.

Table 6: Last Breast Self Examination (IBCCP versus Non-IBCCP)

<table>
<thead>
<tr>
<th>Last exam</th>
<th>IBCCP N = 53</th>
<th>Non-IBCCP N=81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>Never</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>Today to 4 weeks</td>
<td>13</td>
<td>24.5</td>
</tr>
<tr>
<td>1 – 3 months</td>
<td>25</td>
<td>47.2</td>
</tr>
<tr>
<td>4 – 6 months</td>
<td>2</td>
<td>3.8</td>
</tr>
<tr>
<td>7 – 9 months</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>10-12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 1 year</td>
<td>6</td>
<td>11.3</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
Ten participants provided reasons for not performing BSE. The most frequently cited reason was “need to learn how” and “need to know what to feel for.” A few participants stated: “I forget,” “I need a reminder” and “I need physician recommendation.” One individual stated “I want to avoid becoming emotional about it” while others gave various reasons such as “never felt the need,” “never thought about it,” “breast never bothered me,” “not sure” and “I seem to be in good health.”

Fifty seven percent of the IBCCP women reported having had a CBE within the past year, 21% within the past 2 years, two participants reported having a CBE within 3 and 4 years and two reported having a CBE over 6 years ago. One woman reported having never had a CBE while seven did not respond to the question. Fortyeight percent of the non-IBCCP women reported having received a CBE within the past year, 14% were within 2 years, 11% within 3 years, 16% were over 4 years and five women reported never having had a CBE while three participants did not respond.

Participants were asked to state when they had their last mammogram. Overall, the majority of women reported having had a mammogram within the past year and followed by those reporting having had a mammogram within the past 2 years. Thirteen (10%) of the overall participants reported never having had a mammogram, 12 were in the non-IBCCP group while one was in the IBCCP. The one IBCCP participant was most likely in error as the criteria for participation in the IBCCP group was that an individual had to have obtained a mammogram via IBCCP program. Table 7 lists the results of participant responses to when they had their last mammogram by group. There
was a highly statistically significant difference between the groups, \( t (132) = -4.808, p = .000 \). Non-IBCCP women were significantly less likely to be compliant with mammography guidelines.

Table 7: Last Mammogram (IBCCP versus Non-IBCCP)

<table>
<thead>
<tr>
<th>Last Mammogram</th>
<th>IBCCP Frequency</th>
<th>IBCCP Percent</th>
<th>IBCCP N = 53</th>
<th>Non-IBCCP Frequency</th>
<th>Non-IBCCP Percent</th>
<th>Non-IBCCP N=81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>1.9</td>
<td></td>
<td>12</td>
<td>14.8</td>
<td></td>
</tr>
<tr>
<td>Don’t remember</td>
<td>1</td>
<td>1.9</td>
<td></td>
<td>9</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>&gt; 3 years</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 3 years</td>
<td>1</td>
<td>1.9</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2 years</td>
<td>12</td>
<td>22.6</td>
<td>8</td>
<td>9</td>
<td>9.9</td>
<td></td>
</tr>
<tr>
<td>&lt; past year</td>
<td>38</td>
<td>71.7</td>
<td>35</td>
<td>43.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note*: IBCCP = Illinois Breast and Cervical Cancer Program. Statistically significant difference between IBCCP and Non-IBCCP, \( t (132) = -4.808, p = .000 \).

*Beliefs about Breast Cancer Screening*. Participants were asked the following regarding beliefs about BCS: do you believe that early detection is beneficial (Yes / No); if yes, explain why you think early detection is beneficial; and finally what would motivate you most to perform all three BCS activities (BSE, CBE and mammography). Ninety six percent of all participants indicated that they believed that early detection is beneficial. The majority of the women indicated that the earlier breast cancer is detected the earlier treatment can start resulting in a better chance of survival, the second most frequent reason women stated was that early detection “saves lives,” the third most frequently stated reason was early detection “prevented spread of the disease” and “detect changes to breast early.” In response to what would motivate women to
perform all three BCS the majority of women responded that “love of life,” “value of life,” their “children and family” and “having insurance or money” were the factors that would motivate them to perform all three BCS activities.

Data Preparation

Health perception scale (SF12v2). Initial diagnostics of responses to the SF12v2 scale indicated that approximately one percent of data were missing. To address this issue, PRELIS, a statistical application from within structural equation modeling software (LISREL) was used to impute the missing data using an Estimation Maximization (EM) algorithm (Dempster, Laird, & Rubin, 1977; Joreskog & Sorbom, 1993). This procedure estimates missing variable values by taking multiple samples (with replacement) from the existing data and using the average of those resamples as an estimate of the missing data values. After the missing data had been imputed, the SF12v2 scale was scored according to Ware (2002).

Breast cancer risk factors. To assess the degree of participant risk of developing breast cancer, eight items were used (see Table 8). These items were each coded as a dichotomy; participants either answered “yes” or “no” to whether or not they were still menstruating, whether or not they had children, whether they were 30 years of age or older when their first child was born, whether they had ever taken birth control, whether they were currently taking birth control, whether they had ever taken hormone replacement therapy, whether they were currently taking hormone replacement therapy, and whether or not they had relatives with cancer. If a participant answered “yes” to the
first item regarding menstruation status and was also age 55 or older, a risk value of one was applied. If a participant indicated that she had no children, a risk value of one was applied. The remaining six risk items were assigned a value of one if participants indicated “yes.” For analysis purposes, responses to these eight items were summed into a total risk score ($M = 1.46, SD = .85$) with a possible scores ranging from 1-8.

Table 8: Frequency of Itemized Risk Factors for the Development of Breast Cancer

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menstruating Over Age 55</td>
<td>4</td>
<td>130</td>
<td>40</td>
</tr>
<tr>
<td>Has no Children</td>
<td>12</td>
<td>122</td>
<td>40</td>
</tr>
<tr>
<td>First Child at 30+ Years</td>
<td>10</td>
<td>111</td>
<td>53</td>
</tr>
<tr>
<td>Taken Birth Control Pills</td>
<td>110</td>
<td>23</td>
<td>41</td>
</tr>
<tr>
<td>Currently Taking Birth Control Pills</td>
<td>1</td>
<td>127</td>
<td>46</td>
</tr>
<tr>
<td>Taken Hormone Replacement Therapy (HRP)</td>
<td>29</td>
<td>100</td>
<td>45</td>
</tr>
<tr>
<td>Currently Taking HRP</td>
<td>5</td>
<td>109</td>
<td>60</td>
</tr>
<tr>
<td>Relatives with Breast Cancer</td>
<td>32</td>
<td>98</td>
<td>44</td>
</tr>
</tbody>
</table>

Barriers to breast cancer screening. If participants indicated that they had never had a mammogram, they were asked to indicate their reasons for never having a mammogram. Of the 134 women who participated in the study, 27 gave reasons for non-compliance with mammogram screening guidelines. For the purpose of this study, non-compliance is defined as any woman who has either never had a mammogram or any woman who had not had a mammogram in over 2 years. Twelve non-IBCCP participants indicated they had never had mammograms while one IBCCP participant indicated never having had a mammogram. The IBCCP participant response was possibly a mistake on the part of the participant given the fact that in order to have been included in the sample,
the individual had to have had a mammogram. Although specific reasons varied, the most common responses were a lack of health insurance \((N = 7)\), pain and/or fear \((N = 7)\), and time \((N = 3)\). For purposes of statistical analyses, a dummy variable for barriers to BCS was created that assigned those women who indicated a barrier a value of one and those women who did not indicate a barrier a value of zero.

**Missing data.** Protocols were developed to handle missing data on the psychometric tools. There were no missing data on the SOC tool and the SPS tool. However, the end of the SPS tool contained a qualitative item which asked the participants to describe how they defined spirituality. Forty seven (35\%) participants responded to this item. Their responses were analyzed using qualitative methods and will be discussed later. Missing data on the ISS tool was handled using the listwise deletion procedure on SPSS which resulted in a smaller \(N\). Three participants (2\%) missed items on ISS tool, responding to only one item on the five item ISS tool while leaving the remaining four items blank. The three participants were from the IBCCP group and it appeared that the participants misunderstood the instructions on the tool. The author of the ISS concurred with the decision to use listwise deletion of the incomplete questionnaires (N. S, Hogan, personal communication, May 3, 2010).

Pairwise deletion was used for missing items on the IPMS tool to avoid loss of valuable data on the remaining items of the tool which resulted in a smaller \(N\) per item but not by participant. This method was recommended by the authors of the IPMS tool. It was noted that two of the same participants that missed items on the ISS tool missed
items on the IPMS tool that had similar instructions as the ISS tool which appeared to confirm that they had difficulty understanding the instructions. The IPMS items that were most frequently missed were the two written response items (8a and 8b) which asked participants to explain in their own words “what is a mammogram” and “what is the purpose of a mammogram?” These missing items were not counted in the frequency calculations.

The instrument with the most missing data was the BCSBS. The most frequently missed item was the item asking participants for their income (2d). Twenty percent of the non-IBCCP compared to 30% of the IBCCP participants left this item blank. Failure to respond to income inquiries is a well documented phenomenon in the literature (Qureshi et al., 2000). Missing items on the BCSBS tool were not counted in the frequency calculations and resulted in smaller N for those items.

Analyses

Breast Cancer Screening Motivation

To examine the contributions of sense of coherence, social support, spirituality, and health perception to the motivation to obtain BCS, multiple regression was utilized. Table 9 lists the descriptive statistics of the variables predicting breast cancer screening motivation. Before further analyses, bivariate correlation coefficients were computed to assess the relationships among the variables in the regression equation (see Table 10). Inspection of the correlation results suggests that the 13-item sense of coherence scale and the 29-item sense of coherence scale are highly correlated ($r = .93, p \leq .001$).
Because of the high degree of correlation between these two variables, regression models that include both variables as predictors will suffer from issues of multicollinearity. Multicollinearity in regression occurs when predictor variables in a regression equation are more highly correlated with each other than they are with the dependent variable. Multicollinearity among predictor variables is a problem for studies that endeavor to examine the contributions of individual predictor variables to the variance in the dependent variable. Specifically, the p-values associated with the regression coefficients for these predictor variables can be misleading because multicollinearity inflates the variances of parameter estimates. The end result of this problem is that predictors may not emerge as significant, which may lead to incorrect conclusions about the relationships among the variables in the regression model. Because both the 13-item and the 29-item scales indicated acceptable reliability (αs = .85 and .90, respectively), the longer, 29-item scale was chosen to be included in future analyses and the shorter, 13-item scale will be discussed further in the post hoc analyses.

SOC 29 was highly correlated with social support \( (r = .39, p ≤ .001) \), spirituality \( (r = .36, p ≤ .001) \) and health perception \( (r = .52, p ≤ .001) \) (see Table 10). Spirituality and health perception were the most active predictor variables as they were correlated with the most variables in the model.
Table 9: Descriptive Statistics of Variables Predicting Breast Cancer Screening

<table>
<thead>
<tr>
<th>Motivation</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>3.59</td>
<td>1.47</td>
<td>1-7</td>
</tr>
<tr>
<td>SES—Income</td>
<td>.77</td>
<td>1.69</td>
<td>0-6</td>
</tr>
<tr>
<td>Age</td>
<td>57.0</td>
<td>8.40</td>
<td>45-85</td>
</tr>
<tr>
<td>Barriers to Screening</td>
<td>--</td>
<td>--</td>
<td>0-1</td>
</tr>
<tr>
<td>(dichotomous)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Factors</td>
<td>1.46</td>
<td>.85</td>
<td>0-8</td>
</tr>
<tr>
<td>Motivation</td>
<td>41.62</td>
<td>5.76</td>
<td>22-50</td>
</tr>
<tr>
<td>Social Support</td>
<td>20.39</td>
<td>3.29</td>
<td>9-25</td>
</tr>
<tr>
<td>Sense of Coherence—13</td>
<td>63.58</td>
<td>14.63</td>
<td>25-91</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>148.30</td>
<td>27.52</td>
<td>80-197</td>
</tr>
<tr>
<td>Spirituality</td>
<td>53.33</td>
<td>7.95</td>
<td>11-60</td>
</tr>
<tr>
<td>Health Perception</td>
<td>533.05</td>
<td>156.15</td>
<td>175-787.5</td>
</tr>
</tbody>
</table>

Note: Sense of Coherence—29 = long version of this scale containing 29 items. Sense of Coherence—13 = short version of this scale containing 13 items.
Table 10: Correlations between Study Variables

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Education</th>
<th>SES</th>
<th>Sense of Coherence 13</th>
<th>Sense of Coherence 29</th>
<th>Social Support</th>
<th>Spirituality</th>
<th>Health Perception</th>
<th>Risk</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.0</td>
<td>-0.10</td>
<td>-0.09</td>
<td>0.18</td>
<td>0.16</td>
<td>0.07</td>
<td>0.20</td>
<td>0.01</td>
<td>0.09</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.27)</td>
<td>(0.39)</td>
<td>(0.04)</td>
<td>(0.41)</td>
<td>(0.02)</td>
<td>(0.90)</td>
<td>(0.40)</td>
</tr>
<tr>
<td>Education</td>
<td>1.0</td>
<td>0.40</td>
<td>0.15</td>
<td>0.17</td>
<td>0.20</td>
<td>0.19</td>
<td>0.23</td>
<td>0.10</td>
<td>0.10</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.001)</td>
<td>(0.09)</td>
<td>(0.05)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.33)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>SES-Income</td>
<td>1.0</td>
<td>0.16</td>
<td>0.19</td>
<td>0.22</td>
<td>0.18</td>
<td>0.22</td>
<td>0.12</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.12)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.29)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of Coherence 13</td>
<td>1.0</td>
<td></td>
<td></td>
<td>0.93</td>
<td>0.30</td>
<td>0.32</td>
<td>0.49</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.93)</td>
<td></td>
<td>(0.001)</td>
</tr>
<tr>
<td>Sense of Coherence 29</td>
<td>1.0</td>
<td></td>
<td></td>
<td>0.39</td>
<td>0.36</td>
<td>0.52</td>
<td>0.01</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.88)</td>
<td>(0.01)</td>
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</tr>
<tr>
<td>Social Support</td>
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<td>0.08</td>
<td>0.24</td>
<td>0.12</td>
<td>0.26</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.39)</td>
<td>(0.01)</td>
<td>(0.23)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>1.0</td>
<td>0.20</td>
<td>0.03</td>
<td>0.33</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.02)</td>
<td>0.05</td>
<td>(0.79)</td>
<td></td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Perception</td>
<td>1.0</td>
<td>0.55</td>
<td>0.15</td>
<td>0.13</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>1.0</td>
<td>0.60</td>
<td>0.10</td>
<td>0.22</td>
<td>0.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Values = Pearson r correlation coefficients with *(p)* value below in ( ).*
Because age, socio-economic status, level of education, risk factors for breast cancer, and barriers to BCS have all been implicated in the literature to contribute to screening motivation (Deshpande et al., 2009), these variables were statistically controlled (i.e., included in models as covariables). In order to ensure sufficient statistical power, the participant-to-variable ratio for the motivation analyses was based upon the suggestions of Tabachnick and Fidell (2006). Specifically, these authors suggest a sample size of $8k + 50$, when $k$ = the number of predictors in the model. For the nine predictors in the model predicting BCS motivation, the sample size of 134 was sufficient.

The model explained a significant portion of the variance in motivation scores, adjusted $R^2 = .27$, $F(9, 63) = 4.00$, $p \leq .001$ (see Table 11). Of the covariates, only education level was statistically significant, $b = .94$ ($SE = .44$), $t(63) = 2.13$, $p = .037$. This result suggests that a one unit increase in education level was associated with a .94 unit increase in BCS motivation. Even though this is a small effect, it is both statistically and clinically significant. For the purposes of presentation, hypotheses 1, 2, 3 and 4 are reported as hypotheses 1, 2, 3, and 4 A (motivation) and 1, 2, 3, and 4 B (behaviors).

Contrary to hypothesis 1A, which posits that SOC is positively related to BCS motivation, the impact of SOC on BCS motivation was not significant, $b = .03$ ($SE = .03$), $t(63) = .92$, $p = .36$ when included in the model containing all of the study variables. However, when SOC was the single variable in the model predicting motivation the impact of SOC on BCS motivation was significant, $b = .069$ ($SE = .018$), $t(129) = 3.919$, $p = \leq .001$. Therefore the true contribution of SOC in predicting motivation needs to be
investigated further. Finally, the impact of spirituality was highly significant, \( b = .30 \) (\( SE = .09 \)), \( t(63) = 3.25, p = .002 \), indicating that an increase in spirituality was associated with a significant increase in BCS motivation. Analysis for hypothesis IB will be discussed later.

Analysis for hypotheses 3A and 4A which posited that spirituality and social support, respectively modifies the relationship between SOC and BCS motivation was not supported by the data.

Table 11: Regression Model for Breast Cancer Screening Motivation (N = 134)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
<th>( t )</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
<td>.36</td>
<td>.41</td>
<td>.10</td>
<td>.86</td>
<td>.39</td>
</tr>
<tr>
<td>Education</td>
<td>.94</td>
<td>.44</td>
<td>.24</td>
<td>2.13</td>
<td>.04</td>
</tr>
<tr>
<td>Age</td>
<td>.01</td>
<td>.08</td>
<td>.01</td>
<td>.07</td>
<td>.94</td>
</tr>
<tr>
<td>Risk</td>
<td>-.40</td>
<td>.78</td>
<td>-.05</td>
<td>-.51</td>
<td>.61</td>
</tr>
<tr>
<td>Barriers to Screening</td>
<td>.94</td>
<td>1.56</td>
<td>.06</td>
<td>.60</td>
<td>.55</td>
</tr>
<tr>
<td>Sense of Coherence 29</td>
<td>.03</td>
<td>.03</td>
<td>.13</td>
<td>.92</td>
<td>.36</td>
</tr>
<tr>
<td>Social Support</td>
<td>.33</td>
<td>.21</td>
<td>.20</td>
<td>1.57</td>
<td>.13</td>
</tr>
<tr>
<td>Spirituality</td>
<td>.30</td>
<td>.09</td>
<td>.37</td>
<td>3.25</td>
<td>.002</td>
</tr>
<tr>
<td>Health Perception</td>
<td>-.01</td>
<td>.01</td>
<td>-.19</td>
<td>-1.55</td>
<td>.13</td>
</tr>
</tbody>
</table>

*Breast Cancer Screening Behaviors*

To investigate whether engaging in BCS behaviors depended on participation in the Illinois Breast and Cervical Cancer Program (IBCCP), chi-square (\( \chi^2 \)) tests of independence were conducted on each of the six behavior items (see Table 12). This
technique tests the null hypotheses that the two category memberships are independent (i.e., that engaging in the behaviors is independent of participation in the free screening program). A significant chi-square statistic indicates that observations of the behaviors depend on whether or not the woman participated in the program. Because the statistical assumptions underlying the use of chi-square require that each category frequency has a minimum of five observations, a grouping variable was created to compare the IBCCP women to the non-IBCCP women. This decision meant that all of the participants in the analyses were uninsured, but that within the non-IBCCP group, there were women who were compliant as well as non-compliant with mammography screening. For most outcomes, this grouping procedure failed to satisfy the five observations per cell criteria. Although unfortunate for analytic purposes, this is not surprising because the nature of the grouping variable (participation in a free screening program) resulted in an extremely high compliance rate for the IBCCP women. Because of the low base rate (i.e., the low frequency of responses in certain categories) for some of the responses for the behavior categories, finding good (i.e., statistically reliable) predictors of the behaviors is difficult.

