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**HEALTH BELIEFS AND SOCIO-CULTURAL FACTORS THAT PREDICT
CERVICAL CANCER SCREENING BEHAVIORS AMONG HISPANIC
WOMEN IN SEVEN CITIES IN THE UPSTATE OF SOUTH CAROLINA**

**A Dissertation
Presented to the
Graduate School of
Clemson University**

**In Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
International Family and Community Studies**

**Arelis Moore de Peralta
December 2011**

**Accepted by
Dr. Bonnie Holaday, Committee Chair
Dr. Susan Limber
Dr. James McDonell
Dr. Kathleen Robinson**

ABSTRACT

Cervical cancer is one of the most common reproductive cancers among women in the United States. The incidence and mortality rates of cervical cancer among Hispanic women in the U.S. are almost two times higher than non-Hispanic Whites. Cervical cancer screening is associated with early cervical cancer detection and, thus, with reductions in cancer morbidity and mortality. In Hispanic populations, where cancer rates are disproportionately high, it is important to conduct research that accounts for the influence of culture in health-seeking behaviors. The purpose of this study was to use the Health Belief Model (HBM) as a theoretical framework to explore the culturally determined beliefs and attitudes influencing Hispanic women's decisions about cervical cancer and screening. A cross-sectional survey was conducted among self-identified Hispanic women, of various countries of origin, who were 18 to 65 years of age and who lived in seven cities in the Upstate of South Carolina. Generalized Linear Modeling was used to explore the effects of the hypothesized predictors. Results found evidence to support the hypothesized relationships between cervical cancer screening and health beliefs. Perceived threats (susceptibility and severity) and self-efficacy were the strongest predictors. The results also indicated that perceived benefits and barriers acted together to determine the women's likelihood of getting screened. The importance of familism demonstrated the need to incorporate relevant cultural concepts when examining screening behaviors in minority groups. Knowledge about cervical cancer and the Pap test, age, marital status, income, access to regular medical care, familism, and cues to

cervical cancer screening were determining factors that influenced S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test and their cervical cancer screening behaviors. The HBM can be used as a framework to design culturally appropriate cervical cancer screening interventions. Comprehensive approaches combining access to regular care and screening at a medical home and providing clear, accurate and culturally adapted information about cervical cancer, HPV, and screening will support the right of Hispanic women to access to cancer preventive care.

DEDICATION

I dedicate this dissertation to God, my family, friends, co-workers, and volunteers.

To my mother, who gave me life and raised me with love and dedication. Her intelligence, energy, and passion for life are always going to be my greatest inspiration.

To my husband, who is always by my side, supporting me and encouraging me to do my best. His support, love, and commitment to our family allowed me to accomplish this milestone.

To my son, who sacrificed many hours of mom's companion and guidance. Thanks for being a good, loving, and responsible son; I'm so proud of you.

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CHAPTER ONE

The study problem

Introduction to the problem

Cervical cancer in the United States

Cervical cancer is one of the most common reproductive cancers among women in the United States and is the second most common cancer among women worldwide (American Cancer Society, 2009). The National Cancer Institute (2009a) defines cervical cancer as a “cancer that forms in tissues of the cervix (the organ connecting the uterus and vagina)”.

Studies on the worldwide prevalence of cervical cancer has been referred to as “a case study in health equity” because most (85%) of cervical cancer deaths occur in the developing world, as well as among underserved and minority populations in developed countries (Wittet & Tsu, 2008; World Health Organization [WHO], 2006a). This inequity calls for the implementation of aggressive interventions to increase rates of regular screening among minority underserved women (Bazargan, Bazargan, Farooq, & Baker, 2004).

Cervical cancer has a relatively defined etiology, available treatments, and scientifically proven methods of prevention, compared to most cancers (Tracy, Lydecker, & Ireland, 2010). This disease is considered to be highly preventable, due to its long pre-

invasive stage, availability of the Pap smear¹, and the effectiveness of existing treatment options for pre-invasive lesions (Ramirez et al. 2000). The major risk factor for cervical cancer is persistent infection with certain types of human papillomaviruses (HPV) (Panamerican Health Organization [PAHO], 2007).

HPV infection is the most common sexually transmitted disease in the United States (Centers for Disease Control and Prevention [CDC], 2010a). More than six million new infections are reported every year in this country. Primarily affecting adults 18-28 years old (Lopez & McMahan, 2007). Other factors that can increase the risk of cervical cancer are not having regular Pap tests, lack of follow-up after an abnormal Pap test result, dietary and nutritional factors, a family history of cervical cancer, a history of sexually transmitted diseases (STDs), use of oral contraceptives, and having HIV (CDC, March 2009; Warren, Gullett, & King, 2009).

Cytology continues to be recommended for large-scale cervical cancer screening programs (Alliance for Cervical Cancer Prevention [ACCP], April 2007). Cervical cancer screening guidelines have been put forth by the American College of Obstetricians and Gynecologists (ACOG), the American Cancer Society (ACS), and the U.S. Preventive Task Force (USPSTF). There are variations in the recommendations among these

¹ The terms “cervical cancer screening”, “Pap smear test”, “cytology”, and “Pap test” are used interchangeably in this report.

organizations (Tracy et al. 2010), primarily related to women's age to obtain cervical cancer screening and the periodicity for subsequent tests.

Evidence has shown that health personnel implement cervical cancer screening guidelines differently (Saraiya et al., 2010). In addition, in several studies women reported a lack of knowledge about screening guidelines (Parra-Medina et al. 2009; Scarinci, Beech, Kovach, & Bailey, 2003; Wu, Black, & Markides, 2001). The recent changes introduced to the guidelines and the variations in recommendations across organizations, may contribute to a lack of knowledge among most women at risk of cervical cancer, as well as variations in implementation by health personnel.

Cervical cancer and cervical cancer screening in Hispanics

The United States (U.S.) has been referred to as a nation of immigrants. Today's immigrants come from all parts of the world and comprise a significant and growing portion of the U.S. population. It is also estimated that an additional 11.6 million immigrants are undocumented and residing without proper documents in the U.S. (Hoefer, Rytina, & Baker, 2009). The Latino population is already the nation's largest minority group. Hispanics accounted for more than half (56%) of the U.S. population growth in the last decade. According to the 2010 U.S. Census, Hispanics represent 16% of the population. There were 50.5 million Hispanics residing in the U.S. population in 2010 (Pew Hispanic Center, 2011).

Latinos² are not a homogeneous group. They come from different nationalities and unique traditions (Pew Hispanic Center, 2006). Most of these immigrants come from Central and Latin America. Hispanics are overrepresented among low-income individuals in the U.S. (Scarinci et al. 2003). South Carolina (S.C.) is the state with the largest Hispanic population percent growth between 2000 and 2010. The Hispanic population in S.C. grew by 148% during this period (Pew Hispanic Center, 2011). Hispanics in S.C. are estimated to be predominantly Mexicans, young, married, living in poverty conditions, and without health insurance (U.S. Census Bureau, 2009).

The incidence of and mortality for cervical cancer has fallen in the past 50 years in the U.S. However, estimates continue to show a substantial number of cases and deaths due to cervical cancer, particularly among Hispanic women (National Cancer Institute, 2009a; U.S. Department of Health and Human Services, 2009). The incidence and mortality rates of cervical cancer among Hispanic women in the U.S. are almost two times higher than non-Hispanic Whites (CDC, 2010b). The apparent reason for these discrepancies is decreased access to Pap testing and follow-up treatment, due in part to lack of knowledge about preventive procedures (Arredondo, Pollack, & Constanzo, 2008; CDC, 2007).

² The terms “Latino” and “Hispanic” are used interchangeably in this dissertation; as are the terms “foreign born” and “immigrant”.

Hispanics undergo Pap smear screening less frequently than women of other race-ethnicities in the U.S. (Ries et al. 2008). This disparity is even higher among Latina immigrants compared with U.S.-born Latinas (Scarinci et al. 2003). Even among Hispanic women with Medicaid compared with other minority groups with Medicaid, the rates of cervical cancer screening are lower (Fatone & Jandorf, 2009). Significant differences in screening rates have also been found across Hispanic women of various countries of origin (Ramirez et al., 2000). These findings support the relevance of psychosocial and cultural predictors of cervical cancer screening among Latinas (Arredondo et al., 2008).

The Health Belief Model (Rosenstock, 1974) is an individual-level health behavior change model that has been widely used to evaluate factors associated with cancer screening; such as mammography, skin, prostate, and cervical cancers (Tracy et al., 2010). Based on the review of the literature, this study will examine selected socio-economic and socio-demographic variables, women's knowledge about cancer and screening, and cues to cervical cancer screening as potential modifying factors of South Carolina (S.C.) Upstate Hispanic women's cervical cancer screening behaviors. In addition, the modifying effect of three culturally-based beliefs and attitudes (fatalism, familism, and acculturation) on S.C. Upstate Hispanic women's perceptions of cervical cancer and screening will be explored.

A cross-sectional survey was conducted among self-identified Hispanic women, of various countries of origin that lived in seven cities in the Upstate of South Carolina. The objective was to better understand the factors that had an impact on cervical cancer

screening among Hispanics in the Upstate of South Carolina, so that recommendations could be made to reduce known barriers and provide appropriate interventions to increase the rate of cervical cancer screening among Upstate South Carolina Hispanic women.

Significance

As the Hispanic population continues to grow in the U.S., health disparities in preventable malignancies, such as cervical cancer, will continue to be a burden to the U.S. health care system (Watts et al., 2009). Research that accounts for the influence of culture in health-seeking behaviors is much needed to orient the development of culturally sensitive interventions to reduce cervical cancer disparities in the U.S. The Health Belief Model (HBM) was used as a theoretical framework to explore the culturally determined beliefs and attitudes influencing Hispanic women's decisions about cervical cancer and screening.

This study used the HBM to examine factors that predict participation in cervical cancer screening. Cultural characteristics unique to Hispanics (familism, fatalism, and acculturation) were examined to determine if they enhanced the capacity of the HBM to predict cancer screening participation among Hispanics. Learning about Hispanic women's perceptions of and knowledge about cervical cancer screening may increase health providers' and administrators' understanding of the factors that determine Hispanic women's participation or lack of participation in cervical cancer screening programs. In addition, it may enable them to develop more appropriate interventions to increase Hispanic women adherence to cervical cancer screening guidelines. The results of this study can be used to eliminate barriers to cervical cancer screening, and to develop

culturally appropriate screening programs to increase the rate of cervical cancer screening among Hispanic women living in the Upstate of South Carolina (Johnson et al., 2008).

Statement of the problem

According to the World Health Organization's recommended strategies, "every woman has the right to be screened at least once in her lifetime" (PAHO, 2007, p 4). The Healthy People 2020 cancer objectives for Pap smear use in the U.S. specify that 85% of all women should have a Pap smear within the preceding 3 years (U.S. Department of Health and Human Services [DHHS], 2010). Healthy People 2020 goal #3 addressed the need to reduce the number of new cancer cases as well as illness, disability, and death caused by cancer. Goal #2 addressed eliminating health disparities (DHHS, 2010). However, disparities in cervical cancer screening continue to exist among underserved and ethnic minority communities in the U.S. (Johnson et al., 2008).

According to the Centers for Disease Control (CDC), never or rarely being screened for cervical cancer is the single most important factor associated with HPV persistence and the progression to invasive cervical cancer (CDC, 2007). A growing body of evidence indicates that immigrants and ethnic minorities are particularly vulnerable to disparities in cancer screening in the U.S. (Johnson, Mues, Mayne, & Kiblawi, 2008). Hispanic women have a rate of invasive cervical cancer twice as high as that of non-Hispanic white women (CDC, 2010b). A national priority for research studies is to examine how ethnic groups access and utilize health care services. Hispanics are the fastest growing segment of the U.S. population, and it is important to understand the

factors, in addition to demographics, related to behaviors influencing the utilization of preventive and screening services.

Purpose of the study

The purpose of this study was to predict South Carolina Upstate Hispanic women's cervical cancer screening behavior by examining selected cervical cancer and screening beliefs, perceived threats, benefits, barriers and their degree of self-efficacy. The study also examined how selected socio-demographic, socio-economic, and cultural factors modified Hispanic women's cervical cancer and screening beliefs, perceived threats, benefits, barriers, and self-efficacy. Hispanic women were surveyed who were 18 to 65 years of age, and who resided in or near seven conveniently selected cities in the Upstate of South Carolina: Greenville, Simpsonville, Fountain Inn, and Greer (Greenville County); Spartanburg (Spartanburg County); Laurens (Laurens County); and Walhalla (Oconee County). The Health Belief Model (HBM) provided the theoretical framework for conceptualizing the study directions and analyses.

Three culturally-based beliefs and attitudes common among Hispanics (i.e. familism, fatalism and acculturation) and selected cues to action (i.e. selected strategies employed by others which activated women's screening behavior) were examined as modifiers of beliefs and screening practices. In addition, the effect that knowledge about cervical cancer, seven socio-demographics factors, and four socio-economic factors as modifiers to belief and action were also examined. S.C. Upstate Hispanic women's cervical cancer screening utilization in the last 3 years previous to being surveyed was

studied. To achieve this purpose, the study was guided by the following research questions:

1. What health beliefs, knowledge about cervical cancer, and modifiers, in combination, have the strongest predictive power to determine whether or not a woman had a Pap test in the three years prior to the time that they were surveyed?
2. What socio-demographic and socio-economic characteristics, cervical cancer knowledge and health beliefs (perceived susceptibility, severity, benefits, self-efficacy and barriers) were associated with an increased likelihood of participation in cervical cancer screening among S.C. Upstate Hispanic women?
3. To what extent do health beliefs (i.e. perceived susceptibility, perceived severity, perceived benefits, perceived self-efficacy, and perceived barriers) add to the strength of prediction of cervical cancer screening utilization by S.C. Upstate Hispanic women, after controlling for socio-demographic and socio-economic factors, and women's knowledge on cervical cancer and screening?
4. How well does the component structure (Figure 2.2) of the modified HBM fit the population of S.C. Upstate Hispanic women for utilization of cervical cancer screening?
5. To what extent do the cultural-context specific modifiers (i.e. familism, fatalism, and acculturation) contribute to the strength of the power of the

Health Belief Model's ability to predict cervical cancer screening utilization
by S.C. Upstate Hispanic women?

Summary

Chapter 1 provided an introduction to the problem of cervical cancer. Cervical cancer's risk factors, the role of screening and current guidelines for cervical cancer screening in the U.S. were summarized. The demographics and epidemiology of cervical cancer among U.S. Hispanic, both nationwide and in South Carolina were highlighted, as well as the role of psychosocial and cultural predictors on understanding cervical cancer screening behaviors in Hispanic women. The Health Belief Model by Rosenstock (1966) was identified as an appropriate theoretical framework to examine culturally determined beliefs and attitudes that predict cervical cancer screening among S.C. Upstate Hispanic women. The significance of the study, statement of the problem, purpose of the study, and research questions were explained.

Chapter 2 presents the theoretical framework and a literature review that discusses pertinent dependent and independent variables.

CHAPTER TWO

Theoretical framework and literature review

A systematic review was conducted of the English-language literature to examine socio-demographics and socio-cultural factors, and perceptions and beliefs of Hispanic women regarding cervical cancer screening behaviors in the United States and Latin-America within the theoretical framework of the Health Belief Model. Two online electronic databases were searched to select studies for this review. These databases were Academic Search Premier and Medline. In addition, relevant textbooks were reviewed.