The tests of independence indicated that the IBCCP women were significantly more likely to intend a monthly breast self exam and to have had a mammogram than the non-IBCCP women ($\chi^2 = 4.77, p = .029$ and $13.93, p \leq .0001$, respectively). As mentioned above, the findings for mammography are not surprising, given that the IBCCP women received a free mammogram and that having received a mammogram via the IBCCP program was an inclusion criterion for women participating in the IBCCP arm
of the study. It is, however, a clinically significant finding in that it indicates the importance of the IBCCP for low-income African American women who are uninsured.

In addition, analyses indicated that IBCCP women were slightly more likely to have performed a breast self exam and to intend to have a clinical breast exam than the non-IBCCP women ($\chi^2 = 3.33$ and 3.35, both $p < .07$). Given the above findings, the next step was to attempt to identify what variables may predict whether or not a woman engaged in the specific behaviors.

Table 12: Tests of Independence between Breast Cancer Screening Behaviors and IBCCP Participation

<table>
<thead>
<tr>
<th>Behavior</th>
<th>IBCCP</th>
<th>Non-IBCCP</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has Performed a Breast Self Exam (BSE)</td>
<td>47 (88.7%)</td>
<td>6 (11.3%)</td>
<td>3.33*</td>
</tr>
<tr>
<td>Intends BSE Monthly</td>
<td>51 (96.2%)</td>
<td>2 (3.8%)</td>
<td>4.77**</td>
</tr>
<tr>
<td>Has had a Clinical Breast Exam (CBE)</td>
<td>49 (92.5%)</td>
<td>4 (7.5%)</td>
<td>1.14</td>
</tr>
<tr>
<td>Intends to Obtain CBE</td>
<td>51 (96.2%)</td>
<td>2 (3.8%)</td>
<td>3.35*</td>
</tr>
<tr>
<td>Has had a Mammogram</td>
<td>51 (98.1%)</td>
<td>1 (1.9%)</td>
<td>13.93***</td>
</tr>
<tr>
<td>Intends Mammogram</td>
<td>52 (100%)</td>
<td>0 (0%)</td>
<td>3.23</td>
</tr>
</tbody>
</table>

*Note. Cells contain category frequencies; percentage within group is listed within parentheses. Each test uses a single degree of freedom.* $p < .07$, ** $p < .05$, *** $p < .01$. 

*For example, the chi-square test indicates that there is a statistically significant difference between IBCCP and non-IBCCP groups in the percentage of women who performed a breast self exam.*
Because previous research suggests that age, socioeconomic status (SES), education, risk factors for developing breast cancer, and barriers to BCS are associated with BCS behaviors (Deshpande et al., 2009), these variables were all included as covariates in the analyses reported here. In addition to the covariates, the effects of four continuous predictor variables were assessed (sense of coherence, spirituality, health perception, and social support). Analysis determined that data did not support hypothesis 1B which posited that SOC positively impacted BCS as the findings were not significant.

To examine whether or not spirituality and social support moderated the effect of sense of coherence on the behavior variables (hypotheses 3B and 4B, respectively), interaction terms were computed by first centering social support, spirituality, and sense of coherence around their respective means, and then computing the product terms for the two-way interactions (social support X sense of coherence and spirituality X sense of coherence).

To investigate the effects of the covariates, the predictor variables, and the interaction terms on the behavior variables, procedures for the probing of single-degree-of-freedom interactions in logistic regression were used as suggested by Hayes & Matthes (2009). This procedure allows for the assessment of interaction terms, and follows up with analyses of conditional effects. Conditional effects analyses are used to decompose significant interaction terms in order to test the significance of an independent variable (in this case, sense of coherence) at low, moderate, and high levels of a moderator variable (in this case, either social support or spirituality). In addition to
providing z-tests and p-values for the significance of the conditional effects, these analyses provide 95% confidence intervals around each parameter estimate. Since the statistical test examines whether or not the conditional effect at various levels of the moderator variable is significantly different from zero, it is important that the confidence interval does not contain zero. If the confidence interval does contain zero, significant p-values for tests of conditional effects need to be interpreted with caution, due to the fact that they may be unreliable. None of the six behavioral analyses reported below resulted in significant interaction terms. Thus, hypotheses 3B and 4B failed to hold up to the prediction such that effects of sense of coherence on the odds of the various behaviors were not modified by either spirituality or social support. Thus, more parsimonious models, containing only the covariates and the un-centered predictor variables, are reported below.

Woman has given a breast self exam. The model containing the covariates and the predictors (see Table 13) fit the data significantly better than a model containing only the constant, $\chi^2(9) = 19.72, p = .02$. Inspection of the coefficients indicates that if a woman reports barriers to BCS, there is an associated decrease in the odds that she will have given herself a BSE, $b = -3.73, SE = 1.54, p = .015$. Specifically, the exponentiated coefficient (ExpB = .02) indicates that barriers to BCS are associated with a 98% decrease in the odds that a woman has ever given herself a BSE. In addition, results suggest a marginally significant effect of general health perception such that as health perception increases, the odds that a woman will have given herself a BSE increase, $b =$
Specifically, the exponentiated coefficient (ExpB = 1.01) indicates that a one unit increase in general health perception leads to a 1% increase in the odds that a woman will have given herself a BSE (see Table 13).

*Woman intends monthly breast self exam.* The model containing the covariates and the predictors did not fit the data significantly better than a model containing only the constant, $\chi^2(9) = 15.33, p = .082$. Inspection of the coefficients indicates that the only significant effect in this analysis was for barriers to BCS. If a woman indicated barriers to BCS, the odds that she intended a monthly BSE decreased, $b = -3.43, SE = 1.56, p = .028$. The exponentiated coefficient (ExpB = .03) suggests that if a woman indicated barriers to screening, the odds that she intended to give herself monthly breast exams decreased by 97%. There was a marginally significant effect of education such that for every unit increase in the degree of education obtained, there was a decrease in the odds that a woman intended monthly breast self exams, $b = -1.18, SE = .65, p = .07$. The exponentiated coefficient (ExpB = .30) indicates that increases in levels of education were associated with a 70% decrease in the odds that a woman intended to examine her breasts on a monthly basis. The above two findings should be interpreted in light of the fact that the model containing the covariates and the predictors failed to fit the data better than a model containing no predictors (i.e., the constant only model). Thus, both of these findings could be statistically unreliable (see Table 14).
Table 13: Regression Summary for Model Predicting if a Woman has had a Breast Self Exam (BSE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES—income</td>
<td>-.81</td>
<td>.63</td>
<td>.44</td>
<td>1.65</td>
<td>.20</td>
</tr>
<tr>
<td>Education</td>
<td>-.81</td>
<td>.60</td>
<td>.45</td>
<td>1.81</td>
<td>.18</td>
</tr>
<tr>
<td>Age</td>
<td>-.14</td>
<td>.12</td>
<td>.87</td>
<td>1.51</td>
<td>.22</td>
</tr>
<tr>
<td>Risk</td>
<td>-.95</td>
<td>1.21</td>
<td>.39</td>
<td>.62</td>
<td>.43</td>
</tr>
<tr>
<td>Barriers</td>
<td>-3.73</td>
<td>1.54</td>
<td>.02</td>
<td>5.91</td>
<td>.015</td>
</tr>
<tr>
<td>Health</td>
<td>.01</td>
<td>.01</td>
<td>1.01</td>
<td>3.50</td>
<td>.06</td>
</tr>
<tr>
<td>Spirituality</td>
<td>-.07</td>
<td>.07</td>
<td>.93</td>
<td>1.19</td>
<td>.28</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>-.02</td>
<td>.03</td>
<td>.98</td>
<td>.41</td>
<td>.52</td>
</tr>
<tr>
<td>Social Support</td>
<td>.16</td>
<td>.21</td>
<td>1.17</td>
<td>.56</td>
<td>.49</td>
</tr>
</tbody>
</table>

Note: Full model was significant, \( \chi^2 (9) = 19.72, p = .02 \).

Table 14: Regression Summary for Model Predicting Intentions to Perform Monthly Breast Self Exam (BSE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
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<td>3137.54</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Education</td>
<td>-1.18</td>
<td>.65</td>
<td>.31</td>
<td>3.28</td>
<td>.07</td>
</tr>
<tr>
<td>Age</td>
<td>.05</td>
<td>.07</td>
<td>1.05</td>
<td>.49</td>
<td>.48</td>
</tr>
<tr>
<td>Barriers</td>
<td>-3.43</td>
<td>1.56</td>
<td>.03</td>
<td>4.84</td>
<td>.028</td>
</tr>
<tr>
<td>Risk</td>
<td>-1.73</td>
<td>1.60</td>
<td>.18</td>
<td>1.16</td>
<td>.28</td>
</tr>
<tr>
<td>Health</td>
<td>.01</td>
<td>.01</td>
<td>1.00</td>
<td>.29</td>
<td>.59</td>
</tr>
<tr>
<td>Perception</td>
<td>.09</td>
<td>.11</td>
<td>1.09</td>
<td>.62</td>
<td>.43</td>
</tr>
<tr>
<td>Spirituality</td>
<td>-.01</td>
<td>.03</td>
<td>1.0</td>
<td>.03</td>
<td>.86</td>
</tr>
<tr>
<td>Sense of Coherence</td>
<td>.33</td>
<td>.24</td>
<td>1.39</td>
<td>1.92</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note: Full model was not significant \( \chi^2 (9) = 15.33, p = .082 \)

*Woman had obtained a clinical breast exam (CBE).* The model containing the covariates and the predictors did not fit the data significantly better than a model containing only the constant, \( \chi^2(9) = 15.56, p = .077 \). Inspection of the coefficients indicate a marginally significant effect of education such that an increase in educational
attainment was associated with a decrease in the odds that a woman had had a CBE, $b = - .79$, $SE = .46$, $p = .086$. The exponentiated coefficient ($ExpB = .45$) indicates that an increase in education was associated with a 55% decrease in the odds that a woman would have obtained a CBE. In addition, there was a marginally significant effect of barriers to screening such that if a woman indicated barriers, the odds that she would have obtained a CBE decreased, $b = 2.25$, $SE = 1.16$, $p = .052$. The exponentiated coefficient ($ExpB = .11$) indicates that barriers to BCS are associated with an 89% decrease in the odds that a woman will have obtained a CBE. The above two findings should be interpreted in light of the fact that the model containing the covariates and the predictors failed to fit the data better than a model containing no predictors (i.e., the constant only model). Thus, both of these findings could be statistically unreliable (see Table 15).

Table 15: Regression Summary for Model Predicting Whether Woman had Obtained a Clinical Breast Exam (CBE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES – income</td>
<td>.14</td>
<td>.39</td>
<td>1.15</td>
<td>.13</td>
<td>.72</td>
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<tr>
<td>Education</td>
<td>-.79</td>
<td>.46</td>
<td>.45</td>
<td>2.94</td>
<td>.09</td>
</tr>
<tr>
<td>Age</td>
<td>-.03</td>
<td>.07</td>
<td>.97</td>
<td>.27</td>
<td>.61</td>
</tr>
<tr>
<td>Barriers</td>
<td>-2.25</td>
<td>1.16</td>
<td>.11</td>
<td>3.79</td>
<td>.05</td>
</tr>
<tr>
<td>Risk</td>
<td>-2.46</td>
<td>1.54</td>
<td>.09</td>
<td>2.53</td>
<td>.11</td>
</tr>
<tr>
<td>Health</td>
<td>.01</td>
<td>.01</td>
<td>1.00</td>
<td>.14</td>
<td>.71</td>
</tr>
<tr>
<td>Perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>.02</td>
<td>.08</td>
<td>1.01</td>
<td>.04</td>
<td>.85</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>.01</td>
<td>.03</td>
<td>1.01</td>
<td>.15</td>
<td>.70</td>
</tr>
<tr>
<td>Social Support</td>
<td>.12</td>
<td>.17</td>
<td>1.13</td>
<td>.50</td>
<td>.48</td>
</tr>
</tbody>
</table>

*Note: Full model not significant, $\chi^2 (9) = 15.56$, $p = .077.$*
**Woman intends to obtain a CBE.** The model containing the covariates and the predictor variables fit the data significantly better than the model that contained only the constant, $\chi^2 (9) = 18.65, p = .028$. Inspection of the coefficients indicates only three marginally significant effects. First, a woman’s risk of developing breast cancer was associated with a decrease in the odds that a woman intended to obtain a CBE, $b = -4.61, SE = 2.56, p = .072$. The exponentiated coefficient (ExpB = .01) indicates that increasing risk is associated with a 99% decrease in the odds that a woman will obtain a CBE. Despite the marginal statistical significance of this result, this finding may have enormous clinical significance with regard to primary care physicians completing CBE during routine visits. Second, increases in general health perception were associated with an increase in the odds that a woman intended to obtain a CBE, $b = .02, SE = .01, p = .10$. The exponentiated coefficient (ExpB = 1.02) suggests that increases in general health perception increase the odds that a woman intends to obtain a CBE by 2%. Thus, none of the variables in the model increased or decreased the odds that a woman intended to obtain a CBE.

Finally, increases in social support were associated with an increase in the odds that a woman intended to obtain a CBE, $b = .78, SE = .44, p = .07$. The exponentiated coefficient (ExpB = 2.18) indicates that increases in social support were associated with a 118% increase in the odds that a woman intended to obtain a CBE (see Table 16).
Table 16: Regression Summary for Model Predicting Whether Woman Intends to Obtain a Clinical Breast Exam (CBE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES—income</td>
<td>-17.20</td>
<td>3095.06</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Education</td>
<td>-.91</td>
<td>.58</td>
<td>.40</td>
<td>2.46</td>
<td>.12</td>
</tr>
<tr>
<td>Age</td>
<td>.11</td>
<td>.07</td>
<td>1.11</td>
<td>2.33</td>
<td>.13</td>
</tr>
<tr>
<td>Barriers</td>
<td>.05</td>
<td>1.68</td>
<td>1.06</td>
<td>.00</td>
<td>.97</td>
</tr>
<tr>
<td>Risk</td>
<td>-4.61</td>
<td>2.56</td>
<td>.01</td>
<td>3.23</td>
<td>.07</td>
</tr>
<tr>
<td>Health</td>
<td>.02</td>
<td>.01</td>
<td>1.02</td>
<td>2.76</td>
<td>.10</td>
</tr>
<tr>
<td>Spirituality</td>
<td>.01</td>
<td>.09</td>
<td>1.01</td>
<td>.02</td>
<td>.89</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>-.15</td>
<td>.10</td>
<td>.87</td>
<td>2.21</td>
<td>.14</td>
</tr>
<tr>
<td>Social Support</td>
<td>.78</td>
<td>.44</td>
<td>2.18</td>
<td>3.21</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: Full model significant, $\chi^2 (9) = 18.65$, $p = .028$.

**Woman has had a mammogram.** The model containing the covariates and the predictors fit the data significantly better than the model that contained only the constant, $\chi^2 (9) = 50.92$, $p \leq .0001$. However, inspection of the table of coefficients (see Table 10) indicated that none of the individual predictors had a statistically significant effect on the odds of whether a woman had had a mammogram. This often happens with logistic regression equations that contain multiple predictors. The analysis begins by testing whether or not all of the variables, in combination, fit the data better than the constant only model. Then, the unique contributions of each of the individual level predictors are all tested for significance individually. Thus, the results for this analysis can be interpreted as follows: When testing the effect of the covariates and predictors as a complete unit, the prediction of whether a woman has had a mammogram improves. However, no single variable, in isolation, exerts a significant impact on this behavior (see Table 17).
Table 17: Regression Summary for Model Predicting Whether Woman has Obtained a Mammogram

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES—income</td>
<td>-14.29</td>
<td>1603.01</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Education</td>
<td>-37.89</td>
<td>2320.23</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Age</td>
<td>-9.66</td>
<td>399.31</td>
<td>.00</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Barriers</td>
<td>-241.18</td>
<td>7844.67</td>
<td>.00</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Risk</td>
<td>-207.32</td>
<td>9184.65</td>
<td>.00</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Health</td>
<td>.48</td>
<td>23.68</td>
<td>1.62</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Spirituality</td>
<td>4.96</td>
<td>484.895</td>
<td>142.14</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>-1.16</td>
<td>68.42</td>
<td>.31</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Social Support</td>
<td>12.16</td>
<td>424.82</td>
<td>191.185</td>
<td>.00</td>
<td>.98</td>
</tr>
</tbody>
</table>

Note: Full model significant, $\chi^2(9) = 50.92, p \leq .0001$.

**Woman intends to obtain mammogram.** The model containing the covariates and the predictors fit the data significantly better than the model that contained only the constant, $\chi^2(9) = 18.44, p = .03$. However, as before, inspection of the table of coefficients indicated that none of the individual predictors had a statistically significant effect on the odds of whether a woman intended to obtain a mammogram. Thus, the results for this analysis can be interpreted as follows: When testing the effect of the covariates and predictors as a complete unit, the prediction of whether a woman intends to obtain a mammogram improves. However, no single variable, in isolation, exerts a significant impact on this behavior (see Table 18).
Table 18: Regression Summary for Model Predicting Whether Woman Intends to Obtain a Mammogram

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Exp (B)</th>
<th>Wald</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES—income</td>
<td>-37.79</td>
<td>11158.71</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Education</td>
<td>-22.81</td>
<td>3550.16</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Age</td>
<td>.39</td>
<td>243.47</td>
<td>1.48</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Barriers</td>
<td>-2.19</td>
<td>8820.04</td>
<td>.11</td>
<td>.00</td>
<td>1.0</td>
</tr>
<tr>
<td>Risk</td>
<td>-36.49</td>
<td>5932.37</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Health</td>
<td>.20</td>
<td>53.09</td>
<td>1.22</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Spirituality</td>
<td>2.86</td>
<td>1611.17</td>
<td>17.45</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>-.37</td>
<td>190.85</td>
<td>.69</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.10</td>
<td>548.91</td>
<td>.90</td>
<td>.00</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Note: Full model significant, $\chi^2(9) = 18.44, p = .03$.