The following keywords were used in different combinations to search for relevant research studies: cancer screening, cervical cancer, cervical cancer screening, Pap smear test, Health Belief Model, Hispanic, Latinas, perceptions, beliefs, and socio-cultural factors. Both quantitative and qualitative studies were reviewed, including reports of findings from focus groups, in-depth interviews, secondary data analyses, mail and telephone surveys, and randomized control trials. The inclusion criteria were English language and U.S.-based studies of socio-cultural factors influencing cervical cancer screening among Hispanic populations in the U.S. and the Southern region.

The criteria for exclusion were studies not examining socio-cultural barriers, studies using the HBM to explain other outcomes, studies conducted before the year 1990, and articles unrelated to cervical cancer screening. Some of the studies found used the HBM theoretical framework but most did not. The health belief components of the HBM related to cervical cancer screening were examined, including perceived susceptibility,

perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

Theoretical framework

Health Belief Model

The Health Belief Model is one of the major conceptual frameworks guiding current research as well as practice in the health sciences. It takes into account the multiple factors present in a person's decisions to live a healthy life, seek help when needed, and maintain periodic check-ups and screenings (Glanz, Rimer, & Lewis, 2002; Janz, Champion, & Strecher, 2002). The HBM was developed in the early 1950s by a group of social psychologists as an exploratory model to assess why people used or failed to use medical screening programs (Rosenstock, 1974; Hochbaum, 1958). Research evidence indicated that a person's decision to take a health action is influenced by the following factors: state of readiness to behave, beliefs about the efficacy of alternative actions, psychological barriers to action, interpersonal influences, and by "cues" which serve to trigger a response (Rosenstock, 1966).

The HBM is categorized as one of the "intrapersonal theories". These groups of theories focus on personal factors that influence behavior, such as knowledge, attitudes, beliefs, motivation, self-concept, developmental history, past experience, and skills. These personal beliefs and attitudes may influence health behaviors and practices (Hayden, 2009). The ultimate goal is to influence people to use health care and preventive services (Rosenstock, 1966). Based on the HBM conceptual framework, health promotion and intervention techniques were designed to guide the development of

health interventions so that health behavior change occurred (Austin, Ahmad, McNally, & Stewart, 2002; Clark & Becker, 1998). Table 2.1 displays some of the major concepts found within the HBM and the types of health interventions associated with altering each factor (See permission to reproduce this table in Appendix I).

Table 2.1 Key Concepts, Definitions and Applications of the Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's belief regarding the chance of getting a condition	Define population(s) at risk, risk levels Personalize risk based on a person's characteristics or behavior Make perceived susceptibility more consistent with an individual's actual risk
Perceived severity	One's belief of how serious a condition and its sequelae are	Specify consequences of the risk and the conditions
Perceived benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take: how, where, when; clarify the positive effects to be expected
Perceived barriers	One's belief about the tangible and psychological costs of the advised action	Identify and reduce perceived barriers through reassurance, correction of misinformation, incentives, assistance
Cues to action	Strategies to active one's "readiness"	Provide how-to information, promote awareness, employ reminder systems
Self-efficacy	One's confidence in one's ability to take action	Provide training, guidance in performing action Use progressive goal setting Give verbal reinforcement Demonstrate desired behaviors Reduce anxiety

Source: Reproduced with permission from Janz, Champion, & Strecher, 2002.

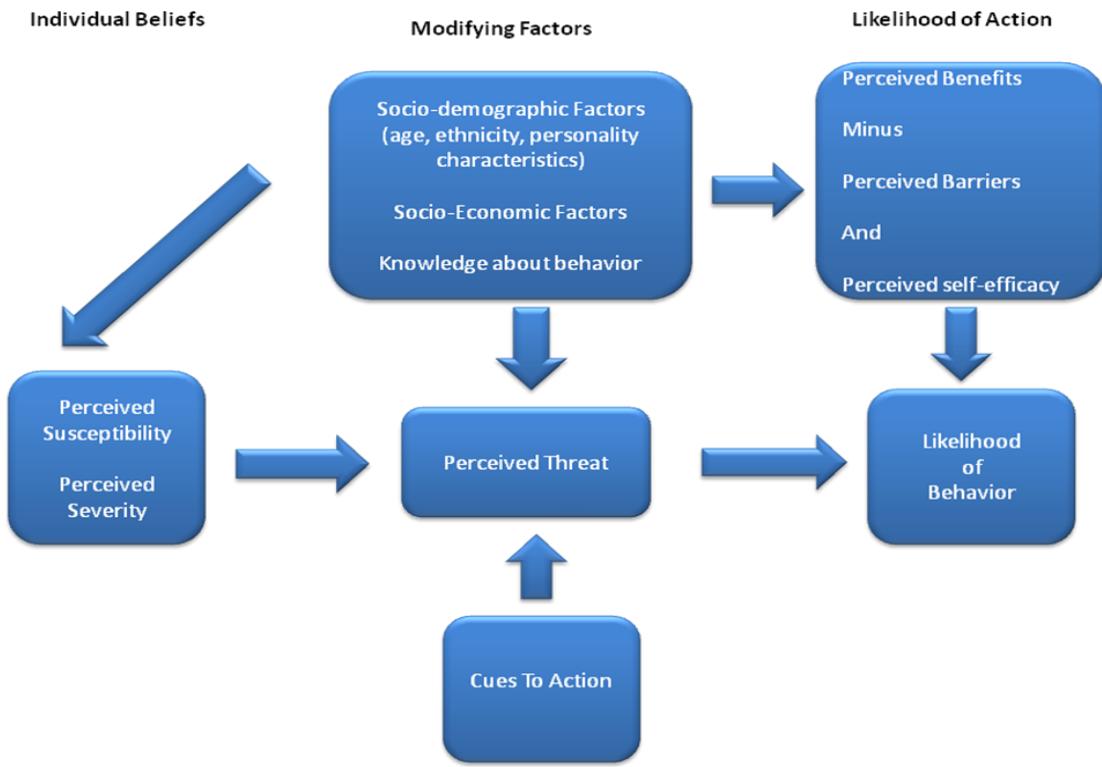
The basic components of the HBM are derived from a well-established body of psychological and behavioral theory, which hypothesizes that in the context of health-related behavior, a person's intentions and actions depend mainly upon two variables: (1) the desire to avoid illness (or if ill, to get well) and (2) the belief that a specific health action will prevent (or ameliorate) illness (Clark & Becker, 1998). As early as 1974, summaries of research findings showed evidence of the explanatory power of the HBM relative to prevention and behavior in response to symptoms or to diagnosed disease. Both, prospective and retrospective studies have provided empirical support for the HBM as a major organizing framework for explaining and predicting health behavior (Clark & Becker, 1998).

The HBM specified a series of subjectively rational beliefs or perceptions that could account for individual differences in motivation and action. According to Rosenstock (1966) a person's belief about the availability and effectiveness of various courses of action determined what course he or she would take. The model highlights threat perceptions as a central component of motivation and conceptualizes such appraisals in terms of beliefs about the extent of perceived susceptibility to and severity of a health problem. Threat perception provides the energy or force to act (Abraham & Sheeran, 2000). The perception of benefits less barriers provides a preferred path of action. The combination of these four perceptions may or may not result in a health action unless some internal (i.e., perception of sign or symptoms) or external (i.e., media, a doctor's reminder note) cues to action occurred (Rosenstock, 1966).

Rosenstock, Strecher, and Becker (1988) proposed the incorporation of perceived self-efficacy into the Health Belief Model. The authors proposed the addition of self-efficacy to the HBM as an independent variable or “perception” along with the traditional health belief variables of perceived susceptibility, severity, benefits, and barriers with the objective of increasing the explanatory power of the model. Rosenstock et al. (1988) argued that while self-efficacy was not explicitly included in the HBM, the self-efficacy concept was implied in “perceived barriers”, although its exclusion from the HBM ignored the variance in behavior accounted for by this construct.

Studies that incorporate self-efficacy into the HBM may inform program planning and health education about how competent patients or clients feel to about carrying out the recommended actions. In addition, there are modifying factors that can affect behavior compliance. Modifying factors would include the extent of media coverage, health professional’s coverage of screening practices, favorable personal relationships, and incentives to engage in the recommended health action (Hayden, 2009). In summary, according to the HBM, modifying variables and cues to action affect an individual’s perception of susceptibility, severity, benefits, barriers, and self-efficacy, and therefore behavior (Figure 2.1).

Figure 2.1 Health Belief Model



Source: Stretcher, V. & Rosenstock, I.M. (1997) as reproduced from Janz, Champion and Strecher (2002). Used with permission.

According to the HBM theory, for behavioral change to succeed people must have an incentive to take action, feel threatened by their current behavioral patterns, and believe that change of a specific kind will be beneficial by resulting in a valued outcome at acceptable cost, but they must also feel themselves competent (self-efficacious) to implement that change.

Research has shown stronger support with respect to the perceived barriers construct of the HBM (Tanner-Smith & Brown, 2010; Janz, Champion & Strecher, 2002).

Perceived susceptibility (Janz et al., 2002) and benefits (Tanner-Smith & Brown, 2010) have been identified as important predictors as well. The weakest predictor has been perceived severity (Tanner-Smith & Brown, 2010; Janz et al., 2002). Severity beliefs have been shown to have small correlations with measures of health-related behavior. One of the potential explanations for these weak correlations with behavior is because perceptions of severity only influence motivation when severity exceeds a certain threshold (Abraham & Sheeran, 2000).

Research has shown the HBM to be an appropriate theoretical framework to orient cognition-related interventions that promote effectively the improvement of both health behavior and the outcomes of healthcare services (Abraham & Sheeran, 2000). However, some limitations have been identified and addressed in the research literature. Browning and Thomas (2005) argued that the HBM ignores the influence of social factors and emotional responses on behavior. There are social factors which may play a role in cancer screening practices but were not reflected in the HBM original model such as nature and extent of social support, degree of acculturation, and previous health encounters (Johnson, Mues, Mayne, & Kiblawi, 2008).

Janz and Becker (1984) noted that the HBM, as a psychosocial model, is limited to “accounting for as much of the variance in individual’s health-related behaviors as can be explained by their attitudes and beliefs (p. 2)”. They argued that other forces influence health actions as well, such as habits, need of social approval, and economic and environmental factors. Some of these factors were included in this study, with the

purpose of examining their influence on cervical cancer screening behaviors among Hispanic women.

Another limitation described in the literature is that the HBM is based on the premise that health is a highly valued concern or goal for most individuals, and also that “cues to action” are widely prevalent. Therefore, where these conditions are not satisfied, the model is not likely to be useful in explaining behavior (Clark & Becker, 1998). Thomas et al. (2003) argued that although the HBM includes several health beliefs affecting compliance to health preventive measures, other health beliefs may not be included in the model. The authors mentioned fatalism and fear as variables that may be important in the explanation of behavior regarding screening. This study will incorporate familism and fatalism as cultural values that may influence Hispanic women’s perceptions of cervical cancer and screening. Incorporating these Hispanic cultural beliefs into the study may help to evaluate these criticisms and potential weaknesses of the HBM.

Another criticism of the HBM is that data are frequently evaluated with cross-sectional rather than prospective designs. Norman and Brain (2005) argued that when using the HBM as a conceptual framework for studies with cross-sectional designs, respondents may have a stronger tendency to be consistent in their responses given that beliefs and behavior are measured in the same questionnaire. This study will use a cross-sectional design, thus this potential respondent bias is not going to be eliminated. However, research evidence suggests that self-report measures based on social cognition models do reliably distinguish between those who do and do not undertake a range of health behaviors. In addition, in some areas, interventions based on social cognition

models have been shown to be more effective than interventions without such theoretical foundations (Abraham & Sheeran, 2000).

The recent challenges to some of the assumptions behind the HBM have lead researchers to initiate studies with minority cultures in the U.S. to determine what their health beliefs and actions are and how they differ from the dominant cultural traditions. The HBM has been used extensively to examine Hispanic women's beliefs relative to breast cancer screening (i.e. Palmer, Fernandez, Tortolero-Luna, Gonzales, & Dolan, 2010; Ramirez et al., 2000; Sussner, Thompson, Valdimarsdottir, Redd, & Jandorf, 2009), as well as to determine beliefs, barriers, social support, and self-efficacy regarding healthful foods among Hispanics in South Carolina (White, Cason, Coffee, Mayo, & Kemper, 2010).

Researchers who have used the key factors identified in the HBM model have successfully predicted women's intentions to obtain a Pap test as well as their actual prevalence of obtaining a Pap test. Some researchers have used qualitative approaches (Barata, Mai, Howlett, Gagliardi, & Stewart, 2008; Byrd, Peterson, Chavez, & Heckert, 2004), but most have used quantitative approaches to predict women's intentions to obtain a Pap test (Ben-Natan & Adir, 2009; Lopez & McMahan, 2007; Montgomery, Bloch, Bhattacharya, & Montgomery, 2009; Tracy, Lydecker, & Ireland, 2010; Urrutia, 2009).

The HBM also guides many of the intervention practices used by health educators and public health leaders (Barata et al., 2008; O'Brien, Hughes, Bixby, & Shea, 2010). The HBM assumes people are goal striving by nature and therefore place an emphasis on

helping people set and reach healthy living goals (Harrison, Mullen, & Green, 1992).

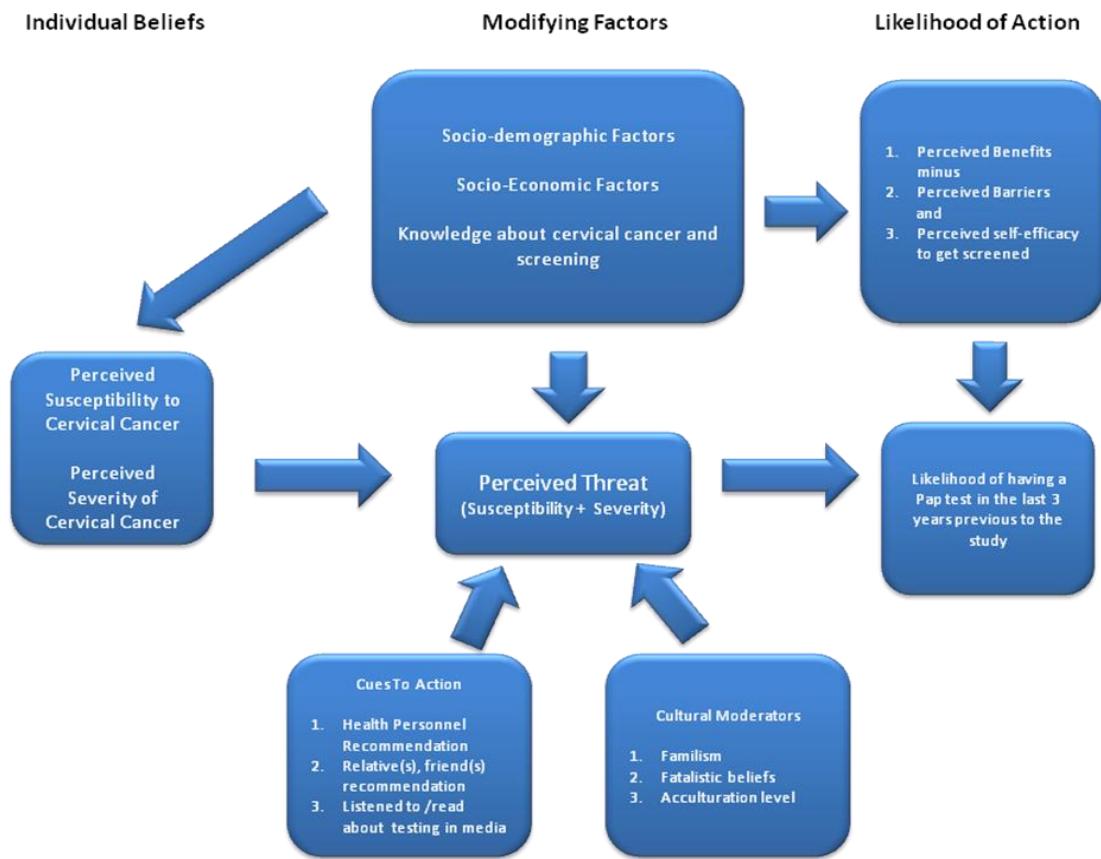
However, in the cross-cultural literature some of the major tenants of the health belief model are challenged because all cultures are not goal-seeking (Triandis, 1980).

Only a few studies have examined the health beliefs unique to Hispanic women relative to cervical cancer and cervical cancer screening using the HBM as a theoretical framework. Some of these studies compared the health beliefs of Hispanic women with those of other race/ethnicities (Tompkins, 2003). Others have emphasized age-related cervical cancer screening beliefs (Borrayo & Reyes, 2002; Byrd et al., 2004), and other studies have examined Hispanic women's' beliefs about cervical cancer and cervical cancer screening regardless of their ages or socioeconomic status (Barata et al., 2008; Byrd, Chavez, & Wilson, 2007). In this study, the HBM was used as the theoretical basis for the examination of Hispanic women's health beliefs related to cervical cancer and cervical cancer screening, and their self-report behaviors relative to obtaining yearly cervical cancer screening.

To avoid duplication, the following discussion will include how the HBM model was modified for the purpose of this study. Specifically, five health belief factors (i.e. perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy) and 15 modifying variables (seven socio-demographics, four socio-economic, three cultural moderators, and cues to cervical cancer screening) were examined for their predictive power to explain Hispanic women's cervical cancer screening actions.

Figure 2.2 displays the modified HBM used in this study. In the next sections, each component is discussed in more detail.

Figure 2.2 A Modified Health Belief Model Used as the Conceptual and Analytic Framework for the Study of Upstate South Carolina Hispanic Women's Cervical Cancer Beliefs, Knowledge and Screening Behavior



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

According to Rosenstock (1974), “the combined levels of susceptibility and severity [provide] the energy or force to act, and the perception of benefits (less barriers) provide a preferred path of action” (p. 332). In this study, five major constructs from the HBM were used to examine Hispanic women’s beliefs and actions: 1) perceived susceptibility, 2) perceived severity, 3) perceived benefits, 4) perceived barriers, and 5) self-efficacy. In

the next section, each of these major factors related to a person's health beliefs and actions are examined.

Perceived threats

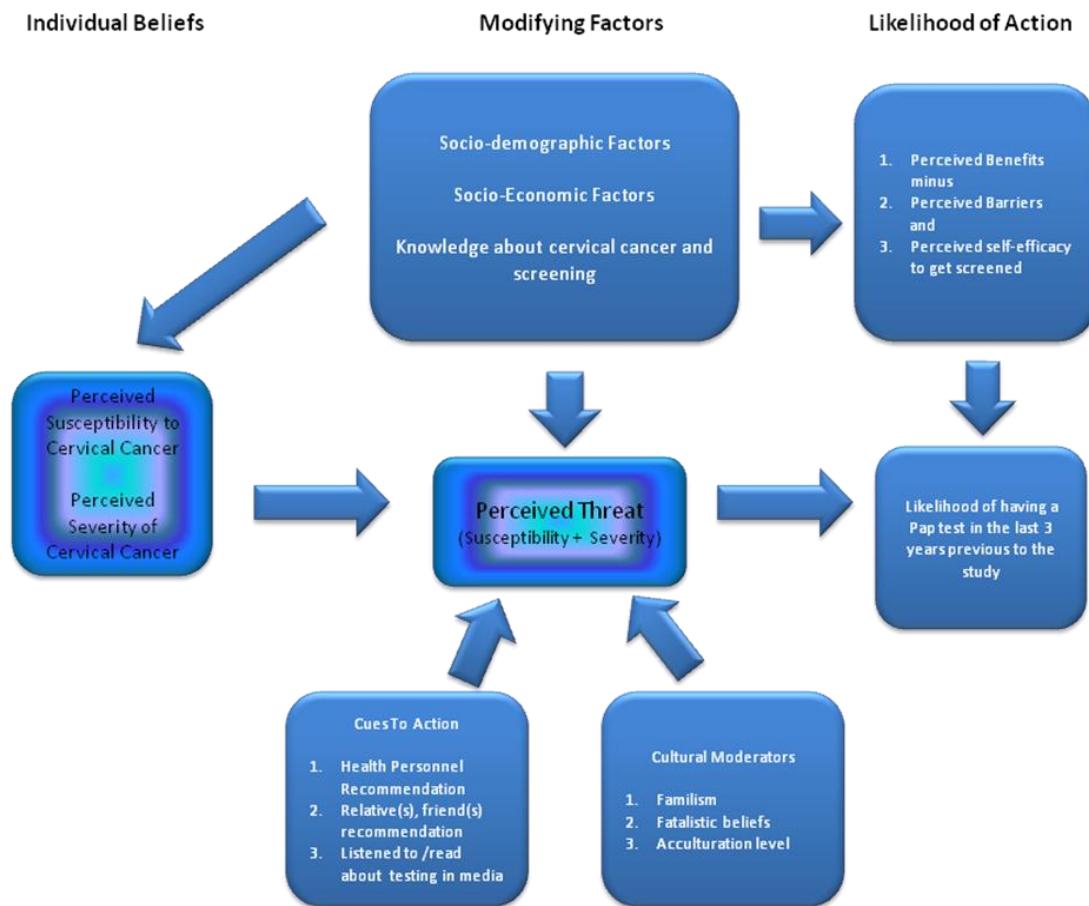
Threat perceptions represent a latent construct as a result of combining beliefs about the extent of perceived susceptibility to and severity of cervical cancer (Figure 2.3). This construct is a central component of motivation in the HBM (Rosenstock, 1966). Threat perception provides women with the energy or force to undergo cervical cancer screening according to established guidelines (Abraham & Sheeran, 2000).

Perceived susceptibility of getting cervical cancer

Perceived susceptibility has been described as one's subjective perception of the risk of contracting a condition (Janz, Champion, & Strecher, 2002). This component of the HBM has been described as one of the more powerful perceptions in moving people to adopt healthier behaviors. The greater an individual's perceived risk, the greater the likelihood of engaging in behaviors to decrease the risk.

On the contrary, if people believe they are not at risk or have a low risk, unhealthy behaviors may result (Hayden, 2009; Janz, Champion, & Strecher, 2002). Hayden (2009) argued that perceived susceptibility may explain behavior in some situations, but not all, as certain population groups tend to assume unhealthy behaviors even when the perception of risk is high.

Figure 2.3 Perceived Threats to Cervical Cancer and Screening



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

Johnson et al. (2008) identified factors related to perceived susceptibility cited in the literature across ethnic groups in the U.S. The researchers found that a woman's perceived susceptibility of cervical cancer may be influenced by a lack of knowledge about cervical cancer and its risk factors and views that a Pap smear is unnecessary unless ill. The authors identified that certain beliefs related to perceived susceptibility to cervical cancer among Hispanic women were body-focused. For instance, Hispanic

women reported that having sexual intercourse shortly after giving birth or during menses, as well as stress to the body (i.e. having abortions, rough sex, being hit in the vaginal area, and having too many children) increased their susceptibility to cervical cancer. Therefore, if they do not experience such practices, they might believe they are not at risk of developing this disease.

Studies found that a significant proportion of Hispanic women believed that screening for breast and cervical cancer was unnecessary, which might be related to a reduced perceived susceptibility of contracting the disease (Austin, Ahmad, McNally, & Stewart, 2002; Johnson, Mues, Mayne, & Kiblawi, 2008; Scarinci, Beech, Kovach, & Bailey, 2003). Scarinci et al. (2003) also found that Latina immigrants believed that a lack of hygiene and untreated vaginal infections could cause cervical cancer. Therefore, if they do not have these exposures, they may perceive that they are not at risk for the disease.

Perceived severity of cervical cancer

Perceived severity relates to feelings of the severity of a condition and its sequelae. While low perceptions of seriousness might provide insufficient motivation for behavior, very high perceived severity might also inhibit action as someone might believe it is useless or too late to either prevent the disease from occurring or to obtain a cure (Clark & Becker, 1998). Feelings concerning the seriousness of contracting an illness or surviving if the disease is not treated include evaluations of beliefs regarding medical and social consequences. The combination of susceptibility and severity has been labeled as “perceived threat” (Janz, Champion, & Strecher, 2002).

The perception of the severity of a disease is often based on medical information or knowledge, as well as on beliefs about the difficulties a disease would create or the effects it would have on one's life (Hayden, 2009). This is the true for Hispanics, as the beliefs about cervical cancer held by this population include beliefs that cervical cancer would make life difficult (Johnson et al., 2008). A cultural characteristic that has been described is that Hispanic women tend to ignore symptomless conditions and define illness in terms of pain or dysfunction. In Boyer et al.'s study (2000) Hispanic women reported they endured symptoms until they could no longer tolerate them and then sought health care.

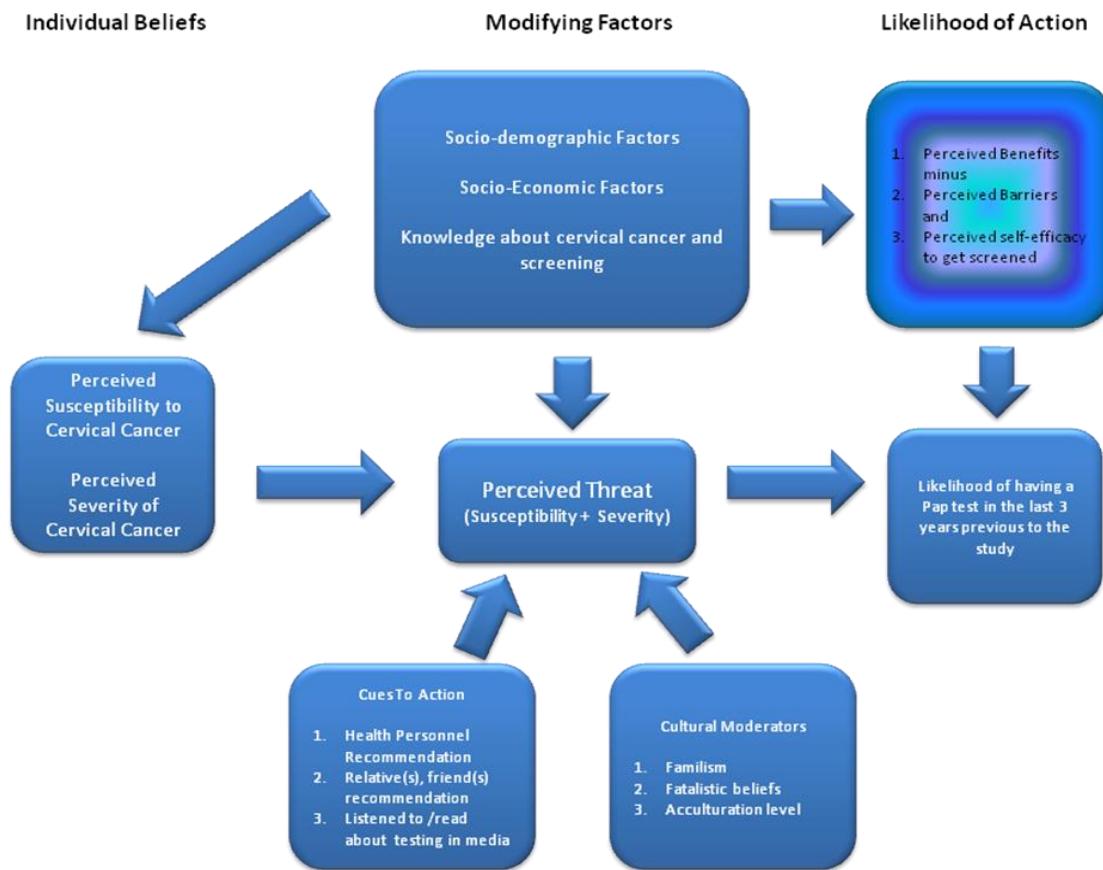
In Johnson' et al. study (2008) about cervical cancer among Hispanic women, some participants reported a low perception of seriousness of cervical cancer while some others identified cervical cancer as a fatal and non-curable disease and as a death sentence. This view of the disease as a death sentence has been associated with extreme fatalism (Austin et al., 2002) which will be discussed in a following section. These two opposite belief patterns, reported by Hispanic women, may influence their compliance with cervical cancer screening. While a low perception of seriousness might provide insufficient motivation to comply, fatalistic beliefs about the disease might inhibit action because of the perception that nothing can be done if detected.

Perceived benefits, barriers and self-efficacy

The perceived benefits of getting screened, minus the barriers to being screened, combined with the nature of the perceived threats resulting from the susceptibility and severity of cervical cancer, and the perceived self-efficacy provides researchers with the

clues to the likelihood that one will have had a Pap test in the last three years (Rosenstock, 1974). Next, benefits, barriers and self-efficacy are described (Figure 2.4).

Figure 2.4 Perceived Benefits, Barriers and Self-efficacy to Screening



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

Perceived benefits of cervical cancer screening

Perceived benefits are one's opinion or beliefs of the efficacy of the various actions to reduce risk or seriousness of impact (Austin et al., 2002; Clark & Becker, 1998). According to Janz et al. (2002) beyond the recognition of one's susceptibility to a disease or the perception of how serious it is, the particular course of action a person might

undertake depends greatly on his or her belief about effectiveness of an action. The authors added that these benefits may or may not be health-related. For instance, getting a screening test to please a relative or family member is an example of a non-health-related action.

Perceived benefits play an important role in the adoption of secondary prevention behaviors, such as screenings. People who perceive a benefit from a screening test (i.e. early detection) are more likely to undergo screening than those who do not see the screening as having a benefit (Hayden, 2009). The benefits of cervical cancer screening perceived by U.S. Hispanic women include early detection of cervical cancer, reassurance that one does not have cancer, and the belief that Pap smears decrease the risk of cervical cancer and prolong life (Johnson et al., 2008). These perceived benefits might positively influence Hispanic women's decisions to obtain cervical cancer screening.