Mediation Analyses

Breast cancer screening motivation. Hypothesis 2A posited that health perception would mediate the relationship between sense of coherence and BCS motivations. Because the previous set of analyses indicated that the effect of sense of coherence on BCS motivation was not significant, the first condition for mediation required by Baron and Kenny (1986) was not satisfied. Thus, hypothesis 2A was not supported.

Breast cancer screening behaviors. Hypothesis 2B posited that health perception would mediate the relationship between sense of coherence and BCS behaviors. Because these analyses indicated that there was no direct effect of sense of coherence on either of the behaviors, the first condition for mediation required by Baron and Kenny (1986) was not satisfied. Thus, hypothesis 2B was not supported.
Effect of Participation in the Illinois Breast and Cervical Cancer Screening Program (IBCCP)

Hypothesis five posited that uninsured African American women who utilized the free mammogram screening program offered by the IBCCP would have stronger sense of coherence, greater spirituality, greater health perception, greater motivation to engage in BCS, and increased social support than uninsured African American women who did not utilize the free screening program. To address this question, Analysis of Variance (ANOVA) was used to test for mean differences of the dependent variables across three different groups: the IBCCP women, the non-IBCCP women who were compliant with mammography screening, and the non-IBCCP women who were not compliant with mammography screening (see Table 19).

Table 19: Descriptive Statistics for Illinois Breast and Cervical Cancer (IBCCP) and Non-IBCCP Women.

<table>
<thead>
<tr>
<th>Variable</th>
<th>IBCCP</th>
<th>NON-IBCCP—Uninsured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Compliant</td>
<td>Compliant</td>
</tr>
<tr>
<td>Health Perception</td>
<td>532.33 (160.62)</td>
<td>495.48 (161.92)</td>
</tr>
<tr>
<td></td>
<td>(n = 53)</td>
<td>(n = 27)</td>
</tr>
<tr>
<td></td>
<td>496.86 (135.08)</td>
<td>(n = 7)</td>
</tr>
<tr>
<td>Motivation</td>
<td>41.45 (6.39)</td>
<td>40.96 (5.51)</td>
</tr>
<tr>
<td></td>
<td>(n = 51)</td>
<td>(n = 25)</td>
</tr>
<tr>
<td></td>
<td>40.29 (8.69)</td>
<td>(n = 7)</td>
</tr>
<tr>
<td>Social Support</td>
<td>20.50 (3.19)</td>
<td>19.11 (3.90)</td>
</tr>
<tr>
<td></td>
<td>(n = 50)</td>
<td>(n = 27)</td>
</tr>
<tr>
<td></td>
<td>20.14 (4.67)</td>
<td>(n = 7)</td>
</tr>
<tr>
<td>Spirituality</td>
<td>52.42 (9.39)</td>
<td>50.33 (9.27)</td>
</tr>
<tr>
<td></td>
<td>(n = 53)</td>
<td>(n = 27)</td>
</tr>
<tr>
<td></td>
<td>54.71 (3.59)</td>
<td>(n = 7)</td>
</tr>
<tr>
<td>Sense of Coherence 29</td>
<td>146.17 (28.36)</td>
<td>143.74 (28.15)</td>
</tr>
<tr>
<td></td>
<td>(n = 53)</td>
<td>(n = 27)</td>
</tr>
<tr>
<td></td>
<td>133.43 (21.83)</td>
<td>(n = 7)</td>
</tr>
</tbody>
</table>

*Note. Standard deviations (SD) appear in parentheses.*
Results indicated that these three groups show no differences on mean levels of sense of coherence, BCS motivation, general health perception, spirituality, or social support (see Table 20).

Table 20: Analysis of Variance Results: IBCCP versus Non-IBCCP Uninsured Compliant versus Non-IBCCP Uninsured Non-Compliant

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>df</th>
<th>F</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Health Perception</td>
<td>(2, 84)</td>
<td>.55</td>
<td>.582</td>
</tr>
<tr>
<td>Breast Cancer Screening</td>
<td>(2, 80)</td>
<td>.13</td>
<td>.878</td>
</tr>
<tr>
<td>Sense of Coherence – 29</td>
<td>(2, 84)</td>
<td>.66</td>
<td>.521</td>
</tr>
<tr>
<td>Social Support</td>
<td>(2, 81)</td>
<td>1.34</td>
<td>.267</td>
</tr>
<tr>
<td>Spirituality</td>
<td>(2, 84)</td>
<td>.83</td>
<td>.442</td>
</tr>
</tbody>
</table>

**Behavioral Differences among Four Sub-groups of Non-IBCCP Women**

Because no significant differences emerged from the previous analysis of hypothesis five, a supplementary analysis was conducted to take a closer look at only the women that were not in the IBCCP program. Within this group of women, there were four groups: those who were uninsured and compliant with mammography screening, those who were insured and compliant with mammography screening, those who were uninsured and noncompliant with mammography screening, and those who were insured and noncompliant with mammography screening (see Table 21). Results indicated a significant difference among these means for the spirituality score, $F(3, 77) = 4.23$, $p = .008$. Tukey’s HSD test for multiple post-hoc comparisons revealed that non-IBCCP women who were insured and compliant had significantly higher spirituality scores than non-IBCCP women who were uninsured and non-compliant ($Ms = 55.92$ versus 50.33,
respectively), \( t(61) = 3.39, p = .006 \). No other comparison was statistically significant (see Table 22).

Table 21: Descriptive Statistics for Non-IBCCP Women on Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Uninsured Non-Compliant</th>
<th>Insured Non-Compliant</th>
<th>Uninsured Compliant</th>
<th>Insured Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Perception</td>
<td>495.48 (161.92)</td>
<td>541.23 (194.33)</td>
<td>496.86 (135.08)</td>
<td>566.82 (135.59)</td>
</tr>
<tr>
<td>(n = 27)</td>
<td>n = 11</td>
<td>n = 7</td>
<td>n = 7</td>
<td>n = 36</td>
</tr>
<tr>
<td>Motivation</td>
<td>40.96 (5.51)</td>
<td>40.72 (4.13)</td>
<td>40.29 (8.69)</td>
<td>42.86 (4.79)</td>
</tr>
<tr>
<td>(n = 25)</td>
<td>n = 11</td>
<td>n = 7</td>
<td>n = 7</td>
<td>n = 36</td>
</tr>
<tr>
<td>Social Support</td>
<td>19.11 (3.90)</td>
<td>19.91 (2.98)</td>
<td>20.14 (4.67)</td>
<td>21.39 (2.48)</td>
</tr>
<tr>
<td>(n = 27)</td>
<td>n = 11</td>
<td>n = 7</td>
<td>n = 7</td>
<td>n = 36</td>
</tr>
<tr>
<td>Spirituality</td>
<td>50.33 (9.27) ( ^a )</td>
<td>55.72 (4.65)</td>
<td>54.71 (3.59)</td>
<td>55.92 (4.45) ( ^a )</td>
</tr>
<tr>
<td>(n = 27)</td>
<td>n = 11</td>
<td>n = 7</td>
<td>n = 7</td>
<td>n = 36</td>
</tr>
<tr>
<td>Sense of Coherence—29</td>
<td>143.74 (28.15)</td>
<td>150.91 (33.85)</td>
<td>133.43 (21.83)</td>
<td>156.94 (23.20)</td>
</tr>
<tr>
<td>(n = 27)</td>
<td>n = 11</td>
<td>n = 7</td>
<td>n = 7</td>
<td>n = 36</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations (SD) appear in parentheses. Cells that share a subscript are significantly different at \( p < .01 \).

Table 22: Analysis of Variance Results for Four Sub-Groups of Non-IBCCP Women

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>df</th>
<th>( F )</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Health Perception</td>
<td>(3, 77)</td>
<td>1.26</td>
<td>.294</td>
</tr>
<tr>
<td>Breast Cancer Screening</td>
<td>(3, 75)</td>
<td>1.00</td>
<td>.396</td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of Coherence</td>
<td>(3, 77)</td>
<td>2.25</td>
<td>.089</td>
</tr>
<tr>
<td>Social Support</td>
<td>(3, 77)</td>
<td>2.56</td>
<td>.061</td>
</tr>
<tr>
<td>Spirituality</td>
<td>(3, 77)</td>
<td>4.23</td>
<td>.008</td>
</tr>
</tbody>
</table>
Post hoc Analyses

Breast Cancer Screening Behaviors: SOC-13

Post hoc analyses were conducted using the SOC 13 to evaluate if there were differences in the results compared to the results observed using the SOC 29. Only differences that had significant results are reported to avoid redundancy.

*Woman intends monthly breast self exam.* The model containing the covariates, the predictors, and the social support X sense of coherence interaction term fit better than the constant only model, $\chi^2(10) = 14.49, p \leq .05$. The only significant term in this model, however, was the interaction between social support and sense of coherence, $b = -0.04$ ($SE = 0.02), p = .05$. This means that the relationship between sense of coherence and expressed intention to perform a monthly breast self exam is contingent on social support (see Table 23). The next step was to analyze the conditional effect of sense of coherence at low, moderate, and high levels of social support as suggested by Hayes and Matthes (2009). This analysis indicates that at low levels of social support, increases in sense of coherence are associated with an increase odds that a woman intends to perform monthly breast exams, but the confidence interval around this effect suggests that it is not statistically reliable, $b = .23, (SE = .13), p \leq .06$ (see Table 24).

The remaining logistic regression models using the SOC 13 for breast cancer screening behaviors including woman has given a BSE, woman had obtained a CBE, woman intends to obtain a CBE, woman has had a mammogram and women intends to
obtain mammogram did not result in statistically significant findings and therefore will not be discussed further.

Table 23: Regression Summary for Model Predicting Intentions to Perform Monthly Breast Self Exam (BSE)–SOC 13

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Z</th>
<th>Exp (B)</th>
<th>Wald</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
<td>.20</td>
<td>.28</td>
<td>.72</td>
<td>1.22</td>
<td>.52</td>
</tr>
<tr>
<td>Education</td>
<td>-.24</td>
<td>.39</td>
<td>-.62</td>
<td>.79</td>
<td>.38</td>
</tr>
<tr>
<td>Age</td>
<td>.04</td>
<td>.06</td>
<td>.55</td>
<td>1.03</td>
<td>.31</td>
</tr>
<tr>
<td>Barriers</td>
<td>1.44</td>
<td>1.24</td>
<td>1.16</td>
<td>4.20</td>
<td>1.34</td>
</tr>
<tr>
<td>Health</td>
<td>.01</td>
<td>.01</td>
<td>.93</td>
<td>1.0</td>
<td>.86</td>
</tr>
<tr>
<td>Perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>-.03</td>
<td>.07</td>
<td>-.43</td>
<td>.97</td>
<td>.18</td>
</tr>
<tr>
<td>Sense of Coherence</td>
<td>.09</td>
<td>.07</td>
<td>1.34</td>
<td>1.09</td>
<td>1.79</td>
</tr>
<tr>
<td>Social Support</td>
<td>.59</td>
<td>.36</td>
<td>1.66</td>
<td>1.80</td>
<td>2.76</td>
</tr>
<tr>
<td>Sense of Coherence X Social Support</td>
<td>-.04</td>
<td>.02</td>
<td>-1.93*</td>
<td>.96</td>
<td>3.73</td>
</tr>
</tbody>
</table>

*Note. *p < .05

` Variables are mean-centered.

Table 24: Conditional Effect of Sense of Coherence at Values of Social Support for Intentions to Give Breast Self Examination–SOC 13

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>B</th>
<th>SE</th>
<th>Z</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>.23</td>
<td>.13</td>
<td>1.84*</td>
<td>-.0156</td>
<td>.4840</td>
</tr>
<tr>
<td>Moderate</td>
<td>.10</td>
<td>.07</td>
<td>1.42</td>
<td>-.0380</td>
<td>.2376</td>
</tr>
<tr>
<td>High</td>
<td>-.03</td>
<td>.06</td>
<td>-.60</td>
<td>-.1476</td>
<td>.0784</td>
</tr>
</tbody>
</table>

*Note. *p < .06.

LLCI = Lower level of 95% confidence interval around B.
ULCI = Upper level of 95% confidence interval around B.
Breast Cancer Screening Motivation

A second post-hoc analysis was run incorporating breast cancer screening motivation as a predictor variable for six breast cancer screening behaviors using the SOC 29. Women have performed monthly BSE was the only behavior that had a significant finding. The more parsimonious model containing the predictor variables as previously delineated with motivation as a predictor variable added, the social support X sense of coherence interaction term and the spirituality X sense of coherence fit better than the constant only model, $\chi^2(7) = 20.75, p \leq .01$. Inspection of the coefficients indicates three statistically significant effects.

First, motivation was significantly associated with a woman performing monthly BSE, $b = -.13, SE = .05, p = .02$. The exponentiated coefficient ($\text{ExpB} = .88$) indicates that increasing motivation is associated with a 12% decrease in the odds that a woman will perform monthly BSE. Second, spirituality was significantly associated with a woman performing monthly BSE, $b = -.08, SE = .04, p = .04$. The exponentiated coefficient ($\text{ExpB} = .92$) indicates that increasing spirituality is associated with a 8% decrease in the odds that a woman will perform monthly BSE. Third, the interaction between social support and sense of coherence was significant, $b = -.02 (SE = .01), p = .04$. This means that the relationship between sense of coherence and expressed intention to perform a monthly breast self exam is contingent on social support (see Table 25). The next step was to analyze the conditional effect of sense of coherence at low, moderate, and high levels of social support as suggested by Hayes and Matthes (2009). This
analysis indicates that at low levels of social support, increases in sense of coherence are associated with an increase odds that a woman has performed monthly breast exams, the confidence interval around this effect suggests that it is statistically reliable, \( b = .06, (SE = .03), p \leq .05 \) (see Table 26).

Table 25: Regression Summary for Model Predicting Women Performing Monthly Breast Self Examination (BSE) with Motivation as a Predictor

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>( SE )</th>
<th>( Z )</th>
<th>( \text{Exp (B)} )</th>
<th>( \text{Wald} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>-.00</td>
<td>.01</td>
<td>-.26</td>
<td>1.0</td>
<td>.07</td>
</tr>
<tr>
<td>Perceptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>-.14</td>
<td>.08</td>
<td>-1.76</td>
<td>.87</td>
<td>3.09</td>
</tr>
<tr>
<td>Spirituality</td>
<td>-.11</td>
<td>.06</td>
<td>-1.96**</td>
<td>.90</td>
<td>3.86</td>
</tr>
<tr>
<td>Sense of Coherence 29</td>
<td>.02</td>
<td>.02</td>
<td>.97</td>
<td>1.02</td>
<td>.94</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.32</td>
<td>.18</td>
<td>-1.76</td>
<td>.73</td>
<td>3.11</td>
</tr>
<tr>
<td>Sense of Coherence X Social Support</td>
<td>-.01</td>
<td>.02</td>
<td>-1.85*</td>
<td>.99</td>
<td>3.41</td>
</tr>
</tbody>
</table>

\( \text{Note.} \) * \( p < .06 \), ** \( p < .05 \)

Table 26: Conditional Effect of Sense of Coherence at Values of Social Support for Women Performing Monthly Breast Self Examination (BSE) with Motivation as a Predictor

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>( B )</th>
<th>( SE )</th>
<th>( Z )</th>
<th>( \text{LLCI} )</th>
<th>( \text{ULCI} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>.06</td>
<td>.03</td>
<td>2.16*</td>
<td>.0052</td>
<td>.1080</td>
</tr>
<tr>
<td>Moderate</td>
<td>.10</td>
<td>.02</td>
<td>.95</td>
<td>-.0205</td>
<td>.0589</td>
</tr>
<tr>
<td>High</td>
<td>-.02</td>
<td>.03</td>
<td>-.59</td>
<td>-.0788</td>
<td>.0423</td>
</tr>
</tbody>
</table>

\( \text{Note.} \) * \( p < .05 \).

\( \text{LLCI} = \) Lower level of 95\% confidence interval around \( B \).
\( \text{ULCI} = \) Upper level of 95\% confidence interval around \( B \).
Factorial ANOVA for Non-IBCCP Sub-groups

Using a general linear model a factorial ANOVA was conducted to explore mean differences between the four subgroups identified among the non-IBCCP participants. For this analysis SOC, health perception, motivation, social support and spirituality were treated as dependent variables. Multivariate tests were used to allow looking at all five dependent variables at one time rather than running five separate ANOVA. Two factors were explored in looking for difference in mean variables between non-IBCCP women; one, whether the women were insured or not insured and two, whether the women were compliant or not compliant with mammography. With all dependent variables together there were no effective factors however, in tests of between-subject effects a significant difference was found in the spirituality score. Further analysis was conducted to determine the contributing factor (insurance or compliance) to this difference. Overall, the effect of insurance resulted in higher scores on all five dependent variables (SOC, health perception, motivation, social support and spirituality). Tukey’s post hoc analysis found the significant main effect of insurance was such that women who were insured had a significantly higher SOC 29 ($M = 155.53$) than women who were uninsured ($M = 143.25$), $t(71) = 2.01$, $p = .05$.

Supplementary analysis exploring the effect of compliance on the dependent variables among non-IBCCP women found that although women compliant with mammograms scored higher on health perception, motivation and spirituality none of these mean differences were statistically significant. In addition, non-compliant women
scored higher on SOC than compliant women. No further analyses were conducted on the compliance factor.

**Qualitative Analysis**

*Spirituality Concept*

Reed’s Spirituality Perspective Scale contains a qualitative item which asks participants to “describe how you define spirituality.” Forty seven of the 134 participants provided written responses to this item. These data were analyzed using an open-coding process (Corbin & Strauss, 2007). In keeping with open-coding techniques, data were analyzed and codes generated to give an initial description of the conceptual nature of the data. Data were categorized and sub-categorized to describe the properties of the concept “spirituality.” Forty seven percent of the participants described spirituality as believing in a higher power while 62% identified the higher power as God, Jesus Christ and/or the Holy Spirit.