Perceived barriers to cervical cancer screening

Perceived barriers are the perception of the tangible and psychologically negative aspects of a particular health action that may act as impediments to undertaking the recommended behavior (Austin et al., 2002; Clark & Becker, 1998). Janz et al. (2002) argued that a person undergoes a kind of unconscious, cost-benefit analysis when deciding whether or not to undertake a particular health action. Through this process, the person weighs the potential effectiveness of an action against the perceptions of how expensive, dangerous, unpleasant or time-consuming it might be. Therefore, for a new behavior to be adopted, a person needs to believe that the benefits of the new behavior

outweigh the needed efforts to perform the action. Perceived barriers have been described as the most significant construct of the HBM in determining behavior change (Hayden, 2009).

Some of the barriers to Pap testing for Hispanic women that have been documented in the literature include accessibility, time constraints, not knowing about the importance of Pap testing, forgetting to schedule a Pap test, embarrassment, and social anxiety (Barata, Mai, Howlett, Gagliardi, & Stewart 2008). Other institutional barriers identified were the lack of a provider's recommendation (Bazargan, M., Bazargan, SH., Farooq, & Baker, 2004; Fatone & Jandorf, 2009; Watts et al., 2009), the presence of male providers (Byrd, Chavez, & Wilson, 2007), not knowing where to obtain screening or the need for screening (Byrd, Peterson, Chavez, & Heckert, 2004; Scarinci et al., 2003; Thiel de Bocanegra, Trinh-Shevrin, Herrera, & Gany, 2009), and language communication barriers with health personnel (Arredondo, Pollack, & Cosntanzo, 2008; Scarinci et al., 2003; Parra-medina et al., 2009; Watts et al., 2009).

Hayden (2009) found that even though Hispanic women perceived cervical cancer as serious and believed there were benefits to having a Pap test, they perceived significant barriers to testing. This belief pattern was present even for college-educated Hispanic women in Tompkin's (2003) study, which found that perceived barriers to cervical cancer screening were more significant for Mexican Americans than for college women of other ethnic groups.

Two literature reviews, using the HBM, summarized perceived barriers for cervical cancer screening among Hispanic women (Austin et al., 2002; Johnson et al., 2008). In

these review the authors identified the following barriers: Hispanic women's embarrassment (Byrd, Chavez, & Wilson, 2007; Parra-medina et al., 2009), feelings that a Pap smear threatened one's virginity and fatalism, distrust of the health care system (Watts et al., 2009), lack of health insurance (Abraido-Lanza, Chao, & Gammon, 2004; Scarinci et al., 2003; Thiel de Bocanegra et al., 2009), fear of pain (Arredondo et al., 2008; Byrd et al., 2007; Byrd et al., 2004; Parra-medina et al., 2009), and anxiety about an untoward diagnosis and the need for subsequent surgery (Byrd et al., 2007).

Byrd et al. (2007) identified unique fears for cervical cancer screening among Hispanic women, including fear of not receiving treatment because of one's immigration status (Byrd et al., 2007; Scarinci et al., 2003), being considered sexually immoral, telling one's husband about a cancer diagnosis, and fear that surgery would cause the cancer to spread (Johnson et al., 2008). Arredondo et al. (2008) found that Latinas who never had a Pap smear reported a greater fear of discovering cervical cancer than those who received this procedure frequently. The lower fear among Hispanic women who received Pap testing frequently may be due, in part, to greater awareness in the preventability of this disease. Fear of cancer was found to be associated with extreme fatalism in Hispanic women, including beliefs that cancer cannot be cured, and considering the diagnosis as a death sentence. As a consequence, educational programs are often avoided, resulting in a lack of knowledge about screening practices (Austin et al., 2002).

Socio-economic barriers to cervical cancer screening for Hispanic women have also been cited in the research literature. Low levels of education and low income have been identified as important barriers for screening adherence, treatment, and the likelihood of

survival (Fatone & Jandorf, 2009). Other socio-economic barriers reported are transportation difficulties, cost, lack of family support, and difficulty with child care (Abraido-Lanza, Chao, & Gammon, 2004; Parra-medina et al., 2009; Scarinci et al., 2003; Watts et al., 2009). Studies have shown that socio-economic factors accounted for most of the differences in screening rates between Hispanic and non-Hispanic White women in the U.S. (Abraido-Lanza, Chao, & Gammon, 2004; Ramirez et al., 2000).

Perceived self-efficacy for cervical cancer screening

Bandura (1994) defined perceived self-efficacy as “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (p. 2). Those who believe that they will succeed uphold a stronger sense of human accomplishment and personal well-being (Bandura, 1998). A significant factor in not performing certain health prevention methods is the fear of being unable to perform them correctly. Unless a person believes he or she is capable of performing the behavior (that is, has self-efficacy), this barrier will not be overcome and the desired behavior will not be performed (Hayden, 2009). Self-efficacy beliefs are important components of behavior change models and have been shown to predict behavior change (Browning & Thomas, 2005).

Self-efficacy was added to the original four beliefs of the HBM in 1988 (Hayden, 2009). Janz, Champion, and Strecher (2002) argued that self-efficacy was not incorporated earlier into the HBM as originally this model focused on preventive actions to be undertaken once or that were very simple to perform (e.g. immunizations). Therefore, earlier researchers did not recognize the importance of self-efficacy beliefs to

master health behaviors that require long term changes or that were more complex actions to perform. Health behaviors that required long-term changes required a great deal of confidence. One should feel competent or self-efficacious to overcome perceived barriers to taking action (Janz et al., 2002).

Based on Bandura's framework, self-efficacy by itself operates harmoniously with other socio-cognitive factors (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Bandura, 1998). Abraham & Sheeran (2000) explained that there is some debate about the definition of perceived behavioral control and its relationship to self-efficacy beliefs. The authors added that self-efficacy has been typically defined in terms of perceived personal competence or confidence (e.g., "I believe I can do X successfully") while perceived behavioral control also includes measures of perceived barriers and difficulties (e.g., "Doing X would be difficult"). Specifically, "health locus of control" is based on the principle that individuals' beliefs about their health vary in the amount of control attributed to different agents (Borrayo & Reyes, 2002).

Some researchers have suggested that self-efficacy and perceived behavioral control can be considered as synonyms and, in the interests of conceptual simplification, the term self-efficacy should be used to mean an overall sense of control-taking. This sense of control should account for both personal resources and perceived barriers (in the HBM sense). However, Bandura (1992) argued that self-efficacy to successfully perform an action is predictive of actual success. Therefore, it seems to be more related to internal factors than external ones, as it is the case for perceived behavioral control. Locus of

control is concerned not with perceived capability, but whether outcomes are determined by one's actions or by forces outside one's control (Bandura, 2001).

In a literature review conducted by Johnson et al. (2008) about cervical cancer screening across diverse U.S. ethnic groups, expectations of self-efficacy were found among Hispanic populations. Hispanic women who were not in compliance with screening guidelines lacked confidence in their ability to understand their physician's explanations about their health condition (Johnson, Mues, Mayne, & Kiblawi, 2008). Arredondo et al. (2008) found that Latinas who believed in their ability to seek and overcome barriers in attaining Pap smears were more likely to engage in this behavior when compared with those who never had a Pap smear. However, the authors found poor internal consistency with the self-efficacy measure used. The TTM, a modified version of the General Self-Efficacy Scale (Suarez, Perez-Garcia, & Bermudez, 2000) was used in this study to measure self-efficacy associated with obtaining cervical cancer screening.

Several scales have been used to assess Hispanic self-efficacy beliefs regarding cervical cancer screening. In general, these studies found a positive association between high perceived self-efficacy and cervical cancer screening (Fernandez et al., 2009; Johnson et al., 2008; Suarez, Perez-Garcia, & Bermudez-Moreno, 2000). This study used a cervical cancer screening self-efficacy scale developed by Fernandez et al. (2009), and applied to low-income Mexican American women. The results of Fernandez et al.'s study showed that self-efficacy was correlated with knowledge, prior experience, and screening intention. In addition, logistic regression analysis supported the theoretical relationship

that women with higher self-efficacy were more likely to report a recent Pap test (Fernandez, et al., 2009).

The demographic representation of Hispanic women according to countries of birth in South Carolina is diverse. However, there is a predominance of Mexican descent Hispanics (U.S. Census Bureau, 2009). These demographic characteristics increase the likelihood that the Fernandez et al. (2009) self-efficacy scale may apply to the population in this study. In addition, it provided the opportunity to evaluate its applicability to Hispanic women of various countries of origin.

Modifying factors to Hispanic women's beliefs and actions

Individual characteristics may influence personal perceptions. Several demographic, socio-psychological, and structural factors may modify the effects of an individual's current beliefs or perceptions about the severity of and susceptibility to a disease, as well as the benefits of self-efficacy and barriers to obtaining screening, and the individual's actual prevalence for screening (Becker et al., 1977; Janz, Champion, & Strecher, 2002). These factors are believed to work through their effects over the individual's health motivations and subjective perceptions, rather than functioning as direct causes of health action (Becker et al., 1977).

The modifying factors are personal characteristics that influence personal perceptions and motivation. A wide range of factors influence people's behavior patterns, whether it is helpful or harmful to people's health. Hayden (2009) argued that some of the critically important factors are socioeconomic status, skills, culture, beliefs, attitudes, values, religion, and gender. The directions and nature of these relationships differ and there are

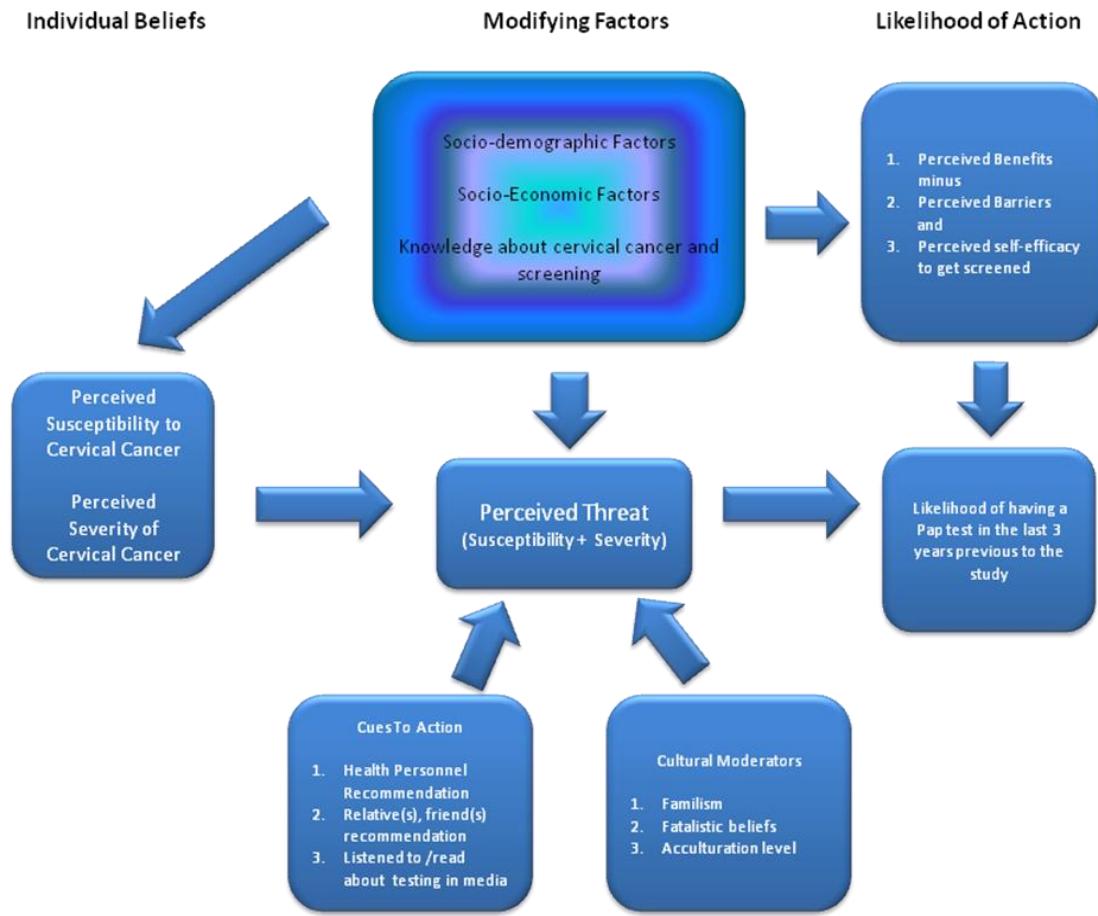
conflicting results among different studies that point to the necessity of continuing to study this phenomenon among different population subgroups using various methodological approaches (Pakenham, Pruss, & Clutton, 2000).

Based on the review of the literature, the following modifying factors were incorporated into the HBM for this study (Figure 2.5).: 1) socio-demographic variables (i.e. age, marital status, foreign vs. native born, country of birth, language spoken [Spanish vs. English], current or recent pregnancy [previous 3 years], and length of residence in the U.S.); 2) socio-economic variables (i.e. income, educational level, availability of health insurance, and availability of a regular source of health care); 3) knowledge about cervical cancer and screening; 4) cues to action (i.e. physician recommendation, family and friends recommendations, availability of educational materials, and exposure to media messages about cervical cancer and cervical cancer screening); and 5) three culturally-related modifying factors (i.e. acculturation, fatalism, and familism). These variables are further explained.

Socio-demographic variables

The socio-demographics variables selected as modifying factors to S.C. Upstate Hispanic women cervical cancer screening beliefs and according to the review of the literature were: women's age, marital status, native vs. foreign born, country of birth, language spoken, and length of residence in the United States. These variables are explained in the following section.

Figure 2.5 Modifying Factors to Beliefs and Screening Behavior: socio-demographic factors, socio-economic factors and knowledge about cervical cancer and screening



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

Women's age.

Being younger is positively associated with cervical cancer screening practices (Borrayo & Reyes, 2002; Calle, Flanders, Thun, & Martin, 1993). Suarez (1994) found that the percentage of women who had a recent Pap smear declined with each 10-year age group. Mexican descent Latinas in Texas who were 45 years or older were significantly less likely to have had a Pap smear than were women less than 45 years of age (Borrayo

& Reyes, 2002). The lower rates of Pap smears among older Hispanic women has been confirmed by several studies (Bazargan, M., Bazargan, S.H., Farooq, & Baker, 2004; Fernandez-Esquer, Espinoza, Torres, Ramirez, & McAlister, 2003; Watts et al., 2009; Wu, Black, & Markides, 2001). This pattern remained even in communities where interventions to increase Pap screening compliance were introduced (Fernandez-Esquer et al., 2003).

Several reasons for the differential patterns of cervical cancer screening compliance between younger and older women have been discussed in the research literature. The reason for the differences included health care access and the primary language spoken (Spanish vs. English). One of the possible reasons for the higher compliance among younger Hispanic women compared with older women were the increased opportunities for health screening and for gynecological care as part of regular planning or reproductive health needs (Fernandez-Esquer et al., 2003).

Findings from a study about cervical cancer screening barriers among Hispanics showed that Hispanic women aged 30 years or older preferred speaking Spanish at home and receiving health care information in Spanish, compared to those under 30 (Watts et al., 2009). Reports of lower rates of cervical cancer screening in Hispanic women with limited English proficiency compared to those who were able to communicate in English have been well documented in the research literature (Watts et al., 2009; Wu, Black, & Markides, 2001).

Marital status.

Research has found that being married was a consistently positive demographic factor for cervical cancer screening among Latinas (Borrayo & Reyes, 2002; Jandorf, Bursac, & Pulley, 2008). Married women were identified as adhering more to recommended cervical cancer screening guidelines when compared to single women (Boyer, Williams, Clark, & Marshall, 2000). Studies have shown that having a male partner who is supportive of cancer screening was also a significant predictor of women's participation in cervical cancer screening among Hispanic women (Thiel de Bocanegra et al., 2009).

Foreign vs. native-born.

Based on the Pew Hispanic Center and the Pew Forum on Religion & Public Life (2007) categorization, the current Latino population in the U.S. is characterized by "native-born", referring to Latinos who were born in the 50 states and the District of Columbia, and "foreign-born", referring to Latinos born outside the U.S. and in Puerto Rico. Puerto Ricans are U.S. citizens by birth but on a variety of characteristics resemble the Latino immigrant population.

Research has shown that foreign-born immigrant Hispanic women report a lower rate of cervical cancer screening than native-born immigrants (Arredondo, Pollack, & Constanzo, 2008; Fernandez-Esquer et al., 2003; Jonhson et al., 2008). The reported rate of screening among foreign-born Hispanic women was lower for those who had recently immigrated to the U.S. (Fernandez-Esquer et al., 2003).

Recent immigrant Hispanics were more likely to lack health insurance, have less timely contact with the health care system, and have a host of socio-demographic and

health-access barriers to care (Jonhson et al., 2008). There are reported low rates of cervical cancer screening in Mexico, the main source of Hispanic immigrants to the U.S. In addition, more than half of cervical cancer deaths in the U.S. are reported to occur in foreign-born women (PAHO, 2004; Wall et al., 2010).

The higher rate of cervical cancer screening among native-born immigrants compared to foreign-born may be influenced by acculturation (Arredondo, et al., 2008), and a lower likelihood to hold fatalistic beliefs (Chavez, Hubbell, Mishra, & Valdez, 1997). However, other studies have reported contradictory results. Owusu et al. (2005) found that Hispanic American women participating in their study were less likely to have had a Pap smear than Hispanic immigrants. The authors hypothesized that this difference may be due to the “healthy immigrant phenomenon”, as migrants may be more likely to get preventive healthcare both before and after they migrate.

Country of birth.

Erwin et al. (2010) noted that the diversity in country of origin for Latinas in the U.S. is often overlooked in cancer control initiatives. Country of origin and current geography or residency in the U.S. has been described as significant determinants in Hispanic women’s cervical cancer screening practices (Ramirez et al., 2000). According to Erwin et al. (2010) women of Mexican and Dominican origin reported the need to negotiate language barriers and had a lack of knowledge about breast and cervical cancer more often than women from Puerto Rico. The authors hypothesized that these differences in breast and cervical cancer screening behaviors among Hispanic women may be related to acculturation and political issues, as more Puerto Rican women have lived in the U.S.

longer, had status as citizens, or had been exposed to the majority culture longer than most of the women from Mexico, the Dominican Republic, or Central American countries.

Research has shown that the term “Hispanic” should not be used without identifying, addressing, and clarifying the ethno-regional characteristics of each Hispanic group under study. The heterogeneity of Hispanics makes it necessary to avoid generalizations about these groups (Ramirez et al. 2000). The population in South Carolina is predominantly Mexican (U.S. Census Bureau, 2009). Although we made efforts to incorporate Hispanic women from different countries of origin into the convenience sample of Hispanic women in this study; our sample of Hispanic women resulted to be predominantly Mexicans following by Colombians. We tried to examine differences in beliefs about cervical cancer and screening by countries of origin. This analysis contributed to the understanding about Hispanic women’s cervical cancer screening behaviors across countries of origin.

Language(s) spoken (Spanish and English Proficiency).

Research evidence has consistently shown that Hispanic women who have limited English proficiency reported a lower rate or awareness about the Pap test as compared to women who are able to communicate in English (Arredondo et al., 2008; Parra-medina et al., 2009; Wu, Black, & Markides, 2001). One study found that Hispanic women who were able to communicate in English, and those who did not need a translator during their health care encounter, were significantly more likely to have had five lifetime Pap smears (Watts et al., 2009). Another study showed that Latinas who never had a Pap smear were

more likely to speak Spanish with their family/friends and at home compared with Latinas who attained this procedure frequently (Arredondo et al., 2008). Therefore, language use is an important determinant of cervical cancer screening practices in Hispanic women in the U.S.

The effect of language as a barrier for Hispanic women appears to be ameliorated by the availability of health insurance in the U.S. Studies conducted in areas with a high proportion of Spanish-speaking Hispanic women who have insurance through Medicare or Medicaid found that these women accounted for a high rate of cervical cancer screening compared with other race-ethnicity groups (Fatone & Jandorf, 2009; Watts et al., 2009).

Length of residence in the United States.

The length of residence in the U.S. is positively associated with higher cervical cancer screening compliance among Hispanic women. Research suggests that as years of residence in the U.S. increased, Hispanic women's compliance with Pap smear guidelines also increased. Watts et al. (2009) found that Hispanic women living in the U.S. for five years or longer were more likely to visit a health care provider for scheduled visits, to have four or more routine health care visits in the preceding five years, and to have had routine screening mammograms and Pap smears; compared to Hispanic women residing in the U.S. for less than five years.

Socio-economic variables

The socio-economic variables selected as modifying factors to S.C. Upstate Hispanic women cervical cancer screening beliefs and according to the review of the literature

were: income level, educational level, current or recent pregnancy (previous 3 years), availability of health insurance, and availability of a regular source of care. These variables are explained in the following section.

Income level.

Boyer et al. (2000) found that Hispanic women who have an annual income of less than \$10,000 were less likely to have ever had a Pap smear. Competing needs for basic necessities for food, shelter, and clothing among low-income women have been identified as a major barrier for cervical cancer screening (Owusu et al., 2005). When compared with low-income women of other race-ethnicities, low-income Latinas reported lower cancer screening rates in the U.S. For instance, Scarinci, Beech, Kovach, & Bailey, (2003) found that low-income Latina immigrants were less likely to receive a Pap smear than low-income non-Latinas.

Cervical cancer screening rate differences between low-income Hispanic women and low-income women of other race/ethnicities may be due to other factors such as lack of health insurance or having a regular source of care (Scarinci et al., 2003). The potential impact of these structural barriers on cervical cancer screening rates among Hispanic women might influenced the relative impact of income on cervical cancer screening disparities in this race-ethnic group.

Educational level.

Educational level seems to be the best predictor of good health. The higher the educational level the greater the employment opportunities, income, and ultimately health status (Hayden, 2009). Studies have reported that women who adhered to current

recommendations for cervical cancer screening, tended to have at least a high school education or higher (Boyer, Williams, Clark, & Marshall, 2000; Scarinci et al., 2003; Wu et al., 2001). However, the relationship among education, culture and cervical cancer screening requires further study. Mexican American college-educated women, when compared with other ethnic groups in the U.S., obtained cervical cancer screening less frequently than other ethnic groups (Tompkins, 2003).

Current or recent pregnancy (previous 3 years).

Owusu et al. (2005) found that Hispanic women who were pregnant, and who already had a check-up for the pregnancy were much more likely to obtain a Pap smear than were women who were not pregnant or who were pregnant but had not received a check-up. The authors explained that women who are still active in childbearing are linked to the system through their need for healthcare services during pregnancy and childbirth. Similarly, other studies found pregnancy to be associated with being up-to-date with cervical cancer screening (Arredondo et al., 2008; Bazargan, Bazargan, Farooq, & Baker, 2004). It was suggested that health promotion researchers may consider developing programs that reinforce screening after Latinas discontinued their prenatal care (Arredondo et al., 2008).

Hispanic women account for higher fertility rates compared to other race/ethnicities in the U.S. (Hamilton, Martin, & Ventura, 2006). Similarly, South Carolina's Latino immigrant population included more families with children (Consortium for Latino Immigration Studies, 2007). These fertility patterns for Hispanic women may increase the

likelihood of these women making contact with the health care system, as well as reporting ever receiving a Pap smear.

In 2005, Hispanic women had the highest fertility rates in the U.S., followed by non-Hispanic black women, Asian women, Native American women, and non-Hispanic white women. Fertility rates for Hispanic women in the U.S. were over 45% higher than those for non-Hispanic black women (99 births per 1,000 for Hispanic women versus 67 births per 1,000 for non-Hispanic black), and more than 65% higher than those for non-Hispanic white women (58 births per 1,000 women) (Hamilton et al., 2006).

Availability of health insurance.

Studies demonstrated that Hispanic women without health insurance were less likely to participate in cervical cancer screening programs (Bazargan et al., 2004; Scarinci, Beech et al., 2003). However, the role of the availability of health insurance in determining cervical cancer screening compliance among Hispanic women appeared to be strongly moderated by other socio-cultural variables such as acculturation, fatalism, familism, and length of residence in the U.S. (Fatone & Jandorf, 2009; Watts et al., 2009).

Fatone and Jandorf (2009) found that among low-income Hispanic women, insurance did not appear to play a major role in facilitating cervical cancer screening compliance, since 75 - 88% of the study's female participants were insured, primarily through Medicare or Medicaid. Similarly, Watts et al. (2009) found that 99% of the Hispanic women participating in their study reported having some form of health insurance. These results suggested that health insurance availability was not the only factor affecting a

woman's ability to participate in screening programs. In addition, minority women are considered to be at risk for disparities regarding access to the health care system, despite the availability of health insurance (Adams, Breen, & Joski, 2007).

Availability of a regular source of health care.

Owusu et al. (2005) found that Hispanic women who had a medical home and a usual health-care provider were more likely to have had a Pap smear during the past three years, or within the past year, than were women who did not report a usual source of care. Bazargan et al. (2004) found a strong association between obtaining a Pap smear, continuity of care and having a medical home among Hispanic and African-American women. Similarly, Fernandez-Esquer and Cardenas-Turanzas, (2004) found that access to health care was a significant barrier to cervical cancer screening compliance in a group of Mexican-American women.

Continuity of care and having a medical home may help bridge the gap in access to cancer prevention services faced by minority women. The availability of health care providers of Hispanic background or Spanish-speaking providers was reported as a valuable asset when assessing health care by Hispanic women. This preference indicated that socio-cultural differences between patients and health care providers may affect communication and clinical decision-making processes for Hispanic women (Watts et al., 2009).

Knowledge about cervical cancer and screening

Knowledge and the skills to put the knowledge to use also influenced health behavior (Hayden, 2009). Knowledge about cervical cancer and screening was negatively

correlated with obtaining Pap screening in both educated (Tompkins, 2003) and less educated Hispanic women (Scarinci et al., 2003; Wu et al., 2001). Studies found Hispanic men and women had significantly less knowledge about cervical cancer as compared with knowledge about breast cancer (Scarinci et al., 2003; Thiel de Bocanegra et al., 2009; Wu et al., 2001). The lack of knowledge about cervical cancer screening was related with low educational and acculturation rates, as well as limited Pap smear screening educational campaigns, when compared with mammogram screening campaigns (Wu et al., 2001).

Qualitative studies have consistently shown that Hispanic women combined accurate and inaccurate knowledge about cervical cancer and screening (Parra-Medina et al., 2009; Scarinci et al., 2003). Byrd, Chavez, and Wilson (2007) found that in general, women knew about cervical cancer and the benefits of regular screening. However, they were not clear about when to initiate screening or how often a woman should be screened. The recent update of the cervical cancer screening guidelines makes it more important to continue educating women about the new screening guidelines.

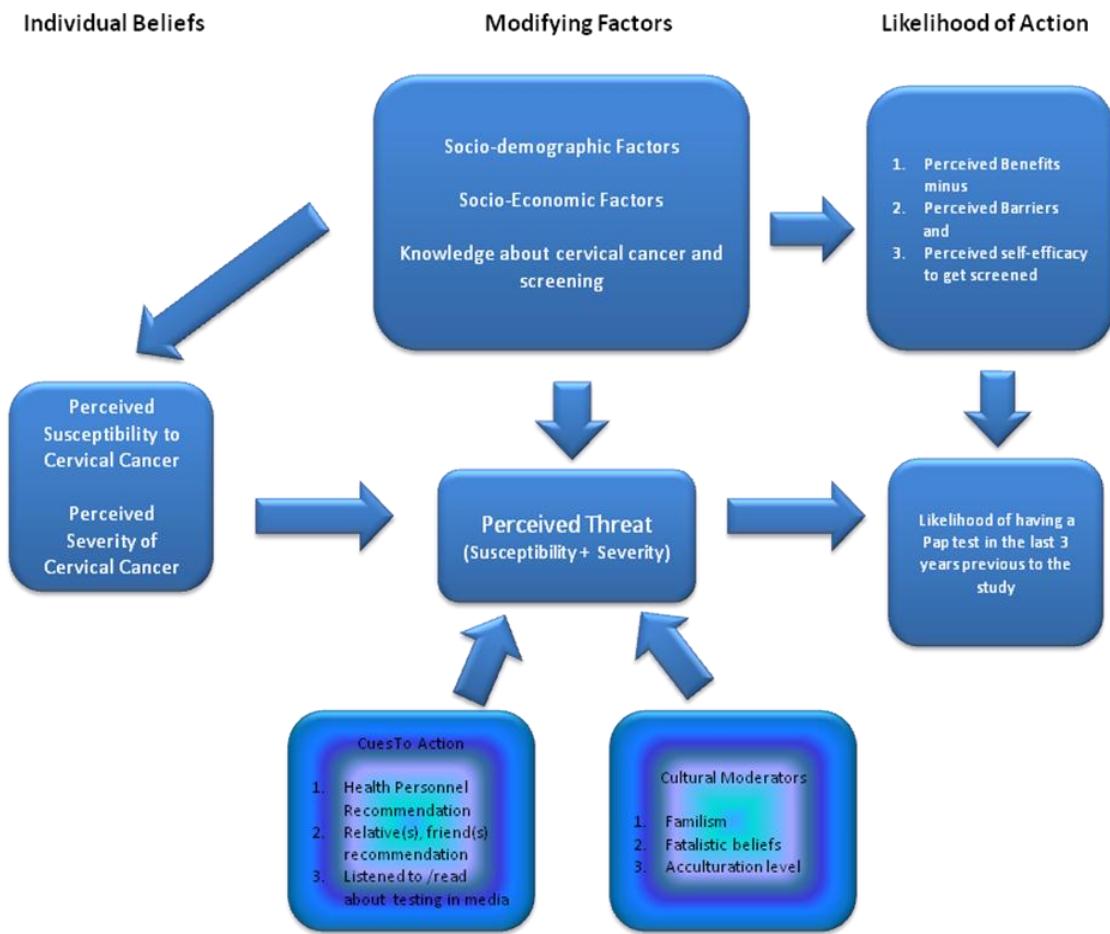
Another study showed that most S.C. Hispanic women participating in the study had some degree of familiarity with the Pap test procedure, but there was no evidence that they fully understood the purpose of the test (Parra-Medina et al., 2009). Fernandez et al. (2009) summarized successful educational methods for Hispanic women that have lead to an increase in cancer-control programs participation, included the following program components: (1) use of Spanish-language media, (2) role models appearing in mass media (newspapers, television) with social reinforcement by community volunteers, (3)

use of videos delivered in group settings or kiosks, (4) multi-method intervention approaches; and (5) use of lay health workers or *promotoras*.