Content analyses of the participants’ written description of how they defined spirituality revealed five categories (domains) and the respective subcategories (see Table 27). Participants described spirituality in terms of believing in a higher power (God, Jesus Christ, and/or Holy Spirit), in terms of what God/Jesus Christ is, what believing in a Higher Power does or brings to their lives, and how believing in a Higher Power affects who they are as people.
Table 27: Qualitative Description of Spirituality Categories and Subcategories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Believing in a higher power (God, Jesus Christ, Holy Spirit)</td>
<td>Described as awareness of, trusting in, faith in, knowledge of, sense of, personal relationship with, communication with</td>
</tr>
<tr>
<td>Described what God is.</td>
<td>Divine intelligence, immutability, permanence, tangible, unconditional love</td>
</tr>
<tr>
<td>Described what believing in a Higher Power does or brings to their lives.</td>
<td>Important part of life, source of inner peace, joy, strength, hope, faith, quiet, guidance, comfort, calm, endurance, coping, uplifting, positive outlook</td>
</tr>
<tr>
<td>Described how believing in a Higher Power affects who they are as people.</td>
<td>Altruism, compassion, caring for everyone, helping others</td>
</tr>
</tbody>
</table>

Participants described spirituality in terms of believing in, awareness of, knowledge of, faith in, personal relationship with and/or communicating with a higher power. Examples of this concept include:

- Spirituality is my relationship with God and how I communicate and relate to Him.
- Spirituality is believing in a divine source of creation and that we are all connected to this divine presence (God).
- Faith beyond what I see or hear.
- To me it’s a belief in God.
- Believing and relying on the Higher Power of our Lord and Savior that our physical and mental state is all in His hands…Trust.
- Spirituality is knowing God and knowing what He can do in my and our lives.

The second category includes participants’ description of what God / Jesus Christ is. Words used to characterize God included Divine intelligence, immutability,
permanence, tangible, and unconditional love. Examples of participants’ description in terms of what God is include:

- God is good.
- I strongly believe there is a creator, Jesus Christ.
- God is my guiding light through times of tribulation.
- God is an important part of my life.
- God is the head of my life.
- The assurance that He loves you unconditionally and wants the best for you.

The third category includes participants’ description in terms of what believing in a Higher Power does or brings to their lives. Participants described it as an important part of life, a source of inner peace, joy, strength, hope, faith, quiet, guidance, comfort, calm, endurance, coping, uplifting, and a positive outlook. Examples include:

- A feeling to help me cope with life in general.
- It directs me and comforts me through everything I go through.
- It keeps me real about the ups and downs in life.
- It gives me hope that things can always get better no matter how bad they seem.
- My spirituality helps me to laugh to keep from crying but more than that it makes me aware that the good in my life far outweighs the bad.

Finally, participants described how believing in a Higher Power affects who they are as individuals and how they interact with others using terms such as altruism, compassion, caring for everyone, and helping others. Examples include:
• To me it is serving others in any way you can help or assist in their time of need.

   Speaking to strangers, help in information, blessing them, passing on a spiritual word if they are down at the moment.

• Who did I touch with a nice word? How many times did I smile or laugh? Was I able to put a smile on someone’s face?

One participant summed up the definition of spirituality as:

My personal relationship with God (the Father, Jesus Christ, God the Son and the Holy Spirit). Knowing that all things in my life are under His control and His authority. Knowing that with Him as head in and over my life all is well regardless of circumstances. God is my peace, love, endurance, hope and faith. He is my everything and in that I have strength and peace to overcome and endure anything. I love God. He’s my everything.

In summary, participants defined spirituality as believing in a Higher Power that guides their lives and is a source of unconditional love, peace, and strength; as a result individuals are able to cope with life’s situations and maintain a positive attitude and assurance that all is well. These findings were similar to those reported by (Mattis, 2000).
CHAPTER FIVE
DISCUSSION

Introduction

The overall purpose of this cross-sectional comparison study was to address the following phenomenon; within low resource environments, some individuals exhibit the ability to maintain health promoting attitudes and behaviors in the face of multiple barriers while others do not. How such individuals surmount such barriers remains unanswered. Clarification of this phenomenon, however, can serve to guide the development of more effective approaches to increase health behaviors, like breast cancer screening.

Salutogenesis offers a framework by which researchers can explore and perhaps shed some light on this phenomenon. The salutogenic theory supports a health oriented conceptual framework in that it focuses on the health end of the continuum as opposed to illness. This perspective allows the researcher to explore the positive aspects of health motivation and behavior (Sullivan, 1989).

Two key elements in salutogenesis are an individual’s orientation toward problem solving and their capacity to use the resources available (Lindstrom & Eriksson, 2005). Sense of coherence (SOC), a central component of salutogenesis, encompasses the problem solving or salutogenic element. SOC is defined as a person’s generalized
orientation toward the world, which is perceived on a continuum. An individual with high SOC perceives the world, as comprehensible, manageable and meaningful. Sense of coherence involves the ability to comprehend the whole situation and the capacity to use the resources available, which, in turn, makes movement toward the health end of the disease-health continuum possible (Antonovsky, 1987). Antonovsky called these “general resistance resources.” General resistance resources (GRRs) can include materials, knowledge/intelligence, social support, commitment, cultural stability, religion/philosophy, and preventive health orientation. The GRRs explored in this study were health perception, spirituality and social support. Antonovsky posited that the strength of one’s SOC was a significant factor in facilitating movement toward health. In this case, AAW’s breast cancer screening motivation and behavior. When confronted with barriers to health promotion, the individual with a strong SOC will be motivated to practice BCS activities (meaningfulness), will believe in the importance of BCS (comprehensibility), and believe that resources to practice BCS activities are available (manageability).

Rather than looking solely at barriers to health behavior, the salutogenic approach allows examination of those attributes or perceived characteristics of individuals who overcome barriers in order to maintain health. More specifically, this study examined AAW and their breast cancer screening motivation and behaviors and explores several variables and the impact those variables have on the breast cancer screening motivation and behaviors among this group of women. Breast cancer screening activities (e.g., BSE,
CBE and mammography) are considered health promotive activities which are in keeping with the salutogenic framework (Antonovsky, 1996; Lindstrom & Eriksson, 2005; Lindstrom & Eriksson, 2006).

**Study Hypotheses**

Five hypotheses were tested in this study. These hypotheses were derived primarily from the salutogenic framework which posits that the individual with a strong SOC will be motivated to practice BCS activities and will utilize resources that are available to maintain breast health. Thus the five study hypotheses are: 1) SOC is positively related to BCS motivation and behaviors of AAW; 2) health perception mediates the relationship between SOC and BCS motivation and behaviors in AAW; 3) spirituality modifies the relationship between SOC and BCS motivation and behaviors in AAW; 4) social support modifies the relationship between SOC and BCS motivation and behaviors in AAW; and 5) AAW who utilize free mammogram screening programs will have a stronger SOC, greater spirituality, and increased social support than AAW who do not utilize free mammogram screening programs. For purposes of presentation hypotheses one, two, three and four were divided into A (motivation) and B (behaviors). The behavior variables included the following: woman has performed a BSE; woman intends to do monthly BSE; woman has obtained a CBE; woman intends to obtain a CBE; woman has had a mammogram; and woman intends to obtain a mammogram.
Hypothesis One

Hypothesis one posited that SOC is positively related to BCS motivation and behaviors of AAW. This hypothesis was primarily based on Antonovsky’s position that the strength of one’s SOC was a significant factor in facilitating the individual’s movement toward health. That is, the individual will be motivated to practice health promotive behaviors (Antonovsky, 1996). Table 16 illustrates the correlation between all of the study variables including the co-variables. Sense of coherence is strongly correlated with BCS motivation indicating that the greater SOC the greater BCS motivation. However, the regression model demonstrated that SOC was not predictive of BCS motivation at a significant level. Therefore, data only partially supported hypothesis 1A.

Hypothesis 1B posited that SOC is positively related to BCS behaviors of AAW. Logistic regression performed on all of the models including the behavior variables indicated that the data did not support the hypothesis that SOC was predictive of BCS behaviors.

In summary, the data from the sample of AAW only partially supported hypothesis one in that SOC was strongly and significantly correlated with BCS motivation but was not predictive of motivation and SOC was not an independent predictor of BCS behaviors. Extensive review of the literature did not provide evidence of any studies that explored the relationship between SOC and BCS motivation and behavior in women in general or in African American women specifically, thus there are
no comparative results to discuss. Although, in the model including all of the variables, SOC by itself, was not predictive of BCS motivation and behavior, these data did show that the model that included all of the predictor variables (SOC, health perception, spirituality and social support) was predictive of both BCS motivation and behavior.

Similar to the findings from this study, others have indicated that SOC is associated with preventive health behaviors. Antonovsky and Kats (1970) defined preventive health behavior as engaging in activities which, in keeping with current consensus of medical professionals, contribute to the early detection of disease. Antonovsky (1987) suggested that SOC is a key determinant in the maintenance of health and theorized that individuals with a strong SOC have the ability to mobilize resources and possess the motivation to maintain healthy outcomes. Wainwright, et al. (2007) concluded that having a strong SOC is associated with healthy lifestyle choices and may be instrumental in health promotion activities. In this current study, healthy outcomes are comparable to AAW practicing preventive health behavior by being compliant with BCS activity recommendations. Practicing BCS behaviors ultimately results in early detection of breast cancer abnormalities and subsequently impacts breast cancer mortality rates among AAW.

**Hypothesis Two**

Hypothesis two posited that health perception mediates the relationship between SOC and BCS motivation and behaviors in AAW. In a study by George (1999), AAW’s health self-assessment was negatively related to their SOC, while strong SOC was
negatively related to health status. Studies by Antonovsky (1985, 1987) led to the conclusion that a strong SOC was related to good health and low SOC was related to perceptions of poor health. SOC seemed to have a salutogenic effect on the three dimensions of health (psychological, physical well-being, and functional status).

Collectively, the literature indicates that health perception of AAW bear a direct relationship to SOC (George, 1999). Sullivan (1993) posited that the relationship between SOC and health was indirect and mediated by the role of SOC in the management of tension.

Baron and Kenny (1986) defined mediators as variables that change the association between the independent and outcome variables. Bennett (2000) explained mediators as variables that provide additional information about how and why independent and outcome variables are strongly associated. A mediator effect is only tested if there is a significant direct association between the independent variable and the outcome variable. In this study, the direct association between SOC and BCS motivation was not statistically significant; therefore the mediator model was not tested.

Because regression analyses indicated that the effect of SOC on breast cancer motivation was not significant, the first condition for mediation required by Baron and Kenny (1986) was not satisfied, thus hypothesis 2A was not supported. Because these analyses indicated that there was no direct association of sense of coherence on any of the six behaviors, the first condition for mediation required by Baron and Kenny was not satisfied, thus hypothesis 2B was not supported.
Although the mediator effect was not tested, there was a significant positive correlation found between SOC and health perception, indicating that as SOC score increased, health perception increased. The study participants scored high on both the SOC and health perception scales. In fact, health perception was correlated with the most variables in the model along with spirituality. This indicates that although health perception did not mediate the effect of SOC on BCS motivation or behaviors, it is however, correlated with multiple variables that when combined in a model were predictive of BCS motivation and behavior.

_Hypothesis Three_

Hypothesis three posited that spirituality modifies the relationship between SOC and BCS motivation and behaviors in AAW. Bennett (2000) defined a moderator as an independent variable that affects the strength of an association between an independent variable and an outcome variable. The moderator interacts with the independent variable of interest so that the association between the independent variable and the outcome variable is stronger or weaker at different levels of the moderator variable. Moderation implies that there is a causal relationship between the predictor variable and the outcome variable and that this relationship changes as a function of the moderator variable (Baron & Kenny, 1986). Therefore, this study posited that the levels of spirituality modify the relationship between SOC and BCS motivation and behaviors.

The rational for assessing spirituality as a modifier of the relationship between SOC and BCS motivation and behaviors was derived from literature indicating the
importance of including spirituality in studies of AAW. Spirituality is a major construct among AAW and its effects on healthcare utilization (Dessio et al., 2004). Dessio et al. reported a positive association between spirituality and different health behaviors such that those who are spiritual tend to experience more positive health outcomes. In contrast, the Dessio et al. study (2006b) found that spirituality did not appear to have a significant influence on breast cancer screening, which is also in contrast to the findings from this study. Although there were no studies that explored the modifier role of spirituality on the relationship of SOC and BCS motivation and behavior, Gibson (2003) found a significant positive relationship between SOC and spirituality in a study of AAW breast cancer survivors which is similar to the results found in this study. Further, spirituality is a primary source of social support for AAW (Ashing-Giwa & Ganz, 1997; Underwood & Powell, 2006a). Much of the literature substantiates the value of including spirituality as a variable in studies of AAW (Bourjolly, 1998; Gibson, 2003; Holt et al., 2003; Holt et al., 2008; R. L. Jones, 1996; Kinney, Emery, Dudley, & Croyle, 2002b).

Data did not support hypothesis 3A in that spirituality did not modify the impact of SOC on BCS motivation. Spirituality did not modify the effects of SOC on the odds of the various behaviors (breast self exam, clinical breast exam and mammography) when the SOC 29 scale was used. Thus, the data did not support hypothesis 3B. However, it is important to note that spirituality was the only significant predictor of BCS motivation, thus spirituality has a direct impact on BCS motivation. A supplementary analysis of SOC 13 was performed with no differences in the findings.
Hypothesis Four

Hypothesis 4 posited that social support modifies the relationship between SOC and BCS motivation and behaviors in AAW. Some studies have found that spirituality is a source of social support (Ashing-Giwa & Ganz, 1997; Underwood & Powell, 2006b). Social support did not modify the effects of SOC on BCS motivation or the odds of the various BCS behaviors (breast self exam, clinical breast exam and mammography) when the SOC 29 scale was used. Thus the data did not support hypothesis 4.

A supplementary analysis of SOC 13 was performed to determine if there was a difference between the results found using the SOC 29 and the SOC 13. This post hoc test resulted in a difference in the findings. The model containing the covariates, the predictors and the social support X sense of coherence interaction term fit better than the constant only model. The interaction between social support and sense of coherence was the only significant term in the model indicating that the relationship between sense of coherence and expressed intention to perform a monthly breast self exam is contingent on social support (see Table 29). The analysis of the conditional effect of sense of coherence at low, moderate, and high levels of social support indicates that at low levels of social support, increases in sense of coherence are associated with an increase odds that a woman intends to perform monthly breast self exams. Thus the data in these analyses partially supported hypothesis four in that social support modified the relationship between SOC and one of the BCS behaviors (intent to perform monthly breast self exam). One explanation of the difference in finding is that because the SOC
13 is a shorter version of the test, interactions that are missed when using the longer SOC 29 version are recognized using the shorter version. This suggests that social support is especially important to women who are unable to seek out and utilize resources (i.e. women with low SOC).

**Hypothesis Five**

Hypothesis five posited that AAW who utilize free mammogram screening programs will have a stronger SOC, greater spirituality, and increased social support than AAW who do not utilize free mammogram screening programs. There were no statistical differences in the scores of the predictor variables between the two groups of women (IBCCP versus non-IBCCP). Although not statistically different, women in the IBCCP program tended to score higher on all of the predictor variables with the exception of spirituality when compared to uninsured non-compliant non-IBCCP women and uninsured compliant non-IBCCP. The IBCCP women also scored higher in motivation than the non-IBCCP. When IBCCP women were compared to the total non-IBCCP group (including uninsured, insured, non-compliant and compliant women) the non-IBCCP women scored higher on all of the variables except social support. Another explanation for the lack of significant differences in the findings could be due to the small numbers of women per group that resulted when the non-IBCCP group was further stratified by insurance status and compliance. Another possible explanation for the data not supporting the hypothesis is the relative homogeneity of the overall group; hence reducing the chances of finding a significant difference in the scores on predictor
variables. Keep in mind there was no statistical difference found between the
demographic descriptions of the two groups.

Discussion of Outcomes

Motivation

The regression model that was inclusive of the four predictor variables SOC,
health perception, spirituality and social support along with the co-variables age, income,
education, risk factors and barriers explained a significant portion of the variance in
motivation scores. Of the four predictor variables only spirituality was predictive of BCS
motivation in this group of women indicating that an increase in spiritual perspective was
associated with a significant increase in BCS motivation. Of the co-variables SES
(income), education, age, risk factors and barriers to screening, only education was
predictive of motivation indicating that an increase in education level is associated with
an increase in BCS motivation.

In a study by Klassen et al. (2008) which explored how worldview of low-income
AAW related to attitudes about breast cancer screening the mean motivation score was
31.2, standard deviation = 5.5. In the current study, women scored higher in motivation
with mean scores of 41.62, standard deviation = 5.76. Contrary to the findings in the
previous study which found a strong negative effect of age on screening motivation, this
study found a positive correlation between age and motivation, if not statistically
significant. Similar to the findings reported by Klassen et al., motivation was positively
and strongly correlated at a statistically significant level with education and income.
In this current study of AAW, motivation was significantly correlated to SOC, social support and spirituality. These findings are concurrent with several studies that explored the influence of social support and spirituality on AAW’s motivation to practice breast cancer screening activities (Ahmed et al., 2005; Darnell, Chang, & Calhoun, 2006; Dessio et al., 2004; Fowler, 2006b; Fowler, 2007a). Contrary to these findings there were studies that found spirituality had no significant impact on breast cancer screening behaviors of AAW (Katz, Kauffman, Tatum, & Paskett, 2008; Underwood & Powell, 2006b). Although there were no studies in the literature that explored the impact of SOC on BCS behavior in AAW, there were studies that indicated the impact of SOC on positive health behaviors among AAW with regards to high risk behaviors (Nyamathi, 1991; 1992; 1993). These studies found that homeless, drug-abusing AAW at high-risk for HIV with strong SOC were more likely to report less emotional distress, fewer high risk behaviors and to appraise stressful situations as less threatening than those with weak SOC. In addition, the women with strong SOC reported high self-esteem and fewer somatic complaints.

Health perception and risk factors were positively correlated with motivation, although not statistically significant. The study participants reported higher than average health perception scores and scored relatively low on risk factor characteristics indicating that this group of AAW was healthy and had relatively low risk. It is important to note that these women may not have been aware that certain questions on the BCSBS were measuring breast cancer risk characteristics, thus it is quite possible that if they had been
asked outright to identify their risk factors for developing breast cancer, the findings could have been different. It would also be interesting to explore if these findings would be different if the women in the study population perceived their health status as poor.

Study participants were asked about their beliefs regarding the benefits of early detection and about what would motivate them to practice all three BCS activities. An overwhelming majority of study participants indicated they believed that early detection was beneficial, that the earlier breast cancer is detected the earlier treatment can start which results in increased survival and that early detection saves lives. In response to what would motivate them to practice all three BCS activities, the majority of women responded that it was their love and value of life, their children and family that was the driving force. Several women also indicated that having insurance and/or money to pay would be motivation for practicing BCS activities. These findings are similar to studies found in the literature (Ahmed et al., 2005; Darnell et al., 2006; Fowler, 2007a).

An assessment of barriers to BCS was done by asking women who self identified as never having had a mammogram to indicate the reasons for never having had a mammogram. A small number of study participants indicated the most common reasons were lack of insurance, pain and/or fear, and time as reasons why they had not had a mammogram. The study investigator was careful to avoid using the word barrier in the BCSBS so that women would identify reasons for not having mammograms and not necessarily associate these reasons with previously identified barriers. Barriers to BCS were not found to have an impact on motivation among the study participants.
Literature suggests that motivation influences health behavior given that health behavior is a function of health motive and of the individual’s belief about various actions and options open to them (Klassen et al., 2008; Rosenstock, 1960). As such, a post hoc analysis was done looking at motivation as a predictor of BCS behaviors. Motivation was significantly and negatively associated with a woman performing monthly BSE indicating that increasing motivation is associated with a decrease in the odds that a woman will perform monthly BSE. The addition of motivation to the logistic regression model demonstrated that spirituality was also significantly and negatively associated with a woman performing monthly BSE. Moreover, there was an interaction between social support and SOC when motivation was added as a predictor in the model. The results indicated that at low levels of social support, increases in SOC are associated with significantly increased odds that a woman has performed monthly BSE. These findings indicate that it is important for future research to further explore the impact that motivation may have on BCS behaviors among AAW. As well, these results suggest an important interaction between social support and SOC.

**Breast Cancer Screening Behaviors**

Breast cancer screening behaviors was measured by six dichotomous questions on the BCSBS tool. Women were asked if they had obtained a BSE, CBE and mammogram and if they intended to have BSE, CBE and mammogram in the future. The overwhelming majority of women participants responded positively to these six items indicating that these women demonstrated positive BCS behaviors overall. It is important
to note these findings are based on self reported data and thus are open to speculation as to their accuracy and congruence with medical record documentation (Cronin et al., 2009; Powe & Cooper, 2008).

Women also scored high on the questions that assessed their knowledge of mammography when asked to define mammograms and describe the purpose of mammograms. An overwhelming majority of the women correctly defined and described the purpose of mammograms. In addition to assessment of knowledge of mammography, study participants were asked if they had received information about BSE, CBE and mammograms and if these BCS activities were recommended by a doctor or nurse. Again, the overwhelming majority of study participants indicated they had received information and that BCS activities had been recommended by their health care provider.

When assessed for knowledge of how often BCS activities should occur, the results were varied. Of those women responding to the questions regarding the frequency of each BCS activity the majority correctly identified that BSE should occur monthly, CBE annually and mammography annually. Overall, the study population was knowledgeable of BCS activities, had received information about BCS activities and was familiar with the frequency at which BCS activities should occur although knowledge of BCS was not identified as a predictor or co-variable in this study. This suggests that increased knowledge regarding BCS does not translate into actualizing such behaviors.
Discussion of Participant Groups

For the purpose of analysis and discussion participation in the IBCCP program is treated as a variable when assessing differences between the participants who were in IBCCP and the non-IBCCP. Evidence suggests that screening mammography can reduce mortality rates associated with breast cancer by 16% to 35% (Berry et al., 2005; Centers for Disease Control and Prevention, 2007; Fletcher & Elmore, 2003; Humphrey et al., 2002). Although rates of mammography have increased over the past decade, they have reached a plateau in recent years. The Centers for Disease Control and Prevention (CDC) reports an estimated 25% gap between screening rates of insured and uninsured women (Richardson, Rim, & Plescia, 2010).

The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) is a nationwide program aimed at helping low-income, underinsured, and underserved women gain access to breast and cervical cancer screening services in an effort to eliminate or reduce financial barriers to mammography screening. The Illinois Breast and Cervical Cancer Program (IBCCP) launched in 1995 is a recipient of NBCCEDP funding to provide free mammograms and breast exams to uninsured women aged 35-64 in Illinois. Women over 64 years of age can qualify for the IBCCP program if they are not eligible for Medicare. Participants of the program receive free mammograms, clinical breast exams and information about performing breast self exams. Yet there is a gap in the number of eligible women who participate in this program.
One of the goals of this study was to explore if there was a difference in personal attributes between the AAW who take advantage of free mammography programs and those who do not. To do this, two groups of participants were recruited: women who had received a mammogram via the IBCCP and those who had not; the latter group is identified as non-IBCCP. Evaluation of the women recruited for the non-IBCCP group revealed that these women fell into four different categories. This occurred because during the initial recruitment of non-IBCCP women potential participants were not screened for insurance status. As recruitment continued it became obvious that a number of the non-IBCCP women were insured and were compliant. In order to increase the chance of identifying a variance between the IBCCP and non-IBCCP women, the investigator included additional screening questions during the recruitment process. Potential participants were asked, “do you currently have health care insurance” and “was your last mammogram over two years ago”? The goal of this line of questioning was to only accept women who were uninsured and non-compliant with mammograms in order to maximize the variance between the two groups. In the end, the non-IBCCP group consisted of four groups: uninsured-noncompliant, uninsured-compliant, insured-noncompliant, and insured-compliant (see Table 27). In comparing the IBCCP versus the non-IBCCP groups on demographic characteristics, there were no significant differences found.

Each group will be discussed separately, as below.
**IBCCP Participants**

IBCCP study participants averaged two years younger than the non-IBCCP. The majority of IBCCP women had a high school education and only a few had college degrees. The majority of the IBCCP women reported annual incomes under $30,000. These findings are in accord with the target population of the IBCCP program. Data showed the IBCCP participants had children at a younger age than non-IBCCP, took birth control pills longer and were on average 10 years younger than non-IBCCP at time of first mammogram (see Table 8).

IBCCP study participants reported receiving information about BSE, CBE and mammography more frequently than did non-IBCCP participants. In addition, they reported receiving recommendations from nurses/physicians to have BSE, CBE and mammograms more frequently than the non-IBCCP group. A greater percentage of IBCCP women correctly identified the recommended frequency of mammography screening than did non-IBCCP women.

The findings revealed that IBCCP women were significantly more likely to intend to perform monthly BSE and to have had a mammogram. Though not surprising given that inclusion criteria required that participants had a mammogram via the IBCCP program, this finding is significant in showing the importance of free mammography programs in contributing to BCS activities among low-income, uninsured women. Several important notes to highlight include the fact that the sample from the IBCCP included women from a 4 year period and women were considered compliant if they had
a mammogram within the past 2 years. Given this, IBCCP participants were almost twice as likely to report having had a mammogram within the past year and a higher number reported having a mammogram within the past 2 years. This is indicative of the IBCCP program fostering and facilitating compliance with mammography recommendations and repeat mammography practices. In addition, IBCCP women were slightly more likely to have performed a BSE and intended to have a CBE. These findings contribute more evidence supporting the importance of free mammography programs.

According to IBCCP administrators, program providers are required to provide CBE as part of the screening physical for participation in the IBCCP program. They meet with each program participant and educate them on the importance of BSE along with instructions on performing BSE. In addition, participants are educated as to the importance of follow up and on maintaining compliance with annual mammograms and CBE. This likely explains why the IBCCP study participants more often engaged in BCS behaviors and were more likely to report having received information and recommendations on BCS activities. This is a limitation in the study design.

IBCCP women reported a more positive outlook on health, seemed to be more health conscious, and to have a greater intent to perform these behaviors. It is possible, however, that this could have been a self-selected group, who were already motivated and intended to perform health behaviors. These attributes, in turn, may have led them to sign up for the program. Questions could have been asked to probe the participants’ attitudes about BCS or to determine whether the IBCCP program influenced these
attitudes. However the design of the study did not allow this investigator to evaluate these possibilities.

Non-IBCCP Participants

Non-IBCCP participants were on average 11 years older when they had their first mammogram. The fact that the non-IBCCP group was older than the IBCCP and only the non-IBCCP included participants with Medicare suggests that Medicare provided the means by which some of the women received their first mammogram. Twelve non-IBCCP women reported never having had a mammogram and the average age of this group of women was 49.7 years with the ages ranging from 45 to 60 years. This offers further evidence of the need for and importance of Medicare in providing a means for women to obtain mammograms. Ten of the twelve women reported having no health care insurance, while two reported having Medicaid. Several women indicated they had no health insurance upon screening, however their questionnaires indicated having Medicaid or Medicare. The women did not recognize Medicaid and Medicare as health care insurance. These findings further support the fact that having health care insurance is an important factor in BCS behaviors of AAW and supports the need to educate participants regarding the nature of programs like Medicare and Medicare. It is important to note however that having Medicare was not predictive of women having mammograms in several recent studies (Greco, Nail, Kendall, Cartwright, & Messecar, 2010; Schueler, Chu, & Smith-Bindman, 2008).
Non-IBCCP women reported longer time frames between CBE evaluations compared to the IBCCP participants. As previously mentioned, several of the non-IBCCP participants reported that they had Medicaid. This suggests that these women did not consider Medicare or Medicaid to be health care insurance. This finding demonstrates the need for ongoing education about the purpose and services provided by such national and state health programs.

While recruiting participants for the non-IBCCP group, several subsets of sisters and mother/daughter sets were enrolled in the study. Fowler (2007a) examined the association of preventive health behaviors of blood-relatives or extended kinship networks in AAW mammogram screening. That study found that the social support relationships of blood-relatives and extended kinship networks served as a reminder to AAW of the importance of preventive health behaviors including mammography screening. Yet other studies have found that blood-relatives and extended kinship networks can discourage mammography screening (Fowler, 2006b; Phillips, Cohen, & Moses, 1999a). In the current study the findings were inconsistent. One set of 4 siblings were split with 2 being compliant with mammography and 2 non-compliant. In another set of four siblings, all four were non-compliant. The remaining two sets of siblings were all compliant. Of the three mother/daughter sets the findings were also inconsistent. Both mother and daughter were compliant with mammography screening in one set, the mother was compliant while the daughter was not in the second set and the daughter was compliant while the mother was not in the third set. These analyses were purely
anecdotal as the numbers were too small to determine statistical significance, but it was interesting to explore similarities or differences in BCS practices of siblings and mothers and daughters. Table 28 lists the scores on the predictor and outcome variables for the 4 sets of sisters and 3 mother/daughter sets.

A closer examination of the non-IBCCP group identified 4 distinct sub-groups: uninsured compliant, uninsured non-compliant, insured compliant, and insured non-compliant. In some of the analysis, insured non-IBCCP women were removed from the model so as not to bias the findings. This however resulted in smaller N’s in these analysis and thus potentially impacted the findings. When these groups were analyzed to determine if there were significant differences between the subgroups it was found that there was a significant difference between the insured compliant and the uninsured non-compliant. Insured compliant non-IBCCP scored significantly higher in spirituality than did the uninsured non-compliant group. This finding prompted further analyses to determine if insurance status or compliance would have a main effect on the variables in the study, namely SOC, health perception, motivation, social support and spirituality. Supplementary post hoc analysis found a significant main effect of insurance, such that women who were insured had a significantly higher SOC than women who were uninsured. Insured women also scored higher on health perception, motivation, social support and spirituality than uninsured; however these findings were not statistically significant. Thus having insurance was an important factor when the predictor variables were treated as dependent variables.
Table 28: Mean Scores for Natural Sets of Sisters and Mothers and Daughters on Independent and Outcome Variables

<table>
<thead>
<tr>
<th>Set Type</th>
<th>Sibling Number</th>
<th>Variables</th>
<th>Motivation</th>
<th>Mammography Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sense of Coherence</td>
<td>Spirituality</td>
<td>Social Support</td>
</tr>
<tr>
<td>Sisters 1</td>
<td>1A</td>
<td>37</td>
<td>4.70</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>2B</td>
<td>66</td>
<td>5.90</td>
<td>4.60</td>
</tr>
<tr>
<td></td>
<td>3C</td>
<td>91</td>
<td>5.60</td>
<td>4.60</td>
</tr>
<tr>
<td></td>
<td>4D</td>
<td>84</td>
<td>6.00</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>2A</td>
<td>53</td>
<td>5.80</td>
<td>4.40</td>
</tr>
<tr>
<td>Sisters 2</td>
<td>2B</td>
<td>53</td>
<td>5.50</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>3A</td>
<td>68</td>
<td>6.00</td>
<td>3.80</td>
</tr>
<tr>
<td></td>
<td>3B</td>
<td>72</td>
<td>6.00</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>4A</td>
<td>65</td>
<td>4.50</td>
<td>5.00</td>
</tr>
<tr>
<td>Sisters 3</td>
<td>4B</td>
<td>62</td>
<td>5.90</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>4C</td>
<td>57</td>
<td>5.10</td>
<td>3.60</td>
</tr>
<tr>
<td></td>
<td>4D*</td>
<td>50</td>
<td>6.00</td>
<td>4.00</td>
</tr>
<tr>
<td>M/DG 1</td>
<td>Mother</td>
<td>68</td>
<td>6.00</td>
<td>3.80</td>
</tr>
<tr>
<td></td>
<td>Daughter</td>
<td>34</td>
<td>5.30</td>
<td>2.80</td>
</tr>
<tr>
<td>M/DG 2</td>
<td>Mother</td>
<td>91</td>
<td>5.60</td>
<td>4.60</td>
</tr>
<tr>
<td></td>
<td>Daughter</td>
<td>60</td>
<td>5.90</td>
<td>4.40</td>
</tr>
<tr>
<td>M/DG 3</td>
<td>Mother</td>
<td>87</td>
<td>6.00</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>Daughter</td>
<td>85</td>
<td>5.90</td>
<td>4.60</td>
</tr>
</tbody>
</table>

*Note: Sisters 4 – sibling 4D was identified as a cousin. All sisters and mother/daughter sets are from non-IBCCP group.*
Predictor Variables

The predictor variables for this study included: SOC, health perception, spirituality, and social support. All of the predictor variables were correlated. SOC mean for the AAW in this study were comparable to those reported in the George’s (1999) study. On a societal level researchers have found that social integration and connection to the larger society promotes health enhancing behaviors (Klassen et al., 2008). Supplementary analysis included motivation as a predictor given the assumption that as women become more motivated they are more likely to participate in BCS behaviors. When motivation was added to the regression model, there were significant differences found in the BCS behaviors however not what was expected. For example, increased motivation negatively impacted women performing monthly BSE. When motivation was added to the logistic regression model, the data indicated that spirituality also negatively impacted women performing monthly BSE. This is in keeping with several studies (Kinney, Emery, Dudley, & Croyle, 2002a; Mitchell, Lannin, Mathews, & Swanson, 2002a; Underwood & Powell, 2006b). Yet, this is in conflict with findings cited in other studies that found that spirituality was positively associated with BCS in AAW (Deshpande et al., 2009; Holt et al., 2003). Overall, these findings indicate that it is important for future research to further explore the impact that motivation may have on BCS behaviors among AAW.

In addition, there was an interaction between social support and SOC when motivation was included as a predictor in the model. The results indicated that at low
levels of social support, increases in SOC are associated with greater odds that a woman has performed monthly BSE. An interaction between social support and SOC was also observed when the shorter SOC 13 instrument was used in the model during a post hoc analysis.

Covariates

Covariates for this study included age, SES (e.g., education and income), breast cancer (BC) risk factors, and barriers. Data from this study indicated that as BC risk factors increased the likelihood that a woman would intend to have a CBE decreased. These findings are similar to those found in a study investigating the BCS behaviors of AAW with breast cancer risk factors (Underwood, 1999a). That study found that among the women with breast cancer risk factors, fewer reported compliance with BCS guidelines than those without risk. Another study found that the recent decline in mammography over the last 5 years has been predominantly among women at low-risk for developing breast cancer (Slomiany, McMasters, & Chagpar, 2008). However, in that study AAW made up only 6% of the sample. Other studies found that breast cancer risk was not significantly associated with breast cancer screening practices in women (Katapodi et al., 2004; Katapodi et al., 2009). However, in that study AAW only made up 25% of the sample.

Women in the current study, who reported barriers to BCS were found to be less likely to practice BSE, intend to practice BSE and to obtain a CBE. These findings are similar to other studies reporting that barriers decrease the likelihood that women will
participate in one or more of the BCS activities (Adams et al., 2001; Hargreaves et al., 2003; Lambert et al., 1998; Peek et al., 2008; Spurlock & Cullins, 2006a).

Overall, the women participating in the IBCCP reported higher frequencies of having received information about BSE, CBE and mammograms and had received more recommendations from health care providers to perform BCS activities than did the non-IBCCP group. This is partially due to the IBCCP program protocol that requires all facilities that participate in the IBCCP program to provide literature and a one to one conference with the health care provider to learn BSE techniques. Health care records are audited for quality components which include documentation of CBE and receipt of BSE instructions and mammography information.

**Major Conclusions of the Study**

A number of the hypotheses for this study were partially or not supported by the data. The variables as they were measured in this study were reliable as indicated by the alpha coefficients. There is a possibility that the variables observed are not the ones that make a big enough impact on the motivation and behaviors of AAW, therefore future studies may need to look beyond the variables included in this study. The following summarizes the main findings of this study. Spirituality predicted BCS motivation at highly significant level while education was the only covariable that predicted BCS motivation in AAW. BCS motivation was positively correlated with SOC, social support and spirituality. IBCCP participants were more likely to be in compliance with BCS guidelines than were non-IBCCP women. Barriers to BCS were associated with
decreased odds that a woman will practice BSE. The model containing covariates and predictor variables as a complete unit predicted women’s intent to obtain a CBE, whether a woman has had a mammogram and the women’s intent to obtain a mammogram. There was an important interaction between social support and SOC in the odds of women performing monthly BSE. Finally, IBCCP participants had higher levels of all of the predictor variables with the exception of spirituality and were more motivated than the non-IBCCP women.

Limitations

This study has several limitations. The sample size was small, especially when the non-IBCCP group was further stratified into four subgroups; thus, further reducing sample size. Demographically, the majority of the women resided within four zip codes of the metropolitan Chicago area. This limits generalizability and does not reflect the diverse ethnic, income and educational characteristics of metropolitan Chicago or the state or national population. All of the BCS behaviors were self-reported. Self-reported data has been shown in the literature to be unreliable in that AAW have been found to overreport BCS activities (Cronin et al., 2009; Powe & Cooper, 2008). Because the overwhelming majority of study participants opted for a mailed survey forum, several questionnaires were returned incomplete. Although the investigator attempted to follow up on all incomplete data, in some cases these attempts were not successful. This resulted in smaller sample sizes in certain analyses. The results in the study were “top heavy” meaning that most of the women indicated they had practiced BCS behaviors, while few
indicated they did not practice BCS behaviors in all situations. Ideally a larger sample size would have resulted in more women in both categories; those that practiced all BCS behaviors and those that did not. With a larger sample size, perhaps the predictors would have yielded more significant findings. Lastly, the study participants were self selected in that they volunteered to participate. This suggests, perhaps, that they may be more motivated in other areas of life such as adopting BCS behaviors.