Cues to action and cultural moderators to beliefs and screening behavior

Two groups of modifying factors will be explained. Cues to action or strategies to activate the health behavior, and three cultural factors: familism, fatalism, and acculturation (Figure 2.6).

Figure 2.6 Cues to Action and Cultural Moderators to Beliefs and Screening Behavior



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

Cues to action

Cues to action are strategies to activate the decision-making process or health behavior. According to this concept, readiness to take action could be potentiated by other factors such as bodily events (sign or symptoms) or environmental events (media publicity or health warning labels on a product) (Hayden, 2009).

Janz, et al. (2002) found that although cues to action have proven to be important to increase the readiness to take action, this concept has not been systematically studied. Moreover, they added that it has been difficult to study cues to action in explanatory surveys. This study incorporated a “cues to action” measurement developed by Urrutia (2009) to assess S.C. Upstate Hispanic women’s perceptions about cues to action and their relationship to their cancer screening behaviors.

Positive cues to cancer screening reported by Hispanic women include physician and lay health workers’ recommendation (Austin, Ahmad, McNally, & Stewart, 2002; Johnson et al., 2008; Watts et al., 2009), written materials and media (Austin et al., 2002; Watts, et al., 2009), support from family/friends (Watts et al., 2009), culturally sensitive care, and comfort with, and respect for a physician (Johnson et al., 2008).

Johnson et al. (2008) reported that the presence of lay community health workers (promotoras) and church attendance were viewed as an important cue to promoting cervical cancer screening in Hispanic communities. In addition, Austin et al. (2002) emphasized that physician recommendation was one of the most important “cues” to cancer screening among Hispanics, partly influenced by the strong respect for authorities (*respeto*) that characterizes the Hispanic culture. Hispanic women who participated in a

study identified radio and television as potential venues to disseminate information about cervical cancer and its prevention. Most of the participants reported listening to Spanish-speaking radio and television programs at least one hour per day (Watts et al., 2009).

Cultural moderators

Cultural values are “what people hold in high regard, and include normative beliefs regarding all aspects of life including nature, truth, honesty, beauty, education, integrity, friendship, and family” (Hayden, 2009, p.4). Hayden (2009) argued that behavior is significantly influenced by culture. In every culture there are norms, or expected, accepted practices, values, and beliefs that are the foundation for behavior. Cultural beliefs and attitudes play a major role in one’s health-seeking behavior and health care utilization (Johnson et al., 2008). Cultural values influenced cervical cancer screening behavior among Hispanic women (Arredondo et al., 2008; Boyer, Williams, Clark, & Marshall, 2000; Johnson et al., 2008).

Cultural values that affect cervical cancer screening behaviors among Hispanic women are identifiable and describable (Arredondo et al., 2008; Boyer et al., 2000). Results of a study conducted among Latina immigrant women in North Carolina suggested that male-dominant attitudes, high levels of sexual modesty, and fatalistic beliefs were all factors that reduced their participation in cervical cancer screening, and therefore influenced whether or not Latinas were screened for cervical cancer (Wilcher, Gilbert, Siano, & Arredondo, 1999).

Hispanic immigrants comprise a growing segment of the cervical cancer burden in the United States (National Cancer Institute, 2009a; DHHS, 2009). There is extensive

research about Mexican American women and cervical cancer and screening. Research should be further expanded to incorporate the diversity of Hispanics depending on country of origin, acculturation patterns, immigration status, and generational and language status (Erwin, et al., 2010). In addition, it is necessary for the medical and public health community to develop culturally relevant strategies that will effectively target educational outreach interventions in communities, as well as enhance the provision of culturally competent care by providers (Arredondo et al., 2008; Johnson et al., 2008).

Culturally sensitive interventions should recognize the diversity of Hispanics country of origin, acculturation patterns, immigration status, and generational and language status (Erwin et al., 2010). Erwin et al. (2010) argued that an intervention that is sensitive to diverse Latino cultural perspectives would customize cervical cancer educational messages, determine who should serve as messengers for the program content and identify appropriate program context and venues.

Familism, fatalism, and acculturation have been identified as relevant cultural factors that influence Hispanic cervical cancer screening behaviors. Therefore, this study contributes to the elucidation of the role played by these constructs in Hispanic women's cervical cancer screening behaviors in the Upstate of South Carolina. In addition, the potential moderator role of these constructs in Hispanic women's beliefs of cervical cancer and screening was examined and identified. Level of acculturation, the beliefs about family relationships (familism) and fatalism are reviewed below:

Acculturation.

Scholars make efforts to establish the conceptual connections between acculturation and social cognition, given the strength of social cognitive theories used to explain both the individual and group processes involved in the acculturation of immigrants (Padilla & Perez, 2003). People who immigrate to the U.S. leave behind social networks, family, and community ties. Adaptation to a new country involves the development of natural helping networks to create a sense of community (Bathum & Ciofu, 2007). In addition, the decision to leave one's country of origin to relocate to a new one may result in consequences in one's personality development, psychosocial functioning, and well-being (Jerusalem & Mittag, 1995).

People have to deal with many stressful situations during migration (Bandura, 1995). People's psychological adaptation to their new circumstances may be either facilitated or impeded depending on contextual factors such as personal resources or vulnerabilities, and environmental resources or constraints (Lazarus, 1991).

Acculturation is a long-term process during which individuals simultaneously learn and/or modify certain aspects of a new culture and their culture of origin (Marin & Gamba, 1996). Salabarría-Peña et al. (2001) defined acculturation as the “adaptation process occurring when individuals from one culture are in contact with a host culture” (p. 662). Acculturated individuals adopt characteristics of the mainstream culture and retain, relinquish or modify traits from their traditional backgrounds. Through the acculturation process various linguistic, social and psychological changes occur in individuals who are in continuous contact and interaction with those from a different,

dominant culture. These changes can be observed across a number of domains including changes in the use of the language of origin, attitudes, values, behaviors, and sense of cultural identity (Cabassa, 2003).

Hunt, Schneider, and Comer (2004) argued that the growing awareness about the disproportionate concentration of poor health among racial and ethnic minorities in the U.S. had produced an increase in interest among health care providers, researchers and policy makers in evaluating the relationship between culture and health status. Padilla and Perez (2003) believed that the social identities migrants bring with them and the identities they develop in the new environment influence their social cognitions which, in turn, guide their health behavior. Acculturation has been widely used as a research variable to measure the effects of changes in beliefs, behavior and values in health, as well as to study how these effects may change as individuals begin to integrate some of the values of the mainstream culture (Siatkowski, 2007).

Many studies found an association between acculturation and cervical cancer screening among U.S. Hispanic women. Generally, more acculturated women were more likely to obtain a Pap smear than those with low levels of acculturation (Arredondo et al., 2009; Wu et al., 2001). Acculturation influenced cervical cancer screening behaviors through different mechanism. For example, research has shown that low-acculturated Mexican-American women expressed a stronger fear of and more fatalistic attitudes toward cancer than high-acculturated women (Austin et al., 2002; Balcazar, Castro, & Krull, 1995; Suarez, Nichols, Pulley, Brady, & McAlister, 1993).

The role of acculturation as a predictor of cervical cancer screening among Hispanic women was found to be influenced by socio-demographic and socio-economic variables such as educational level, length of residence in the U.S., and language preference. Hispanic women's educational level might play a role in their cervical cancer screening behaviors, as higher acculturated Hispanic women were more likely to have achieved higher levels of education (Wu et al., 2001). Similarly, Watts et al. (2009) found that Hispanic women living in the U.S. less than five years, and who preferred to communicate in Spanish were less likely to be screened for cervical cancer. The authors suggested that these results might be associated with lower levels of acculturation in this group.

The type of instrument used to measure acculturation and its relationship with cervical cancer screening might influence the direction of the results. For example, O'Brien et al. (2010) found no significant association between acculturation rates and the receipt of Pap smear screening using the short acculturation scale (SAS) developed by Marin and Gamba. (1996). They argued that other studies using acculturation scales similar to the one used in their study failed to show a consistent association between acculturation and Pap smear receipt. On the contrary, Kepka et al. (2010) used the SAS to measure the relationship between acculturation level and HPV infection and found that more acculturated Mexican American women were more likely to be infected with high-risk HPV and other Sexually Transmitted Diseases (STD) than less acculturated Mexican women.

Arredondo et al. (2008) used a scale developed by Hazuda, Stern, and Haffner (1994) and found that only English versus Spanish usage (compared to English proficiency, value placed on culture of origin, and attitude toward traditional family) was associated with the likelihood or frequency of having had a Pap smear. Therefore, language was identified as the most important factor in the acculturation construct as measured by this scale.

Several models are used to explain, as well as to measure, acculturation in the research literature. Researchers have called for an understanding of acculturation as a bi-dimensional process, in which individuals learn and/or adopt certain aspects of the dominant culture, while retaining most or some aspects of their culture of origin (Cuéllar, Arnold, & Maldonado, 1995; Marín & Gamba, 1996). This reasoning has guided the development of instruments to measure acculturation among Hispanics, as well as other ethnic groups.

Familism.

The second factor that may moderate Hispanic women's intentions and actions relative to cancer screenings and treatment is Familism. Familism is one of five core values of the Hispanic culture (Marin & VanOss-Marin, 1991). The others are simpatía (sympathy), respeto (respect), fatalism (discussed below), and machismo (machismo). Familism is "a cultural value that involves individuals' strong identification with and attachment to their nuclear and extended families, and strong feelings of loyalty, reciprocity, and solidarity among members of the same family" (Marín & VanOss Marín, 1991, p 13). In the research literature, this construct has also been named family

solidarity, family integration, or intergenerational solidarity (Lugo-Steidel & Contreras, 2003). The term familism implies the commitment of family members, to the family as a whole and to family relationships.

Familism is a strong cultural value in cultures with a collective orientation (Gaines, Marellich, Bledsoe, & Steers, 1997; Triandis, 2001). In collective cultures, a person's value priorities are focused on the welfare of one's family, group or larger community over their own personal interests or well-being. Schwartz (2007) argued that familism emphasized prioritizing the family over the individual, showing respect for elders, and honoring the family name. Consequently familism and other similar constructs may reflect a collectivist value system (Schwartz, Montgomery, & Briones, 2006).

Schwartz (2007) suggested that familism may be applicable across race-ethnicities depending on how the construct is represented and endorsed, and the ways in which the construct relates to other similar variables, such as collectivism and interdependence. Rinderle and Montoya (2008) argued that for Latinos, familism expressed a collective orientation with regard to their families and was also one manifestation of cultural collectivism. Similarly, Perea and Slater (1999) argued that in the Mexican American culture, collectivism largely manifests itself as familism. Familism is one of the most important culture-specific Hispanic values. It is also believed to be a core value to specific Hispanic subgroups, such as Mexican-Americans, Puerto-Ricans, Cubans, and Central and South Americans (Marín & VanOss Marín, 1991).

Familism is related to acculturation among Latinos. Even highly acculturated Latinos held more familistic attitudes than White non-Latinos (Sabogal et al., 1987). However,

results of a study conducted by Zayas, Bright, Alvarez-Sanchez, & Cabassa (2009) among Hispanic adolescents suggested that familism might decrease with increased acculturation, as the familialistic beliefs among adolescents were lower than those of their mothers. The researchers called attention to the need to evaluate and trace the process of declining familism with increasing acculturation as Hispanics assimilate into U.S. society. These results might have implications for both research and health care interventions among highly acculturated Hispanics in the U.S.

Familism has also been considered to have an impact in the health of communities. Individuals who reported higher levels of familism were more likely to engage in healthy behaviors and less likely to practice risky ones (Gaines, Marellich, Bledsoe, & Steers, 1997). Marín and VanOss Marín (1991) suggested that, when working with Hispanic populations, researchers may find it helpful to achieve an understanding of and respect for familism. For example, the inclusion of extended family when planning interventions for Hispanics has been consistently supported by social networks research with Latino cultures and other health education programs (Erwin et al., 2010).

Research evidence suggested that family solidarity and caring for oneself for the sake of the family may be positively associated with cervical cancer screening in Hispanic women. A sample of South Carolina resident Hispanic women reported that the main reason for having a Pap test was caring for oneself for the sake of the family (Parra-medina et al., 2009). Similarly, support from family/friends has been described as important “cue” to get screened for cervical cancer (Watts et al., 2009). Arredondo et al. (2008) found familism to be a robust predictor of cervical cancer screening practices

among Hispanic women in North Carolina. In addition, studies found that having a male partner who was supportive of cancer screening was a significant predictor of Hispanic women's participation in cervical cancer screening (Thiel de Bocanegra et al., 2009).

Familism is a multidimensional construct. Researchers have described the structural, behavioral and attitudinal dimension of familism (Lugo-Steidel & Contreras, 2003). The structural dimension marks the spatial and social boundaries within which behaviors occur and attitudes acquire meaning, the behavioral dimension of familism refers to those behaviors associated with the feelings and attitudes about the family, and the attitudinal dimension denotes the normative commitment of family members to the family and to family relationships, beyond the individual's attention (Lugo-Steidel & Contreras, 2003). Villarreal, Blozis, and Widaman (2005) argued that the domains of attitudinal and behavioral familism captured the more fundamental, psychological aspects of familism. Research also strongly suggested that attitudinal familism was more stable over generations, across language preference, acculturation level, and country of origin (Sabogal et al., 1987).

Fatalism.

Fatalism ("fatalismo") is a perspective on life based on the belief that events are inevitable and cannot be modified by one's actions (Davison, Frankel, & Smith, 1992). Cancer fatalism was described as "the belief that cancer is unavoidable regardless of personal actions or that death is certain when cancer appears" (Abraido-Lanza et al., 2003, p 153). This concept has been described as a significant part of the Latino culture and religious beliefs (Antshel, 2002). Cancer fatalism was identified as a barrier to

participate in cancer screening, detection, and treatment (Powe & Finnie, 2003).

However, Abraido-Lanza et al. (2003) argued that there is little evidence to support the proposition that fatalism among Latinos poses a barrier to screening. The researchers explained that most studies present contradictory results, and most failed to control for socio-demographic characteristics that were associated with fatalism and screening.

Several studies have reported that Hispanic women tend to have a fatalistic view toward cervical cancer (Arredondo et al., 2009; Boyer et al., 2000; Scarinci et al., 2003). A study compared the relative influence of global fatalistic beliefs versus cervical cancer specific fatalistic beliefs of Mexican American women. This study found that cervical cancer specific beliefs were associated with repeated cancer screening, whereas global beliefs were not (Fernandez-Esquer & Cardenas-Turanzas, 2004). Arredondo et al. (2008) found that North Carolina resident Hispanic women who never had a Pap smear were more likely to endorse fatalistic beliefs compared with Latinas who obtain the procedure frequently. The authors used a scale developed by Cuellar, Arnold, and Gonzalez (1995) to measure fatalistic beliefs.

In a qualitative study conducted by Boyer et al. (2000), Hispanic women reported beliefs related to Fatalism. For example, “If one cannot influence the future, why focus on it or try to change it?” Watts et al. (2009) found that participant Hispanic women had a fatalistic attitude toward the discovery of a cancer following a screening test. In their study most women considered a cancer diagnosis to be deadly, but also reported wanting to be informed of their cancer diagnosis. Fatalistic beliefs toward cervical cancer seemed to vary across country of origin among Hispanics. Ramirez et al. (2000) found that

Mexican-Americans and Puerto Ricans had more negative or fatalistic attitudes towards breast and cervical cancer screening than do Latinos from other countries of origin.

Niederdeppe et al. (2007) found that fatalistic beliefs about cancer prevention are prevalent in the U.S. adult population of all racial and ethnic groups. The authors also found that these beliefs were stronger among less-educated Americans of all ethnic groups. Although fatalism beliefs toward cancer were found in every ethnic group in the U.S., Latinos are more likely than White Americans to think that chronic disease is determined by God and therefore must be accepted and endured as a *castigo divino* (punishment) for personal sin or sins of family members (Antshel, 2002).

Abraido-Lanza et al. (2003) challenged the assumption that fatalism is a cultural trait among Latinos. The researchers argued that it is necessary to conduct a thorough examination of different concepts included in the notion of fatalism, develop more complex, valid, and reliable measures to assess its effects, and more closely analyze how socioeconomic and other factors (e.g. oppression, racism, and limited access to health care) may be masked as fatalism.

Similarities and differences have been described in the research literature between Health Locus of Control and Fatalism. The Multidimensional Health Locus of Control (MHLOC) scale includes internal and external dimensions of health locus of control (Wallston, Wallston, & DeVellis, 1978). Internal control refers to the belief that health outcomes are determined by one's own actions and decisions. External control by powerful others refers to the belief that the actions of doctors and other health professionals determine health outcomes. Chance control refers to the belief that health

and illness are largely a matter of chance or fate (Bundek, Marks, & Richardson, 1993).

This last construct of health locus of control is equivalent to the concept of fatalism as it relates to external events that cannot be controlled by the individual.

Chance control and fatalism differ in the way they developed in individuals. Bundek et al. (1993) argued that chance control beliefs generally form early in life as a result of early childhood experiences with illness in one's family, and might remain relatively stable across time. On the other hand, the research literature summarized by Powe and Finnie (2003) suggested that fatalism develops over time and is most frequently reported among medically underserved people and those with limited knowledge of cancer.

Bazargan et al. (2004) found that, after controlling for all the other predisposing characteristics, those minority women who believed that powerful others, such as physicians, nurses, and other health professionals were responsible for their health and illness were more likely to report compliance with cervical cancer screening guidelines.

Abraido-Lanza et al. (2003) argued that Fatalism measurement among Latinos suffered from four broad limitations: 1) reliance on single-item measures, 2) lack of established and reliable scales, 3) limited evidence of the validity of existing measures, and 4) use of scales that may tap distinct fatalism-related constructs (e.g. fear, destiny, and religious attributions concerning cancer as God's punishment) (Florez et al., 2009). For instance, studies have found low levels of cancer-specific fatalism among Hispanics. Participants of a study on social-cognitive aspects of low-income, underserved Latinas preparing to undergo genetic cancer risk assessment for hereditary breast and ovarian cancer (BRCA testing) using a 15-item validated Powe Fatalism Inventory scale, reported

low levels of cancer-specific fatalism. These findings contradicted results of other studies, including studies of African-American women, which have found that cancer-specific fatalism was higher among those considering BRCA testing (Lagos et al., 2008).

In the next sections, the nature of the cervical cancer situation in the United States is reviewed including a brief review of what it is, its prevalence, how it is treated, and barriers to treatment. The current situation for U.S. Hispanic women is highlighted.

Literature review

Cervical cancer and screening

The National Cancer Institute defines cervical cancer as a “cancer that forms in the tissues of the cervix (the organ connecting the uterus and vagina)” (Ries et al., 2008, p 4). It is usually a slow-growing cancer that may not have symptoms but can be found with regular Pap tests (a procedure in which cells are scraped from the cervix and looked at under a microscope). Cervical cancer has been referred to as “a case study in health equity” worldwide because most (85%) of these deaths occur in the developing world (Wittet & Tsu, 2008; WHO, 2006a). This inequity results in large part from the absence of cervical cancer screening programs (Wittet & Tsu, 2008). However, even in developed countries, where early detection efforts are stronger, several subpopulations remain under-screened. In particular, active young women, minority women with language difficulties, and women with specific cultural health beliefs are at a greater risk of developing cervical cancer (Austin et al., 2002).

Virtually every case of squamous cell cervical cancer worldwide (99%) is linked to genital infection with human papillomavirus (HPV), the most common viral infection of

the reproductive tract (WHO, 2006a). Most HPV infections resolve spontaneously. Those that persist may lead to the development of pre-cancer and cancer. Typically, it takes from 10 to 20 years for precursor lesions caused by HPV to develop into invasive cancer. Effective interventions against cervical cancer exist, including screening for and treatment of pre-cancer and invasive cancer (WHO, 2006a). Two prophylactic HPV vaccines have shown excellent efficacy against persistent HPV infection and related cervical lesions. In low-resource settings, the optimal age for screening young women to achieve the greatest public health impact is between 30 and 40 years (WHO, 2009).

The American Cancer Society (2008) stated that if current knowledge about cancer prevention and early detection were applied, at least half of all cancer deaths could be prevented. However, quality cytology-based screening programs that use Pap smears, and that have been shown to be effective in the U.S. and other developed countries, can be difficult to sustain (CDC, 2007). The World Health Organization informed that an effective strategy for prevention and control of cervical cancer should encompass

“...interventions along the continuum of care, from primary prevention to screening and early detection, treatment, and palliative care. It requires a complete package of linked services consisting of health education and community empowerment, vaccination of adolescents, screening of women, treating those detected with precancerous cervical lesions or invasive cancer, and symptom management, particularly pain.” (PAHO, 2007, p 3)

Cervical cancer is a disease that, if detected early, is treatable. Countries with well-organized programs to detect and treat pre-cancerous abnormalities and early stage

cervical cancer can prevent up to 80% of these cancers (WHO, 2006a). In addition, for women in whom pre-cancerous lesions have been detected through Pap tests, the likelihood of survival is nearly 100% with appropriate evaluation, treatment, and follow-up (American Cancer Society [ACS], 2010). However, effective screening programs, combined with follow-up treatment for women with abnormal test results have been difficult to implement in low- to middle-resourced settings (WHO, 2006a). Cervical cancer incidence and mortality rates had decreased 67% over the past three decades, with most of the reduction attributed to the Pap test. However, between 60% and 80% of women with advanced cervical cancer reported they did not have Pap test in the past five years (ACS, 2010).

Since 2007, the Alliance for Cervical Cancer Prevention (ACCP) has recommended low-resourced settings to conduct screening using either visual inspection after an application of acetic acid (VIA) or Lugol's Iodine (VILI), and then treating pre-cancerous lesions using cryotherapy (freezing). Evidence has shown that this is a most efficient and effective strategy that could be carried out at primary care settings by competent providers, including nurses and trained midwives (Gravitt et al., 2008; PAHO, 2007). Furthermore, studies have shown that VIA and VILI have higher sensitivity to detect pre-cancerous lesions than Pap test (Qureshi, Vinita Das, & Zahra, 2010). Despite the evidence-based effectiveness of VIA and VILI, if sufficient resources exist, cytology continues to be the recommended screening process to use in large-scale cervical cancer screening programs (The Alliance for Cervical Cancer Prevention [ACCP], 2007).

In countries with limited health resources, new programs should begin screening women at age 30 or older and include younger women after the highest-risk group has been covered (WHO, 2006a). New and alternative technologies for early detection of cervical cancer, such as VIA and VILI, has proven to be effective and others continue to be evaluated. For example, self-obtained samples for HPV testing has been evaluated in Canada. This method is showing promise as a complement to conventional screening by reducing some of the barriers persistently reported, such as embarrassment (Barata et al., 2008).

Risk factors for cervical cancer

The major risk for cervical cancer is persistent infection with certain types of human papillomaviruses (HPV) (PAHO, 2007). Almost all cervical cancers are caused by HPV (CDC, March 2009). These viruses are the most common sexually transmitted viral infections and they affect men and women differently. Other known cervical cancer risk factors include high parity, increasing number of sexual partners, started having sex at an early age, low socioeconomic status and positive smoking history (CDC, March 2009; PAHO, 2007). Other factors that can increase the risk of cervical cancer are not having regular Pap tests, lack of follow-up after an abnormal Pap test result, dietary and nutritional factors, family history of cervical cancer, history of chlamydia, trichomonas, or herpes simplex virus infection, use of oral contraceptives, and having HIV (CDC, March 2009; Warren, Gullett, & King, 2009).

Boyer et al. (2000) summarized factors associated with U.S. Hispanic's cervical cancer screening behaviors, including age, education, income, immigrant status,

acculturation, cultural beliefs about modesty and sexual behavior, family-centered values, and existing social networks. In addition, research suggests that Latinas' low cancer awareness was associated with finding cervical cancer at more advanced and less treatable stages (Erwin et al., 2010). Lower compliance to cervical cancer screening guidelines and lack of follow-up after a diagnosis also has been found (Parra-Medina et al., 2009).

U.S. cervical cancer screening guidelines

The official cervical cancer screening guidelines have been issued by four U.S. organizations (Table 2.2). The U.S. Preventive Services Task Force (USPSTF) issued its most recent screening recommendations in January 2003. These recommendations were also endorsed by the National Cancer Institute (Warren et al., 2009). USPSTF recommended cervical cancer screening at least once every three years, regardless of age. This recommendation was based on evidence that screening annually does not improve outcomes relative to screening every three years (U.S. Preventive Task Force, 2003). The American Cancer Society (ACS) and the American College of Obstetrics and Gynecology (ACOG) traditionally have recommended three consecutive normal Pap test findings before switching to screening less often than annually (Saraiya et al., 2010).

The incorporation of the HPV co-testing, which is HPV (DNA) test plus the Pap test, has induced changes to cervical cancer screening guidelines. ACS and ACOG have strengthened their recommendations to extend screening intervals to three years with a previous HPV testing negative result. There is a low risk of developing high-grade pre-cancer and cancer of the cervix for the next 10 years in a woman with HPV contesting

negative results (Saraiya et al., 2010). However, USPSTF reported that it is necessary to evaluate the benefits of HPV testing with prospective studies. As a consequence, USPSTF has not yet recommended HPV co-testing due to insufficient evidence.

ACOG introduced changes in their screening guidelines in 2009, based on the scientific advances in screening procedures. ACOG recommended that women wait until age 21 and then be screened every two years until age 30 (McBride, February 2010). In addition, for women with 3 consecutive normal Pap test results, the recommended screening interval is 3 years. The USPSTF recommends against routine screening of women over age 65 who have had recent adequate screening and who are not otherwise at high risk for cervical cancer. ACS recommends 70 years to be the age for cessation of screening, after having 3 or more recent, consecutive negative tests (Warren et al., 2009).

These differences in screening guidelines across organizations and time pose a challenge for both health personnel and the population at large. Fatone & Jandorf (2009) argued that cervical cancer screening guidelines are complex as there is debate about the benefits of repeated screening based on past screening results, as well as individual risk factors. Findings of a study showed that a lower proportion of primary care physicians recommended extending screening intervals to 3 years with a normal result of an HPV co-testing. One of the reasons for this lack of adherence to current guidelines is that the American College of Physicians and American Academy of Family Physicians accept the USPSTF guidelines, which does not include HPV co-testing into the decision-making process for screening, due to insufficient evidence (Saraiya et al., 2010).

Table 2.2 Cervical Cancer Screening Guidelines of United States Organizations: Pap Test (Cytology) alone vs. HPV Co-testing

Topic	ACS (2002)	ACOG (2003)	ACOG (2009)	USPSTF (2003)
Age for initiation of screening	Approximately 3 years after onset of sexual intercourse but no later than age 21	Approximately 3 years after onset of sexual intercourse but no later than age 21	Approximately 3 years after onset of sexual intercourse but no later than age 21	Age 21, or within 3 years of initiation of sexual activity, whichever comes first
Frequency of Screening				
Conventional Pap	Annually. May extend interval to every 2-3 years for women age 30 and over who have had three negative cytology tests	Annually. May extend interval to every 2-3 years for women age 30 and over who have had three negative cytology tests	For women aged 21-29 years every 2 years. For women aged 30 and over, if 3 consecutive Pap test results are normal, then may change interval to every 3 years	At least every 3 years, regardless of age
Liquid-based cytology	Every 2 years. May extend interval to every 2-3 years for women age 30 and over who have had three negative cytology tests	Annually. May extend interval to every 2-3 years for women age 30 and over who have had three negative cytology tests	For women aged 21-29 years every 2 years. For women aged 30 and over, if 3 consecutive Pap test results are normal, then may change interval to every 3 years	Insufficient evidence
With HPV testing	Every 3 years with negative HPV testing and negative cytology	Every 3 years with negative HPV testing and negative cytology	For women aged 21-29 years, HPV co-testing not recommended. For women aged 30 and over, if HPV results is negative and cytology result is normal, rescreening should be no sooner than every 3 years.	Insufficient evidence
Age for Cessation of Screening	Age 70 and older with 3 or more recent, consecutive negative tests and no abnormal tests within the prior 10 years	Inconclusive evidence upon which to establish an upper age limit	Inconclusive evidence upon which to establish an upper age limit	Age 65 and older, history of negative cytology and not increased risk for c.c.
Screening after total hysterectomy	Discontinue if hysterectomy was for benign reasons and no prior history of high-grade CIN	Discontinue if hysterectomy was for benign reasons and no prior history of high-grade CIN	Discontinue if hysterectomy was for benign reasons and no prior history of high-grade CIN	Discontinue if hysterectomy was for benign reasons

Abbreviations: ACOG, American College of Obstetrics and Gynecology; ACS, American Cancer Society; US Preventive Services Task Force; HPV, human papillomavirus; Pap, Papanicolaou.
Source: Adapted from Saraiya et al., 2010; Warren, Gullett, & King, 2009.

Physicians who follow ACOG guidelines should recommend screening every 2 years for women 21-29 years. However, most physicians continue to recommend yearly screenings regardless of women's age (Saraiya et al., 2010). According to ACOG, a Pap test every two years is as good as a Pap test every year. The authors consider that additional tests are inconvenient and costly. In addition, research showed that it does not make a difference in terms of lives saved (McBride, 2010). Saraiya et al. (2010) called for the implementation of strategies to improve physician adherence to recommendations as a means to achieve efficient screening practices in the U.S.

Prevalence of cervical cancer and cervical cancer screening

Wittet and Tsu (2008) argued that in addition to the emotional trauma on surviving family members, cervical cancer deaths render significant economic costs over the short- and long-term. According to the Healthy People 2010 cancer objectives for Pap smear use, 85% of all women should have a Pap smear within the preceding three years (DHHS, 2000). Although, in the U.S. the incidence and mortality rates for cervical cancer have fallen in the past 50 years due to the use of Pap tests (DHHS, 2009), it is estimated that from 1998 to 2003 about 10,800 new cervical cancer cases were diagnosed each year in this country (CDC, 2007). In 2004, 11,999 women were diagnosed with cervical cancer, and nearly 3,924 women died from the disease (U.S. Cancer Statistics Working Group, 2009). Approximately 6.2 million people become infected with HPV annually in the U.S. (ACS, 2010).