**Implications and Future Directions**

The findings from this study support the importance of continued free mammography programs such as the Illinois Breast and Cervical Cancer Program and others like it. It is important to consider the following question. Is there something that is of value that women receive by participating in IBCCP and similar programs that changes their intent to take part in BCS behaviors? Or is it that something inherent in these women that drove them to take advantage of such programs? Women must have valued their health otherwise they would not have signed up for free programs. It is important to continue to explore factors that drive women to take advantage of free programs and resources that improve access to BCS services and thus impact the mortality rate among AAW. Health care insurance and participation in state and federal programs such as Medicaid and Medicare are important ways to increase access to mammography and other BCS activities, such as CBE and BSE. It is important that such programs educate women that these programs are a source of health care and enable access to important health screening services and preventive health information.
Future studies should include comparisons of AAW’s BCS in women who attend churches with a health ministry compared to churches without to determine if the positive impact of spirituality on BCS behaviors is driven by “religiosity” and attendance in churches with health ministries. Also, the impact of spirituality and social support on predicting BCS behaviors needs further investigation. Studies exploring the impact of motivation on BCS behaviors are important to identify motivating factors in both low-income and middle-income AAW and those insured and not insured. Although SOC was not found to independently predict motivation or behaviors, it interacted with social support and spirituality demonstrating its usefulness in understanding BCS motivation and behaviors. Thus, it is the belief of this investigator that the salutogenic framework is in fact a viable and useful framework for future studies of AAW breast cancer screening behaviors.
APPENDIX A:

BREAST CANCER RISK FACTORS
<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Breast cancer is the most common cause of cancer among women, excluding skin cancer, and accounts for more than 1 in 4 cancers diagnosed in US women. Men are generally at low risk. The estimated new cases of breast cancer for 2008 are 1,990 in men compared to 182,460 in women.</td>
</tr>
<tr>
<td>Age</td>
<td>The chance of developing breast cancer increases with age, with 95% of new cases and 97% of breast cancer deaths occurring in women aged 40 and older.</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>White, non Hispanic women have the highest overall incidence rate for breast cancer and a higher incidence than AAW after age 40. In contrast, AAW have a higher incidence rate before age 40 and are more likely to die from breast cancer at any age.</td>
</tr>
<tr>
<td>Personal history of breast cancer</td>
<td>A woman having breast cancer in one breast has an increased risk of developing cancer in her other breast.</td>
</tr>
<tr>
<td>Family history of breast cancer</td>
<td>A woman’s risk of breast cancer is higher if her mother, sister, brother, or daughter had breast cancer. The risk is higher if a family member had breast cancer before age 40. Having other relatives (maternal or paternal) with breast cancer may also increase a woman’s risk.</td>
</tr>
<tr>
<td>Certain breast changes</td>
<td>Some women have cells in the breast that look abnormal under a microscope. Having certain types of abnormal cells, atypical hyperplasia and lobular carcinoma in situ (LCIS) increases the risk of breast cancer.</td>
</tr>
<tr>
<td>Genetic changes</td>
<td>Changes in certain genes increase the risk of breast cancer. The most common are genetic alterations to BRCA1 and BRCA2.</td>
</tr>
<tr>
<td>Reproductive and menstrual history</td>
<td>Women who have had no children or had their first child after age 30 have a greater risk of breast cancer. Women who had their first menstrual period before age 12 and who went through menopause after age 55 are at a greater risk of breast cancer. Women who take menopausal hormone therapy with estrogen plus progestin after menopause appear to have a greater risk of developing breast cancer.</td>
</tr>
<tr>
<td>Radiation therapy to chest</td>
<td>Women who had radiation therapy to the chest before age 30 as treatment for another cancer (Hodgkin’s Lymphoma), are at increased risk of breast cancer. Studies show that the younger the woman was when she received radiation treatment, the greater her risk of breast cancer later in life.</td>
</tr>
<tr>
<td>Breast density</td>
<td>Dense or fatty breast tissue. Older women who have dense breast on mammogram are at increased risk of breast cancer.</td>
</tr>
<tr>
<td>Risk Factor</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Taking DES (diethylstilbestrol)</td>
<td>Women who took DES during pregnancy have a slightly increased risk of breast cancer.</td>
</tr>
<tr>
<td>Being overweight or obesity after menopause</td>
<td>The chance of developing breast cancer after menopause is higher in women who are overweight or obese.</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Women who are physically inactive throughout life may have an increased risk of breast cancer.</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>Studies suggest that the more alcohol a woman drinks, the greater her risk of breast cancer.</td>
</tr>
</tbody>
</table>

APPENDIX B:

STAGES OF BREAST CANCER AND 5-YEAR SURVIVAL RATE
<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>5-year survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Carcinoma in situ. The earliest form of breast cancer. The cancer cells are still within a duct or lobule.</td>
<td>100%</td>
</tr>
<tr>
<td>I</td>
<td>Tumor is 2 cm or less across and has not spread to lymph nodes or distant sites</td>
<td>98%</td>
</tr>
<tr>
<td>II</td>
<td>The tumor has spread from the lobules or ducts to nearby tissues; size ranges from 2 to 5 cm in diameter; may or may not have spread to lymph nodes. The cancer has not spread to distant sites.</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td><strong>Stage IIA</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is 2 cm or less across and has spread to 1 to 3 axillary lymph nodes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is 2 cm or less across and tiny amounts of cancer are found in internal mammary lymph nodes on sentinel lymph node biopsy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is 2 cm or less, has spread to 1 to 3 axillary lymph nodes, and tiny amounts of cancer are found in internal mammary lymph nodes on sentinel lymph node biopsy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is larger than 2 cm across and less than 5 cm but hasn’t spread to the lymph nodes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Stage II B</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is larger than 2 cm and less than 5 cm across. It has spread to 1 to 3 axillary lymph nodes and/or tiny amounts of cancer are found in internal mammary lymph nodes on sentinel lymph node biopsy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is larger than 5 cm across but does not grow into the chest wall or skin and has not spread to lymph nodes.</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>The tumor may be any size and involves the skin or chest wall or has spread to the lymph nodes located underneath the breast on the same side of the affected breast. The tumor has not spread to distant sites.</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td><strong>Stage III A</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is not more than 5 cm across. It has spread to 4 to 9 axillary lymph nodes, or it has enlarged the internal mammary lymph nodes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Tumor is larger than 5 cm across but does not grow into the chest wall or skin. It has spread to 1 to 9 axillary nodes, or to internal mammary nodes.</td>
<td></td>
</tr>
</tbody>
</table>
- **Stage III B** – Tumor has grown into the chest wall or skin
  - Tumor has spread to 1 to 3 axillary lymph nodes and/or tiny amounts of cancer are found in internal mammary lymph nodes on sentinel lymph node biopsy
  - Tumor has spread to 4 to 9 axillary lymph nodes, or it has enlarged the internal mammary lymph nodes
- **Stage III C** – Tumor is any size
  - Cancer has spread to 10 or more axillary lymph nodes
  - Cancer has spread to lymph nodes under or above the clavicle
  - Cancer involves axillary lymph nodes and has enlarged the internal mammary lymph node
  - Cancer has spread to 4 or more axillary lymph nodes, and tiny amounts of cancer are found in internal mammary lymph nodes on sentinel lymph nodes biopsy

**IV**  
The cancer can be any size and may or may not have spread to nearby lymph nodes. It has spread to distant organs (the most common sites are the bone, liver, brain, or lung), or to lymph nodes far from the breast  

<table>
<thead>
<tr>
<th>Recurrence</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent</td>
<td>Cancer that has recurred after treatment. It may recur in the breast or chest wall, the bone, brain, liver, lungs or other part of the body</td>
</tr>
</tbody>
</table>

*Note: American Cancer Society [ACS], 2008; Underwood, 2006a*
APPENDIX C:

SUMMARY OF BREAST CANCER SCREENING

RECOMMENDATIONS / GUIDELINES
<table>
<thead>
<tr>
<th></th>
<th>AAFP</th>
<th>ACOG</th>
<th>ACR</th>
<th>ACS</th>
<th>AMA</th>
<th>USPSTF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammography</td>
<td>Every 1-2 years for women 40 years and older, after counseling by their family physician regarding the potential risks and benefits of the procedure.</td>
<td>Yearly mammograms between ages 25 &amp; 35 for women at high risk. Average women advised to begin mammography screening at age 40.</td>
<td>Annual screening mammograms for asymptomatic women 40 years of age and older.</td>
<td>Annual mammogram for women age 40 and older.</td>
<td>Endorses positions of the ACOG, ACS, ACR that all women having screening mammography as per current guidelines. Annual screening mammograms in asymptomatic women 40 years and older.</td>
<td>Biennial screening mammography for women aged 50 to 74 years. Current evidence insufficient to assess additional benefits and harms of screening mammography in women 75 years or older. Recommends against routine screening mammography in women aged 40 to 49.</td>
</tr>
<tr>
<td>Clinical breast examination (CBE)</td>
<td>High risk women begin annual &amp; semi-annual CBE between ages 25 &amp; 35.</td>
<td>Annual CBE for women age 40 and older. CBE every 3 years for women age 20-35.</td>
<td>Annual clinical breast exams in asymptomatic women 40 years and older.</td>
<td>Concludes that current evidence is insufficient to assess additional benefits and harms of CBE beyond screening.</td>
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<tr>
<td></td>
<td>AAFP</td>
<td>ACOG</td>
<td>ACR</td>
<td>ACS</td>
<td>AMA</td>
<td>USPSTF</td>
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<tr>
<td>Breast self-examination (BSE)</td>
<td>Evidence is insufficient to recommend for or against teaching or performing routine BSE.</td>
<td>Low risk women should perform regular monthly BSE.</td>
<td>Monthly BSE optional for women age 40 and older. Monthly BSE optional for women age 20-39.</td>
<td>39.</td>
<td>older.</td>
<td>mammography in women 40 years or older.</td>
</tr>
</tbody>
</table>

*Note: American Academy of Family Physicians (AAFP); American College of Obstetricians and Gynecologists (ACOG); American College of Radiology (ACR); American Cancer Society (ACS); American Medical Association (AMA); U.S. Preventive Services Tasks Force (USPSTF).*
APPENDIX D:

NURSING RESEARCH ON BREAST CANCER SCREENING BEHAVIOR IN AFRICAN AMERICAN WOMEN (1997-2008)
<table>
<thead>
<tr>
<th>Citation</th>
<th>Focus</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dibble et al. (1997)</td>
<td>Attitudes</td>
<td>Determine if there were differences in women’s attitudes toward BCS procedures among women from five diverse ethnic groups who were undergoing a film-screen mammogram.</td>
</tr>
<tr>
<td>Adams et al. (2001)</td>
<td>Barriers</td>
<td>Enhance AAW participation in early detection and follow-up services for breast cancer. Obtained information concerning barriers to participating in BCS.</td>
</tr>
<tr>
<td>Lambert et al. (1998)</td>
<td>Barriers</td>
<td>Describe the perceived barriers to mammography for low-income, older AAW.</td>
</tr>
<tr>
<td>Spurlock &amp; Cullins (2006)</td>
<td>Barriers</td>
<td>Examine relationships between perceptions of cancer fatalism and BCS in AAW.</td>
</tr>
<tr>
<td>Barroso et al. (2000)</td>
<td>Beliefs</td>
<td>Compare the health beliefs of AAW and white women about breast cancer, including attitudes about health in general, perceptions of susceptibility to cancer and breast cancer, beliefs about the benefits of early detection, and perceptions of the seriousness of breast cancer, and health locus of control</td>
</tr>
<tr>
<td>Champion &amp; Springston (1999)</td>
<td>Beliefs</td>
<td>Describe the relationship of perceptions of perceived breast cancer risks and perceived benefits and barriers to mammography and stage of mammography adherence.</td>
</tr>
<tr>
<td>Graham (2002)</td>
<td>Beliefs</td>
<td>Examine the relationships between health beliefs of Black women and BSE.</td>
</tr>
<tr>
<td>Kinney et al. (2002)</td>
<td>Beliefs</td>
<td>Examine the relationship between beliefs about God as a controlling force in health and adherence to BCS among high risk AAW. Relationships among belief in God as a controlling force in health and socio-demographic, psychosocial, and clinical variables as potential confounders of religious and spiritual beliefs also were explored.</td>
</tr>
<tr>
<td>Phillips et al. (1999)</td>
<td>Beliefs</td>
<td>Explore the beliefs, attitudes, and practices related to breast cancer and breast cancer screening among low- and middle-income AAW.</td>
</tr>
<tr>
<td>Phillips et al. (2001)</td>
<td>Beliefs</td>
<td>Describe the experience and meaning of BCS for AAW.</td>
</tr>
<tr>
<td>Russell et al. (2006)</td>
<td>Beliefs</td>
<td>Investigate health beliefs associated with repeat mammography screening in AAW and to determine</td>
</tr>
<tr>
<td>Citation</td>
<td>Focus</td>
<td>Purpose</td>
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</tr>
<tr>
<td>Russell et al. (2007)</td>
<td>Beliefs</td>
<td>Determine, first, the relationship between particular health and cultural beliefs and stage of mammography screening adoption in urban AAW and second, whether demographic and experiential characteristics differed by stage.</td>
</tr>
<tr>
<td>Thomas (2004)</td>
<td>Beliefs</td>
<td>Examine associations between women’s memories and feelings concerning their breasts and current BCS behaviors.</td>
</tr>
<tr>
<td>Adams et al. (2004)</td>
<td>Decision making</td>
<td>Describes how the fears of AAW and their other emotions influence their response to mammography screening interventions. Three purposes: to identify the emotions related to BCS behavior of AAW; to identify a measurement instrument that could assess emotional response to BCS for AAW; to begin to identify individual differences in emotions that may predict BCS behaviors in AAW.</td>
</tr>
<tr>
<td>Fowler (2006a)</td>
<td>Decision making</td>
<td>Develop a substantive theory that explains how AAW aged 50 years and older of different socioeconomic status (SES) make decisions about mammography screening. Decision-making processes explaining mammography screening</td>
</tr>
<tr>
<td>Fowler (2006b)</td>
<td>Decision making</td>
<td>Describe the social processes used by AAW age ≥ 50 years in making decisions about mammography screening</td>
</tr>
<tr>
<td>Duffy et al. (2001)</td>
<td>Influences</td>
<td>Describe the breast health characteristics of older AAW living in community based settings and determined if selected demographics, functional status and co-morbidity significantly influenced BSE proficiency in older AAW.</td>
</tr>
<tr>
<td>Fowler (2007)</td>
<td>Influences</td>
<td>Examine the association of the preventive health behaviors of blood-relatives or extended kinship networks that had the potential to encourage AAW to obtain mammography screening or to provide information that was debilitating to refute screenings.</td>
</tr>
<tr>
<td>Underwood (1999)</td>
<td>Influences</td>
<td>Gain a broader understanding of BCS behaviors of AAW comparing those with known and no known risk factors. To identify factors which influence</td>
</tr>
<tr>
<td>Citation</td>
<td>Focus</td>
<td>Purpose</td>
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</tr>
<tr>
<td>Champion &amp; Scott (1997)</td>
<td>Instrumentation</td>
<td>Describe the psychometric development of culturally sensitive scales to measure beliefs related to mammography and BSE.</td>
</tr>
<tr>
<td>Fowler (1998)</td>
<td>Instrumentation</td>
<td>Test the reliability and validity of two scales measuring beliefs about breast cancer and barriers to mammogram screening in urban AAW.</td>
</tr>
<tr>
<td>Adderley-Kelly &amp; Green (1997)</td>
<td>Intervention</td>
<td>Determine the breast cancer knowledge of subjects, their level of confidence when performing breast self-exam, and if individual instruction, one-to-one practice, and feedback on performance made a difference in screening practices. Explore whether an educational intervention designed to enhance cancer knowledge and use of BSE, self-efficacy in BSE, and completion of screening for breast cancer would increase BSE, self-efficacy in BSE, and completion of screening for breast cancer.</td>
</tr>
<tr>
<td>Champion et al. (2000)</td>
<td>Intervention</td>
<td>Assess the effectiveness of a tailored in-person screening intervention based on the variables of the health belief model</td>
</tr>
<tr>
<td>Champion et al. (2006)</td>
<td>Intervention</td>
<td>Identify more efficacious methods of promoting routine mammography screening in underserved populations.</td>
</tr>
<tr>
<td>Coleman et al. (2003)</td>
<td>Intervention</td>
<td>Develop and evaluate appropriate lay literature for AAW with low literacy skills.</td>
</tr>
<tr>
<td>Fowler et al. (2005)</td>
<td>Intervention</td>
<td>Describe all phases of a collaborative breast health intervention for AAW designed to increase mammography screening</td>
</tr>
<tr>
<td>Grindel et al. (2004)</td>
<td>Intervention</td>
<td>Determine the effect of 3 types of BCS messages on knowledge, attitudes, perceived risk for breast cancer, and mammography screening of AAW</td>
</tr>
<tr>
<td>Hall et al. (2005)</td>
<td>Intervention</td>
<td>Determine the effectiveness of a multifaceted, culturally sensitive breast cancer education program for AAW</td>
</tr>
<tr>
<td>Underwood &amp; Dobson (2004)</td>
<td>Intervention</td>
<td>Assess the potential impact of breast cancer education programs designed to reach AAW in community based institutions.</td>
</tr>
<tr>
<td>Baldwin</td>
<td>Utilization</td>
<td>Explore homeless AAW’s knowledge of breast cancer</td>
</tr>
<tr>
<td>Citation</td>
<td>Focus</td>
<td>Purpose</td>
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</tr>
<tr>
<td>&amp;Williams-Brown (2005)</td>
<td></td>
<td>and their use of BCS services</td>
</tr>
<tr>
<td>Champion &amp; Menon (1997)</td>
<td>Utilization</td>
<td>Identify significant predictors of mammography use, BSE frequency, and BSE proficiency</td>
</tr>
<tr>
<td>Champion et al. (1998)</td>
<td>Utilization</td>
<td>Compare self-reported mammography and medical records of mammography status in a low income AA sample.</td>
</tr>
</tbody>
</table>
APPENDIX E:

STUDIES USING SOC QUESTIONNAIRE

WITH AFRICAN AMERICAN WOMEN
<table>
<thead>
<tr>
<th>Citation</th>
<th>Focus</th>
<th>Purpose</th>
<th>SOC tool</th>
<th>Sample, characteristic and setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>George, V.D. (1999)</td>
<td>Health self-assessment and SOC</td>
<td>Determine AAW’s health self-assessment, health status, and SOC.</td>
<td>SOC 29</td>
<td>Random selection of 48 AAW from 264 faculty and staff of an urban university in the Midwest. Desired sample size of 64 based on power analysis using a medium-effect size of 0.34, power of 0.80 and p=&lt;.05, two-tailed tests</td>
</tr>
<tr>
<td>Gibson, L.M. &amp; Parker, V. (2003)</td>
<td>SOC, hope, spirituality, and quality of life</td>
<td>Describe which variables in the Gibson Model of Inner Resources (SOC, hope, and spirituality) were significantly predictors of personal well-being in AAW breast cancer survivors</td>
<td>SOC 13</td>
<td>162 AA breast cancer survivors were recruited from outpatient cancer facilities and cancer organizations, church groups, sororities, and community/civic organizations.</td>
</tr>
<tr>
<td>Gibson, L.M. (2003)</td>
<td>SOC, Hope and Spiritual perceptions</td>
<td>Describe the relationships among the inner resources, SOC, hope, and spiritual perspective, in AAW and European-American (EAW) breast cancer survivors</td>
<td>SOC 13</td>
<td>Convenience sample N=10 breast cancer survivors consisted of 5 AAW and 5 EAW, majority (6)were registered nurses</td>
</tr>
<tr>
<td>Nyamathi, A. (1991)</td>
<td>SOC, self-esteem, social availability</td>
<td>Investigate the relationship of three specific resources (SOC, self-esteem, and social availability) and combinations of them on emotional distress, somatic complaints, and high-risk behaviors of minority</td>
<td>SOC 13</td>
<td>Convenience sample of 581 women (471 – 81% AAW and 110 – 19% Hispanic), enrolled in drug rehabilitation program and homeless</td>
</tr>
<tr>
<td>Citation</td>
<td>Focus</td>
<td>Purpose</td>
<td>SOC tool</td>
<td>Sample, characteristic and setting</td>
</tr>
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</tr>
<tr>
<td>Nyamathi, A. (1992)</td>
<td>SOC, appraisal of threat, resources, coping responses, self-esteem, health outcomes, emotional distress, and somatic complaints</td>
<td>women at risk for HIV infections. Assess factors that relate to level of HIV risks of black homeless women</td>
<td>SOC 13</td>
<td>Convenience sample of 460 black homeless women</td>
</tr>
<tr>
<td>Nyamathi, A.M. (1993)</td>
<td>SOC, personal and environmental concerns, appraisal of threat, emotional distress, and high-risk behaviors</td>
<td>Investigate the relationship among SOC, personal and environmental concerns, appraisal of threat, emotional distress, and high-risk behaviors in minority women at risk for HIV infection.</td>
<td>SOC 13</td>
<td>581 minority women (471-81% AA, 110-19% Hispanic) recruited. 183 were participants in drug rehab programs and 398 were homeless.</td>
</tr>
</tbody>
</table>
APPENDIX F:

SUMMARY OF KEY THEORIES IN THE STUDY OF BREAST CANCER SCREENING BEHAVIORS OF AFRICAN AMERICAN WOMEN
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Supposition</td>
<td>Individuals will likely engage in a health behavior if they believe that the negative consequences of a health condition can be avoided, and if they believe that by performing a specific health behavior they will avoid the negative consequences of the health condition.</td>
<td>People make rational decisions when faced with a choice and that a person’s behavior is influenced by their intention. Intention to perform a behavior is determined by the person’s attitude toward the behavior, influence of their social environment, and their perceived behavioral control.</td>
<td>A variety of individual, environmental, and provider-related variables are associated with health-care access and utilization.</td>
</tr>
<tr>
<td>Primary Elements / Variables</td>
<td>Demographic, Social and Psychological factors, Expectations, Benefits, Barriers, Efficacy, Threat, Susceptibility, Severity, Cues to Act, Health Promoting Behavior</td>
<td>Behavioral beliefs, Attitude toward behavior, Normative beliefs, Subjective norm, Control beliefs, Perceived behavior control, Intention, Actual behavioral control, Behavior</td>
<td>Predisposing variables, Demographics, Health beliefs, Social structure, Enabling variables, Personal resources, Family resources, Community resources, Need, Perceived health, Evaluated health</td>
</tr>
<tr>
<td>Uses in nursing research</td>
<td>Health Belief Model</td>
<td>Explore and improve the breast care behaviors of AAW by predicting behaviors which allow development of effective interventions.</td>
<td>Theory of Reasoned Action</td>
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</tr>
<tr>
<td>Limitations</td>
<td>Health Belief Model</td>
<td>Does not have power to consistently predict behaviors in AAW. Does not address spirituality/religiosity in AAW. Inconsistent application of variables.</td>
<td>Theory of Reasoned Action</td>
</tr>
</tbody>
</table>

Note: Aday & Andersen, 1974; Ajzen & Fishbein, 1980; Becker, 1974
APPENDIX G:

RECRUITMENT DOCUMENTS
Help Needed with Doctoral Study

African American Women between 45-85 years of age needed for confidential study on breast cancer

If interested, please call Regina Conway-Phillips, MSN, RN, PhD candidate at 708-216-3753. E-mail to: reginaconway@att.net
Help Needed with Doctoral Study

African American Women between 45-85 years of age needed for confidential study on breast cancer screening

If interested, please call Regina Conway-Phillips, RN, MSN, PhD (candidate) at 708-216-3753
E-mail to: reginaconway@att.net

You will receive $25.00 for participation

Contact Regina Conway-Phillips: 708-216-3753
African American Women between 45-85 years of age needed for confidential study on breast cancer screening

If interested in participating or for more information:
Call Regine Conway-Phillips at
708-216-3753
Or Email to
reginaconway@att.net

A Salutogenic Framework to Understand Disparity in Breast Cancer Screening Behavior in African American Women

Regina Conway-Phillips, RN, MSN, PhD Candidate
Phone: 708-216-3753
E-mail: reginaconway@att.net
Ms. Regina Conway-Phillips is an African American Registered Nurse (RN) who is working on her PhD (Doctoral Degree) in Nursing Research at Loyola University Chicago-Nehoff School of Nursing. She is preparing to begin her study on Breast Cancer Screening Motivation and Behavior in African American Women (AAW). Breast cancer is especially burdensome for AAW given that AAW have a lower survival rate than any other racial or ethnic group and the breast cancer mortality rate in AAW is higher than that of White women. Breast cancer mortality among AAW could be reduced if breast cancer screening (BCS) was more effectively utilized by AAW.

Ms. Conway-Phillips is studying a new framework to understand those personal factors that allow some AAW to engage in health preventive behaviors despite considerable barriers.

Focus of this study -
The focus of this study is on AAW to understand the large disparity in breast cancer outcomes in this group of women.

Who can participate?
For this study, I am surveying African American women between the ages of 45 and 85 years. I am seeking your willingness to participate in my study. If you, or anyone you know is willing to participate, you will be asked to complete a set of questionnaires, after which you will receive $25.

What is involved?
Women who participate will be invited to answer a set of questionnaires. The questionnaires are expected to take no longer than 30 minutes to complete.
Participants have three options for completing the questionnaires:
- Mailed
- Face-to-Face
- Telephone Interview

Each participant will receive $25 for completing the questionnaires.

Importance of this study -
This study is part of Ms. Conway-Phillips' mission to contribute to a solution to the continued large disparity in health within the United States and to eliminate the disparity in breast cancer mortality.
APPENDIX H:

LOYOLA IRB APPROVAL
September 29, 2009

RE:  IRB Approval, Regina Conway-Phillips, Principal Investigator
     “Breast Cancer Screening Behavior in African American Women”

To Whom It May Concern:

The Office of Research Services has been notified that the University’s Institutional Review Board received the protocol submission captioned above for review. The project was reviewed and approved at the regularly scheduled meeting on August 14, 2009. This protocol has full-board approval until August 4, 2010.

Loyola University of Chicago, Stritch School of Medicine has a Human Subjects Assurance on file with the Office for Human Research Protections under FWA0009471, and approved thru October 14, 2011.

If you have any questions or require additional information, please feel free to contact me at (708) 216-8433.

Sincerely,

Jamie Caldwell, Director
Office of Research Services for the Health Sciences
Loyola University Chicago at the Medical Center

Cc: Regina Conway-Phillips
APPENDIX I:
IDPH IRB APPROVAL DOCUMENTS
December 28, 2009

Ms. Regina Conway-Phillips, MSN, RN
Niehoff School of Nursing
Loyola University Chicago
2160 S. First Ave., 105-2840
Maywood, IL 60153

Re: 0678 IBCCP Datasharing Agreement

Dear Ms. Conway-Phillips:

I am enclosing the datasharing agreement for your study, “A Salutogenic Framework to Understand Disparity in Breast Cancer Screening Behavior in African American Women.” This datasharing agreement has been signed by Dr. Arnold, the Director of Public Health, and is now fully-executed.

With the datasharing agreement executed, we can now proceed with providing you with a list of de-identified, numbered applicants for your study, from which you can select a random sample to receive your study materials. You may contact me by phone at (217) 557-4433 or by e-mail at allen.griffy@illinois.gov to discuss how this list can best be provided to you.

I look forward to working with you as you conduct your study. Please let me know if you have any questions or concerns.

Sincerely,

K. Allen Griffy, CPA/Supervisor
Contract and Data Management Section
Office of Women’s Health
APPENDIX J:

IDPH COVER LETTER
Dear IBCCP Participant:

Regina Conway-Phillips is an African American Registered Nurse (RN) who is studying for a PhD degree at Loyola University Chicago Niehoff School of Nursing. She is conducting a study to determine how African American women’s attitudes contribute to breast cancer screening results.

For this study, she is surveying African American women between the ages of 45 and 85 who have received a mammogram through the Illinois Breast and Cervical Cancer Program (IBCCP) in the last four years. She is seeking your help to complete her study. If you are willing to help, please complete the enclosed questionnaires. **You will receive $25 for returning the completed set of questionnaires.**

The Illinois Department of Public Health fully supports Ms. Conway-Phillips in her research project. To show our support, we are mailing this letter to you as a participant in the Illinois Breast and Cervical Cancer Program (IBCCP). This study is voluntary. Please be assured that we have not given out your name or address to anyone, including Ms. Conway-Phillips.

We are asking you to support this study, as we believe it will be helpful in reaching more African American women with breast cancer screenings. If you choose to enroll in the study, please fill out the enclosed Informed Consent Form and the Questionnaire Booklet and return these items to Ms. Conway-Phillips in the stamped preaddressed envelope that is included in this packet. You may also contact Ms. Conway-Phillips by telephone at 708-216-3753 to inform her of your interest in participating in the study. Your consideration is appreciated.

If you would like to discuss this letter or the survey with someone at IBCCP, please call Lynette McKinney-Colman at (217) 524-6088.

Sincerely,

Pamela W. Balmer
Division Chief, Women’s Health Services
Program Manager, Illinois Breast and Cervical Cancer Program
APPENDIX K:

AUTHORIZATIONS TO USE INSTRUMENTS
RE: Index of Positive Motivation for Screening

Dear Ms. Conway-Phillips -

I would be pleased if you choose to incorporate our scale in your work. Best of luck with your interesting and important research activities.

With all best regards -

Ann Carroll Klassen, Ph.D.
Associate Professor
Department of Health, Behavior, and Society
Johns Hopkins Bloomberg School of Public Health
and Department of Oncology
Johns Hopkins School of Medicine
624 N Broadway, Room 298
Baltimore, Maryland 21205
410 955 2218 (P) (Office)
410 955 7241 (Fax)
akklassen@jhsph.edu

From: Regina Conway-Phillips (rphill12@luc.edu)
Sent: Tuesday, April 07, 2009 11:35 PM
To: Klassen, Ann; Smith, Katherine C.
Cc: rcp6326@aol.com
Subject: Index of Positive Motivation for Screening

Hello Drs. Klassen and Smith,

My name is Regina Conway-Phillips and I am a doctoral student in the Loyola University Chicago Niehoff School of Nursing. I am preparing for the research phase in my doctoral dissertation. My topic of interest is breast cancer screening behaviors of African American women. My proposed title is:

Understanding the breast cancer screening motivation and behavior of AAW: A salutogenic framework.

I am interested in determining the relationship among sense of coherence (SOC), health perception, spirituality and social support and the impact on breast cancer screening motivation and behavior in AAW. I propose operationalizing breast cancer screening motivation by using the Index of Positive Motivation for Screening that you used in your multi-year NCI funded study of breast cancer screening among AAW in Baltimore, MD.

This email is to ask your permission to use the Index of Positive Motivation for Screening as a measurement instrument for my doctoral dissertation.

My contact information is as follows:
Regina Conway-Phillips, MSN, RN
109 S Maple Ave, 2nd Floor
Oak Park, IL 60302
Home: 708-445-8819
Work: 708-327-3080
Cell: 773-206-1612

Email:
Home: rcp6326@aol.com
School: rphill12@luc.edu
Work: regina.conway-phillips@cancer.org

RE: Index of Positive Motivation for Screening

I look forward to your response.

Thank you,

Regina

Regina Conway-Phillips, MSN, RN
Patient Navigator
American Cancer Society
Cardinal Bernardin Cancer Center
Lower Level
708-327-3080

http://webmail.aol.com/42402/aol/en-us/mail/PrintMessage.aspx

4/8/2009
September 28, 2009

Regina Conway-Phillips
109 South Maple Avenue
Oak Park, IL 60302

Dear Ms. Conway-Phillips:

Thank you for your interest in the Inventory of Social Support (ISS). I am enclosing the instrument and associated factor structure.

You are granted permission to use the ISS for non-commercial purposes. You may edit the instructions for the instrument as appropriate for your sample(s). You may also change the formatting of the instrument to maintain a consistent presentation with any other instruments you may be using. The wording of the items and the scaling options may not be changed without express permission. Any edited versions of the instrument will remain my property and I request you forward a copy of the edited version for my records.

The instrument may not be duplicated or reproduced in any publications. I would request a copy of any published manuscripts or abstracts of presentations that reference the ISS. For the time being, all published work must contain the following credit:

Finally, I'd appreciate any unpublished feedback relating to the psychometrics of the ISS and your experiences with the measure.

Thank you again for your interest in the ISS and I wish you the best in your efforts.

Sincerely,

Nancy Hogan, PhD, RN, FAAN
Distinguished Professor
Associate Dean for Research
Niehoff School of Nursing
Loyola University Chicago
2160 South First Avenue
105-2840
Maywood, Illinois 60153
Tel: 773-665-7865
nhogan@luc.edu
NON-COMMERCIAL LICENSE AGREEMENT
Office of Grants and Scholarly Research (OGSR)

License Number: CT118601 / OP002536
Effective Date: July 16, 2009
Licensee Name: Regina Conway-Phillips
Licensee Address: Loyola University Chicago
Marella Niehoff School of Nursing
2160 S First Avenue
105-2840
Maywood, IL 60153

Requested Administrations: 120
Approved Administrations: Two Times Requested Administrations
Approved Use: Non-commercial academic research - unfunded - "Breast cancer screening."
Term: Beginning on July 22, 2009 and ending on July 21, 2010
Licensed Surveys: As indicated in Appendix B attached
Manuals: Licensee must purchase (or have purchased) from QM a copy of the manuals indicated in Appendix B attached
Royalty Fee: None, because this License is granted in support of the non-commercial Approved Use below
Administrative Fee: $100.00

Licensee accepts and agrees to the terms of this Non-Commercial License Agreement (the "Agreement") from the Office of Scholarly Grants and Research (OGSR) of QualityMetric Incorporated ("QM") as of the Effective Date.

Subject to the terms of this Agreement, including the QualityMetric Non-Commercial License Terms and Conditions attached as Appendix A: (a) QM grants to Licensee, and Licensee accepts, a non-exclusive, non-transferable, non-assignable, non-sub licensable worldwide license to use, solely for the Approved Use and during the License Term, the Licensed Surveys in the authorized Modes and Approved Languages indicated on Appendix B and to administer the Licensed Surveys only up to the Approved Administrations (and to make up to such number of exact reproductions of the Licensed Surveys necessary to support such administrations) in any combination of the specific Licensed Surveys and Approved Languages and Modes and to use any related software provided by QM and (b) Licensee agrees to pay the Administrative Fee and other applicable charges in accordance with the attached invoice.

Capitalized terms used in this Agreement and not otherwise defined herein shall have the meanings assigned to them in Appendix A. The appendices attached hereto are incorporated into and made a part of this Agreement for all purposes.

Regina Conway-Phillips
Loyola University Chicago
Marella Niehoff School of Nursing
2160 S First Avenue
105-2840
Maywood, IL 60153

Signature: __________________________
Name: Regina Conway-Phillips
Title: PhD Candidate

> For additional information about QM’s OGSR, go to http://www.qualitymetric.com/advancing/ <

FileName: Regina Conway-Phillips - CT118601 - OP002536
Template - License Agreement (OGSR) - 09-2008
SPS REQUEST FORM

1. Regina Conway-Phillips, request to copy the Spiritual Perspective Scale (SPS) for use in my research entitled, Understanding Breast Cancer Screening Motivation and Behaviors in African American Women: A Salutogenic Framework, for my doctoral dissertation.

In exchange for this permission, I agree to submit to Dr. Pamela G. Reed a copy of items 1 and 2 below, and item 3 if available:

1) An abstract of my study purpose, framework, and findings, especially which includes the correlation’s between the SPS scale scores and any other measures used in my study. (This will be used by Dr. Reed to assess construct validity).

2) The reliability coefficient as computed on the scale from my sample (Cronbach’s alpha).

3) A computer of the SPS data and demographic data, and the data coding dictionary (to decipher coded data).

Any other information or findings that could be helpful in assessing the reliability or validity of the instrument would be greatly appreciated (e.g., problems with items, comments from subjects, other findings).

These data will be used to establish a normative database for clinical populations. No other use will be made of the data submitted. Credit will be given to me in reports of normative statistics that make use of the data I submitted for pooled analyses.

Date: April 18, 2009

Researcher’s Name: Regina Conway-Phillips, MSN, RN

Professional Position: Registered Nurse

Mailing Address: 109 S Maple Ave, 2nd Floor, Oak Park, IL 60302

Email Address: rcp6326@aol.com and rphill2@luc.edu

Permission is hereby granted to copy the SPS for use in the research described above.

Pamela G. Reed, RN, PhD, FAAN

Date:

Please return this form completed to Dr. Reed by email, and keep a copy for your own records.
QUESTIONNAIRE BOOKLET

Regina Conway-Phillips, MSN, RN
PhD Candidate
Loyola University Chicago Niehoff School of Nursing
2160 S First Ave
105-2840
Maywood, IL 60153
708-216-3753
reginaconway@att.net
Dear Participant,

Thank you for agreeing to participate in this research project. This booklet contains 6 questionnaires that will ask you about some key factors that may help health professionals understand why African American women do not obtain regular screening for breast cancer. The questionnaires ask you about your sense of coherence (how you view your life), your perception of your health, your perspective of spirituality, the level of social support you have, your motivation to obtain breast cancer screening, and your history of obtaining breast cancer screening.

This booklet contains the following questionnaires:

- Orientation to Life Questionnaire (SOC-29)
- SF12-v2 Health Survey
- Spiritual Perspective Scale
- Inventory of Social Support
- Index of Positive Motivation for Screening
- Breast Cancer Screening Behaviors of AAW Questionnaire

There are 3 important steps to remember:

1. It is important that you read and follow the instructions for each questionnaire.
2. Please make sure you answer all of the questions on each questionnaire.
3. Upon completing the questionnaire booklet, return it in the self-addressed, stamped envelope that was provided in this packet.

If you have any questions, I can be reached at 708-216-3753.

Thank you,

Regina Conway-Phillips, MSN, RN, PhD (Candidate)
ID # _______

ORIENTATION TO LIFE QUESTIONNAIRE (SOC-29)

Here is a series of questions relating to various aspects of our lives. Each question has seven possible answers. Please mark the number which expresses your answer, with numbers 1 and 7 being the extreme answers. If the words under 1 are right for you, circle 1; if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses your feeling. Please give only one answer to each question.

1. When you talk to people, do you have the feeling that they don’t understand you?

   1  2  3  4  5  6  7
   never
   have this
   feeling
   always
   have this
   feeling

2. In the past, when you had to do something which depended upon cooperation with others, did you have the feeling that it:

   1  2  3  4  5  6  7
   surely
   wouldn’t
   get done
   surely
   would get
   done

3. Think of the people with whom you come into contact daily, aside from the ones to whom you feel closest. How well do you know most of them?

   1  2  3  4  5  6  7
   You feel
   that they
   are
   strangers
   You know
   them very
   well

Continued on back of page→
4. Do you have the feeling that you don’t really care about what goes on around you?

1  2  3  4  5  6  7
Very seldom or never

5. Has it happened in the past that you were surprised by the behavior of people whom you thought you knew well?

1  2  3  4  5  6  7
never happened

6. Has it happened that people whom you counted on disappointed you?

1  2  3  4  5  6  7
never happened

7. Life is:

1  2  3  4  5  6  7
full of interest

Continued on next page→
8. Until now your life has had:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>no clear goals or purpose at all</td>
<td>Very clear goals and purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Do you have the feeling that you’re being treated unfairly?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>very seldom or never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. In the past ten years your life has been:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>full of changes without your knowing what will happen next</td>
<td>completely consistent and clear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Most of the things you do in the future will probably be:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>completely fascinating</td>
<td>deadly boring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on back of page→
12. Do you have the feeling that you are in an unfamiliar situation and don’t know what to do?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very often</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>very seldom or never</td>
</tr>
</tbody>
</table>

13. What best describes how you see life:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>one can always find a solution to painful things in life</td>
<td></td>
<td></td>
<td></td>
<td>there is no solution to painful things in life</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. When you think about your life, you very often:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>feel how good it is to be alive</td>
<td></td>
<td></td>
<td>ask yourself why you exist at all</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. When you face a difficult problem, the choice of a solution is:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>always confusing and hard to find</td>
<td></td>
<td></td>
<td>always completely clear</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page
16. Doing the things you do every day is:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>a source of deep pleasure and satisfaction</td>
<td>a source of pain and boredom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Your life in the future will probably be:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>full of changes without your knowing what will happen next</td>
<td>completely consistent and clear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. When something unpleasant happened in the past your tendency was:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>“to eat yourself up” about it</td>
<td>to say “ok, that’s that, I have to live with it,” and go on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. Do you have very mixed-up feelings and ideas?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>very seldom or never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on back of page→
20. When you do something that gives you a good feelings:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>it's certain that you'll go on feeling good</td>
<td>it's certain that something will happen to spoil the feeling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. Does it happen that you have feelings inside you would rather not feel?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>very seldom or never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. You anticipate that your personal life in the future will be:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>totally without meaning or purpose</td>
<td>full of meaning and purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. Do you think that there will always be people whom you'll be able to count on in the future?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>you're certain there will be</td>
<td>you doubt there will be</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page→
24. Does it happen that you have the feeling that you don’t know exactly what’s about to happen?

1 2 3 4 5 6 7
very often very seldom or never

25. Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

1 2 3 4 5 6 7
never Very often

26. When something happened, have you generally found that:

1 2 3 4 5 6 7
you you saw
overestimated things in
or the right
underestimated proportion
its importance

27. When you think of difficulties you are likely to face in important aspects of your life, do you have the feeling that:

1 2 3 4 5 6 7
you will you won’t always succeed in
you won’t succeed in
overcoming overcoming
the difficulties the difficulties

Continued on back of page→
28. How often do you have the feeling that there's little meaning in the things you do in your daily life?

1  2  3  4  5  6  7
very often  very seldom or never

29. How often do you have feelings that you're not sure you can keep under control?

1  2  3  4  5  6  7
very often  very seldom or never

Thank you for completing these questions!
Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Thank you for completing this survey!

For each of the following questions, please mark an □ in the one box that best describes your answer.

1. In general, would you say your health is:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

   Yes, limited a lot
   Yes, limited a little
   No, not limited at all

   - Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf...
     □ ☐ ☐ ☐ ☐
   - Climbing several flights of stairs...
     □ ☐ ☐ ☐ ☐

Continued on back of page→
3. **During the past 4 weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of your physical health**?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

- Accomplished less than you would like..................................................  □  □  □  □  □  □  □  □  □  □
- Were limited in the kind of work or other activities .................................. □  □  □  □  □  □  □  □  □  □

4. **During the past 4 weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

- Accomplished less than you would like..................................................  □  □  □  □  □  □  □  □  □  □
- Did work or other activities less carefully than usual .................................. □  □  □  □  □  □  □  □  □  □

5. **During the past 4 weeks**, how much did pain interfere with your normal work (including both work outside the home and housework)?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

Continued on next page→
6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

- Have you felt calm and peaceful? □ □ □ □ □ □ □ □
- Did you have a lot of energy? □ □ □ □ □ □ □ □
- Have you felt downhearted and depressed? □ □ □ □ □ □ □ □

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Thank you for completing these questions!
SPiritual Perspective Scale © Reel, 1986

Introduction and Directions: In general, spirituality refers to an awareness of one's inner self and a sense of connection to a higher being, nature, others, or to some purpose greater than oneself. I am interested in your responses to the questions below about spirituality as it may relate to your life. There are no right or wrong answers. Answer each question to the best of your ability by marking an “X” in the space above that group of words that best describes you.

1. In talking with your family or friends, how often do you mention spiritual matters?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Less than once a year</th>
<th>About once a year</th>
<th>About once a month</th>
<th>About once a week</th>
<th>About once a day</th>
</tr>
</thead>
</table>

2. How often do you share with others the problems and joys of living according to your spiritual beliefs?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Less than once a year</th>
<th>About once a year</th>
<th>About once a month</th>
<th>About once a week</th>
<th>About once a day</th>
</tr>
</thead>
</table>

3. How often do you read spiritually-related material?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Less than once a year</th>
<th>About once a year</th>
<th>About once a month</th>
<th>About once a week</th>
<th>About once a day</th>
</tr>
</thead>
</table>

4. How often do you engage in private prayer or meditation?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Less than once a year</th>
<th>About once a year</th>
<th>About once a month</th>
<th>About once a week</th>
<th>About once a day</th>
</tr>
</thead>
</table>

Continued on next page
Spiritual Perspective Scale (continued)

Directions: Indicate the degree to which you agree or disagree with the following statements by marking an "X" in the space above the words that best describe you.

5. Forgiveness is an important part of my spirituality.

6. I seek spiritual guidance in making decisions in my everyday life.

7. My spirituality is a significant part of my life.

8. I frequently feel very close to God or a "higher power" in prayer, during public worship, or at important moments in my daily life.

9. My spiritual views have had an influence upon my life.

10. My spirituality is especially important to me because it answers many questions about the meaning of life.

If possible, please describe how you define spirituality on the back of this page, or provide any other comments you feel are important for the researcher to know about.
Thank you for completing the SPS.

©Reed, 1985
INVENTORY OF SOCIAL SUPPORT
Hogan, N. & Schmidt, L., 1999
Revised with N. Hogan 3/2009

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes the way you have been feeling during the past two weeks, including today. Please select the number that best describes YOU and put that number in the blank provided.

1 = Does not describe me at all
2 = Does not quite describe me
3 = Describes me fairly well
4 = Describes me well
5 = Describes me very well

___ 1. People take the time to listen to how I feel.
___ 2. I can get help for my health concerns when I need it.
___ 3. I can express my feelings about my breasts openly and honestly.
___ 4. It helps me to talk with someone who is nonjudgmental about how I feel.
___ 5. There is at least one person I can talk to.

Thank you for answering these questions!
Index of Positive Motivation for Screening
Klassen et al., 2008

Please read the list of some of the reasons that people might use to explain who gets breast cancer and who does not. For each reason, please think about how much this might explain whether a woman gets breast cancer. Using the scale shown below, please choose the number that describes the way you feel about each reasons effect on whether or not a woman gets breast cancer.

1 = BIG EFFECT
2 = SOME EFFECT
3 = NOT MUCH EFFECT
4 = NO EFFECT AT ALL

___ 1. Contagious elements, such as a virus, and having direct contact with someone who has breast cancer.
___ 2. Having the kind of personality that causes cancer.
___ 3. Punishment for something a person has done wrong in her life.
___ 4. Previous injury or trauma to the breast.
___ 5. Having a family history of breast cancer.

Read the following questions about the acceptance of cancer. Please choose the number that best describes the way you feel about cancer.

1 = STRONGLY AGREE
2 = AGREE A LITTLE
3 = DISAGREE A LITTLE
4 = STRONGLY DISAGREE

___ 6. If I had breast cancer, I would rather not know about it.
___ 7. Cancer would be the worst disease I can imagine having.

8. In your own words, please explain:
   a. What is a mammogram?
   
   b. What is the purpose of a mammogram?

   Continued on back of page→
For items 9 and 10 read each of the following statements and circle the item that best describes the way you feel about each statement.

9. In most cases, by the time a doctor can see a breast cancer the size of a pin head on a mammogram, what is the chance of it already having spread to another part of her body?

1 = ALMOST CERTAIN TO HAVE SPREAD
2 = VERY LIKELY
3 = SOMEWHAT LIKELY,
4 = NOT AT ALL LIKELY

10. After a woman has had 2 or 3 negative mammograms, it is not necessary to have any more.

1 = STRONGLY AGREE
2 = AGREE A LITTLE
3 = DISAGREE A LITTLE
4 = STRONGLY DISAGREE

Read each of the following statements carefully. Using the scale below, please select the number that best describes the way you feel.

1 = STRONGLY AGREE
2 = AGREE A LITTLE
3 = DISAGREE A LITTLE
4 = STRONGLY DISAGREE

___ 11. If you trust your doctor, you do not need to ask for any tests. He or she will give them to you when you need them.

___ 12. Regarding my health, I can only do what my doctor tells me to do.

___ 13. Women can tell if they have breast cancer without going to the doctor for tests.

Thank you for completing these questions!
Breast Cancer Screening Behaviors of African American Women Questionnaire

PERSONAL AND FAMILY HISTORY

1. The following questions concern your personal and family health history. Please read each question or statement carefully and follow the instructions provided.

a. How old were you when you had your first menstrual period? __________

b. Place an x by the answer that best describes your current menstrual status.
   - Still having a regular period: __________ 1
   - Still having a period, but irregular: __________ 2
   - Pregnant: __________ 3
   - Not having a menstrual period-post menopause: __________ 4
   - Not having a menstrual period- other (nursing, etc.): __________ 5
   - Hysterectomy: __________ 6

c. How many children have you given birth to? (write in) ________ (if none, SKIP to Q1. e)

d. How old were you when you had your first child? (write in) ________

e. Have you ever taken birth control pills? Yes _____ No _____ (if no, SKIP to Q1. h)

f. If yes, how many years did you take the pill? ________ (write in)

g. Are you taking birth control pills now? Yes _____ No _____

h. Have you ever taken hormone replacement therapy? Yes _____ No _____ (if no, SKIP to Q1. k)

i. If yes, how many years did you take hormone replacement therapy? (write in) ________

j. Are you taking hormone replacement therapy now? Yes _____ No _____

k. Did any of your blood relatives have breast cancer? Yes _____ No _____ (if no, SKIP to Q1. m)

l. If yes, who had breast cancer? (Place an X next to all answers that apply to you).
   - Mother: ________
   - Grandmother: ________
   - Sister: ________
   - Aunt: ________
   - Daughter: ________

m. Have you had breast cancer? Yes _____ No _____

n. Has a friend had breast cancer? Yes _____ No _____

2. The following questions concern your personal data. Please read each question or statement carefully and follow the instructions provided. For each statement or question please fill in or place an X next to the response that best describes you.

a. What is your age? ________

b. What is your highest grade or year of school you have completed? (write in) ________

c. What is your source of health care coverage? (Place an X next to the answer that applies).
   - None: ________
   - Public aid/Medicaid: ________
   - Medicare: ________
   - Private insurance (self-pay): ________
   - Private insurance (employer paid): ________
   - Other: (write in) ________

d. What is your total household income? (write in) ________

3a. Do you attend church? Yes _____ No _____

3b. If yes, what religion? (Write in) ________

Continued on back of page
BREAST CANCER SCREENING HISTORY

4a. Have you ever received information regarding each of the following? (Place an X next to the answer that applies. Please be sure to answer each question.)

- Breast Self-Examination (BSE) …………Yes _____ No _____
- Mammography…………………………Yes _____ No _____
- Clinical (Professional) Breast Examination…Yes _____ No _____

4b. Has your doctor or nurse recommended any of the following? (Place an X next to the answer that applies. Please be sure to answer each question.)

- Breast Self-Examination (BSE) …………Yes _____ No _____
- Mammography…………………………Yes _____ No _____
- Clinical (Professional) Breast Examination…Yes _____ No _____

5a. How often do you think each of the following breast cancer screening activities should occur? (Place an X next to the answer that applies. Give detail if you select other)

- Breast Self-Examination (BSE): Yearly _____ Monthly _____ Weekly _____ Other _____
- Mammography: Yearly _____ Every 2 years _____ Every 3 years _____ Other _____
- Clinical (Professional) Breast Examination: Yearly _____ Every 2 years _____ Every 3 years _____ Other _____

5b. Have you ever been taught how to perform breast self-examinations (BSE)?

Yes _____ No _____

6a. Have you ever performed a breast self-examination (BSE)? Yes _____ No _____

6b. If yes, how often do you examine your breast? (Place an X next to the answer that applies).

- I do not examine my breast.........
- Once or twice a month………………
- Every two or three months………..
- Several times a year………………..
- Every two or three years……………

6c. When was the last time you examined your breast? (Write in number of months or years)

_________________________ (e.g., 1 month ago, 2 years ago).

7a. Do you intend to do BSE on a monthly basis in the future? Yes _____ No _____

7b. If no, what are the reasons you will not do breast self-examinations? (Write in all of your reasons)

Continued on next page→
8a. Have you ever had a clinical (professional) breast examination? (An exam done by the doctor or nurse) Yes________ No________

8b. If yes, how often do you go for a clinical (professional) breast examination? (Place an X next to the answer that applies)

- Every six months……………….____
- Once a year……………………____
- Every two to three years…………..____
- Every five years…………………____

8c. The last clinical (professional) breast exam I had was (write in number of months or years)

________________________

9. Do you intend to obtain a clinical (professional) breast examination in the future?

Yes __________ No__________

10a. Have you ever had a mammogram? (An x-ray of the breast). Yes_____ No_______ (if no, SKIP to Q 11)

10b. At what age did you have your first mammogram? (Write in the age) _________________

10c. The last time I had a mammogram was. (Place an X next to the response that applies to you)

- Within the past year ............____
- Within the past 2 years..........____
- Within the past 3 years..........____
- More than 3 years...............____
- Don’t remember................____
- Never...........................____

11. There are many reasons why women do not have mammograms. Why is it that you have never had a mammogram? (Write in all of the reasons)

_____________________________

12. Do you intend to have a mammogram in the future? Yes_______ No_______

13a. Do you believe that early detection is beneficial? Yes _____ No ______

13b. If yes, explain why you think early detection is beneficial. __________________________________________

14. What would motivate you most to perform all three breast cancer screening activities (BSE, CBE and mammography)? (Write your response)

Thank you for answering these questions!
Thank you!

Return the questionnaire booklet in the self-addressed, postage paid envelope to receive $25.00.

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VITA

Regina Conway-Phillips was born and raised in Chicago, Illinois to her parents George Jefferson Conway (deceased) and Willie Mae Conway Morton. She received a Diploma Degree in Nursing from Ravenswood Hospital School of Nursing, Chicago, Illinois in 1975, a Bachelor of Science in Nursing from Chicago State University, Chicago, Illinois in 1986, and a Master of Science in Nursing from the Marcella Niehoff School of Nursing at Loyola University Chicago, Chicago, Illinois in 1994. Ms. Conway-Phillips entered the doctoral program at Loyola University Chicago in the fall of 2006 and completed the Doctor of Philosophy degree in the Marcella Niehoff School of Nursing in May, 2011.

While at Loyola, Regina has served as a clinical instructor at the Niehoff School of Nursing and as a research assistant for Dr. Barbara Velsor-Friedrich on a National Institute of Nursing Research funded RO1 grant. Regina has been active in several national nursing organizations and is a past president of the American Academy of Ambulatory Care Nursing.

Currently, Regina is a Nurse Navigator for the American Cancer Society at the Loyola University Cardinal Bernardin Cancer Center. She lives in Oak Park, Illinois.
DISSERTATION APPROVAL SHEET

The dissertation approval sheet submitted by Regina Conway-Phillips has been read and approved by the following committee:

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

____________________  _________________________
Date                    Director's Signature