Estimated new cases and deaths from cervical (uterine cervix) cancer in the U.S. in 2008 were 11,070 new cases and 3,870 deaths (National Cancer Institute, 2009a). These

rates are based on cases diagnosed in 2002-2006 from 17 geographic areas. The average national age-adjusted incidence rate of cervical cancer was 8.2 per 100,000 women per year. Hispanic women had the highest incidence rate with 12.7 cases per 100,000 women. South Carolina registered an incidence rate of 8.6 cases per 100,000 women for 2008. This rate was higher than the national average (National Cancer Institute [NCI], 2009b).

In the U.S., more black and Hispanic women get cervical cancer and they tend to be diagnosed in later stages of the disease compared to women of other races or ethnicities. The apparent reasons for these discrepancies are decreased access to Pap testing and follow-up treatment (CDC, 2007). Screening rates in the U.S. are low among low-income women who lack insurance coverage for Pap tests (Tangka et al., 2010). Owusu et al. (2005) found that African Americans and Hispanics were significantly less likely to have ever had a Pap smear, compared to Non-Hispanic Whites. It is estimated, that even in the U.S., in 2004-2006 only nearly 9% (775,312 of 8.9 million) of National Breast and Cervical Cancer Early Detection Program (NBCCEDP) eligible women received the NBCCEDP-funded Pap test (Tangka et al., 2010).

The Behavioral Risk Factor Surveillance System showed that South Carolina accounted for a percentage of recent Pap tests (within the preceding 3 years) that was above the national average for 2008 (ACS, 2010). For instance, for women 18 years and older, Pap Test rates for South Carolina (85.6%) were higher than other states including California (83.8%), Florida (83.2%), Texas, 81.0%, and New York (83.0%). These increased rates, as compared with other states, do not account for the lower screening rates affecting low-income and immigrant populations (ACS, 2010).

Among barriers cited to achieve successful cervical cancer prevention programs were the high cost of the HPV vaccine, the weakness of existing cervical cancer screening programs, and the lack of awareness about HPV (Wittet & Tsu, 2008). Other factors that have been associated with lower rates of cervical cancer screening included the lack of a usual source of healthcare, lack of health insurance, low income, low educational attainment, obesity, smoking, immigrant status, foreign birth, younger and older ages, and not being married or living with a partner (ACS, 2010; Nelson, Moser, Gaffey, & Waldron, 2009).

The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) and Best Chance Network are nation-wide federally-funded ongoing programs seeking to reduce health care disparities regarding cervical cancer in the U.S. The NBCCEDP is a nationwide, comprehensive public health program that helps uninsured and underserved women gain access to screening services for the early detection of breast and cervical cancer (CDC, 2002). The NBCCEDP is directed at low-income, uninsured women aged 18–64 from priority populations.

Since the NBCCEDP began in 1991, CDC has expanded the program to all 50 states, 4 U.S. territories, the District of Columbia, and 13 American Indian/Alaska Native tribes or organizations. The Best Chance Network (BCN) is funded by the federal government and through state funds allocated by the state legislatures. Since 1995, the American Cancer Society (ACS), South-Atlantic Division, has worked with the Department of Health and Environmental Control (DHEC) in S.C. to help coordinate BCN services with

providers, recruit eligible women into the program, and provide professional education for the program.

Cervical cancer in the U.S. and South Carolina Hispanic population

Demographics.

The Latino population is the nation's largest and fastest growing racial/ethnic group in the U.S. (Passel & Suro, 2005), representing 16% (48,419,324) of the total population for 2009 (U.S. Census Bureau, 2009). According to the Pew Hispanic Center (2006), the Hispanic or Latino population will triple in size and will account for most of the nation's population growth from 2005 through 2050. However, these statistics do not account for the large population of undocumented Hispanic immigrants in the country. The Immigration and Naturalization Services (INS) estimated that there were 5 million undocumented immigrants residing in the U.S. in 1996. In addition, most of the U.S. undocumented immigrants came from Latin America (Consortium for Latino Immigration Studies, 2007).

The Hispanic/Latino population has been described as a mosaic of cultures. The diversity is referred to by nationality, customs, heritage, lifestyles and socioeconomic status (ACS, 2008). Latinos come from different nationalities and unique traditions. They are not homogenous groups. The Hispanic population in the U.S. includes people coming from South, Central and Latin America and Caribbean nations. According to the Pew Hispanic Center (2006), 64.1% of the Hispanic resident population in the U.S. is Mexican, 9% is Puerto Rican, 3.4% is Cuban, and 3.1% is Guatemalan. Practitioners

working with Latino communities must consider the existence of an array of origins and cultural elements among Latinos (Guarnaccia, Martinez, & Acosta, 2005).

The number of Hispanics in poverty increased from 8.6 million in 2002 to 9.1 million in 2003 in the U.S. Of the foreign-born population, those who had not become citizens had a poverty rate of 21.7% in 2003. In addition, the number of foreign-born non-citizens in poverty increased (4.6 million in 2003, up from 4.3 million in 2002) (U.S. Census Bureau, 2004). This is particularly important, as national surveys have recently confirmed the severity of health disparities between low- and high-income Americans. An analysis based on the Gallup-Heathway's Well-Being Index, conducted in 2010, showed that those making less than \$24,000 per year suffered from much poorer emotional and physical health, had poorer health habits, and had significantly less access to medical care than middle- and high-income families (Mendez, October 2010).

Data from the U.S. Census Bureau (2004) showed that the highest poverty rate of the U.S. in 2003 was for the Southern region, at 14.1%. In addition, the number of people leaving in poverty increased in this region from 14.0 million to 14.5 million in 2003 (U.S. Census Bureau, 2004). The South region registered the fastest population growth for Hispanics in the U.S.; Georgia, North Carolina and South Carolina are among the top states with an increase of more than 300% in the last ten years. The South Carolina Hispanic population grew 342% during this period (Kochhar, Suro, & Tafoya, 2005).

Hispanics in South Carolina are estimated to be predominantly young, married, living in poverty conditions and without health insurance (U.S. Census Bureau, 2009). Estimates of the U.S. Census Bureau (2009) showed that Hispanics in South Carolina

were 203,827 people for 2009, representing a 4% of the total population for this state. This report portrayed the following characteristics for S.C. Hispanics: forty six percent were females (93,760 Hispanic women), the median age was 24 years old compared with 37.5 years for the total population, and more than a half was estimated to be married (53.1%). In addition, 45.8% lacked health insurance, compared to only 16.8% of the general population of South Carolina. In this state, Hispanics' poverty rates were estimated to be 33.3% for 2009, compared with 12.9% to the entire population (U.S. Census Bureau, 2009).

The South Carolina Latino population exhibits tremendous diversity (Consortium for Latino Immigration Studies, 2007). The population growth in South Carolina was primarily due to Mexican and Central America migratory movements to places where low-wage, undocumented work opportunities were available (Erwin et al, 2010). However, many of South Carolina's Latino residents are not recent immigrants. Some were born in the U.S., and others come from Puerto Rico and are, therefore, U.S. citizens. South Carolina Latinos include members of the upper and middle South American, Central American, or Mexican classes. They include lawyers, doctors, teachers, other professionals, people with advanced degrees, and military personnel (Consortium for Latino Immigration Studies, 2007). This study included data collection sites that had a great variety of community- and faith-based organizations, associations and ESL programs where Hispanic gathered to capture within its sample the diverse cultural traits among Hispanics in the Upstate of South Carolina.

U.S. Hispanic's cervical cancer incidence and mortality.

Recent trends suggest that cervical cancer incidence and mortality among women in some racial and ethnic populations in the U.S. continue to decrease significantly. However, cervical cancer rates are considerably higher among Hispanic and African-American women (CDC, 2010b). The incidence rate of cervical cancer among Hispanic women in the U.S. were almost two times higher than among non-Hispanic White (12.0 vs. 8.1/100,000 women) by 2007. In 2007, Hispanic women registered the highest incidence of cervical cancer in the U.S. (11.6/100,000 women) and the second highest mortality rate (3.1/100,000) due to cervical cancer (CDC, 2010a).

There is very limited available specific data on cervical cancer incidence and mortality for Southern states. State-specific and population data on cervical cancer incidence and mortality for Hispanics have not been published by South Atlantic Division Cancer Registries due to the relatively small numbers of Hispanics residents in each state (ACS, 2008). However, the higher national rate of cervical cancer incidence among Hispanic, compared to other race-ethnicities, may be predictive of expected high rates among S.C. Hispanic residents. Cervical cancer mortality rates for all race-ethnicities in the Southern region exceeded the national rate by 15% by 2005 (Department of Health and Environmental Control [DHEC], 2005).

According to a PAHO report (2007), in Latin America and the Caribbean (LAC), cervical cancer is also the leading cause of cancer deaths among women. It is estimated that 72,000 new cases and 33,000 deaths occur annually among women in LAC, accounting for one of the highest cervical cancer mortality rates in the world (PAHO,

2007). In Mexico, although there is an ongoing cervical cancer screening program for more than 20 years, they have only achieved 13% reduction of the potentially preventable cervical cancer cases (PAHO, 2004; Guarnaccia et al., 2005). This data has implications for the U.S., as Mexico is the main source of Hispanic immigrant residents in this country (Pew Hispanic Center, 2006).

Approximately 12,516 new cases of cervical cancer are diagnosed each year in Mexico, with a crude incidence rate of 24.4/100,000 women. It has become the most frequent cancer among Mexican women (Wall et al., 2010). In addition, studies have described a high prevalence of Human Papillomavirus (HPV) infections among Mexican women, which increases their risk of cervical cancer (Parra-Medina et al., 2009).

Prevalence of U.S. Hispanic's cervical cancer screening.

Underutilization of screening services and poor adherence to diagnostic follow-up have been identified as major contributor factors to the high mortality rates among Hispanic women in the U.S. (Parra-Medina et al., 2009). Hispanic women are significantly less likely to be screened for cervical cancer than non-Hispanic White or Black women in the U.S. (Abraido-Lanza, Chao, & Gammon, 2004; Austin, Ahmad, McNally, & Stewart, 2002; Bazargan, M., Bazargan, S.H., Farooq, & Baker, 2004; Ries et al., 2008). Latinas account for the lowest cervical cancer screening rates as compared with other race-ethnicities in the U.S. (82.0%); as well as the South Atlantic Division (82.8%) that includes South Carolina among other seven states. Among Latinas, Mexican and uninsured women accounted for the lowest cervical cancer screening rates (ACS, 2008).

The majority of studies that examined the factors that affected the rates of cervical cancer screening for U.S. Hispanic women focused on comparing their rates of cervical cancer screening to women in other ethnic groups (Abraido-Lanza et al., 2004; Bazargan et al., 2004; Benard, Lee, Piper & Richardson, 2001; Coughlin, Uhler, Richard & Wilson, 2003; Goel et al., 2003; Selvin & Brett, 2003; Singh, Miller, Hankey & Edwards, 2004). Few of these studies examined the factors that might be responsible for differential patterns of cervical cancer screening across different ethnic populations.

Hypotheses

Based on the review of the literature the following hypotheses were tested.

H1. When S.C. Upstate Hispanic women's perceived threats (i.e. susceptibility, severity), perceived benefits, and self-efficacy are high, and perceived barriers are low, then S.C. Upstate Hispanic women will have a greater likelihood of having been screened for cervical cancer within the past three years.

H1.1. S.C. Upstate Hispanic women with a higher level of perceived threats (i.e. susceptibility and severity) to cervical cancer will be significantly more likely to have had a Pap test in the last three years previous to the study than those with lower levels of perceived threats (i.e. susceptibility and severity).

H1.2. S.C. Upstate Hispanic women who perceived fewer barriers for a cervical cancer screening will be significantly more likely to have had a Pap test in the last three years prior to the study than those who perceived more barriers to committing to screening.

H1.3. S.C. Upstate Hispanic women with a higher level of perceived benefits of cervical cancer screening will be significantly more likely to have had a Pap test in the last three years previous to the study than those with lower levels of perceived benefits.

H1.4. S.C. Upstate Hispanic women who believe in their ability to seek and overcome barriers in getting screened (self-efficacy) will be significantly more likely of having had a Pap smear test in the last three years previous to the study than those with lower levels of perceived self-efficacy.

H.2. Selected socio-demographics variables (i.e. age, marital status, foreign vs. native born, country of birth, language spoken, current or recent pregnancy, and length of residence in the US), modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors.

H2.1. S.C. Upstate Hispanic women who are older will have a statistically significantly lower frequency of having had a Pap test in the last three years than younger women.

H2.2. S.C. Upstate Hispanic women who were married or living with a partner will have a statistically significantly higher frequency of having had a Pap test in the last three years than single women.

H2.3. S.C. Upstate Hispanic women who are native-born will have a statistically significantly higher frequency of having had a Pap test in the last three years than do foreign-born.

H2.4. S.C. Upstate Hispanic women born in Mexico will have a statistically significantly lower frequency of having had a Pap test in the last three years than women born in other Latin American or Caribbean countries.

H2.5. S.C. Upstate Hispanic women who “almost never” spoke English will have a statistically significantly lower frequency of having had a Pap test in the last three years than women who spoke English “often” or “almost always”.

H2.6. S.C. Upstate Hispanic women who reported being currently pregnant will have a statistically significant higher frequency of having had a Pap test in the last three years than women who reported not being currently pregnant.

H2.7. S.C. Upstate Hispanic women who reported that they were pregnant in the last three years will have a statistically significant higher frequency of having had a Pap test in the last three years than women who reported not having been pregnant in the last three years.

H2.8. S.C. Upstate Hispanic women who had been in the United States for a longer time will have a statistically significantly higher frequency of having had a Pap test in the last three years, than did women who reported residing in the U.S. for a shorter period of time.

H.3. Selected socio-economic factors (i.e. income, education, availability of health insurance, and availability or a regular source of care), modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women’s cervical cancer screening behaviors.

H3.1. S.C. Upstate Hispanic women with higher income levels will have a statistically significantly higher frequency of having had a Pap test in the last three years than did women with lower income levels.

H3.2. S.C. Upstate Hispanic women who achieved higher educational levels will have a statistically significantly higher frequency of having had a Pap test in the last three years than did those women who achieved lower educational levels.

H3.3. S.C. Upstate Hispanic women who had health insurance will have a statistically significantly higher frequency of having had a Pap test in the last three years than did those women without health insurance.

H3.4. S.C. Upstate Hispanic women who reported having a regular source of health care will have a statistically significantly higher frequency of having had a Pap test in the last three years than did those women without a regular source of health care.

H4. Three culturally-related factors (i.e. familism, fatalism, and acculturation) modified significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior.

H4.1. S.C. Upstate Hispanic women, who were highly acculturated, as measured by the BAS scale (Marín, & Gamba, 1996), had a significantly higher frequency of having had a Pap test in the last three years previous to the study compared to lower acculturated women.

H4.2. S.C. Upstate Hispanic women with higher familialistic belief scores, as measured by the AFS scale (Lugo-Steidel & Contreras, 2003), had a significantly higher frequency of

having had a Pap test in the last three years previous to the study compared to women with lower familistic belief scores.

H4.3. S.C. Upstate Hispanic women that had high fatalistic views toward cervical cancer, as measured by the SPFI scale, were significantly less likely to have had a Pap test in the last three years previous to the study compared to women with lower fatalistic belief scores.

H5. Women's knowledge about cervical cancer and the Pap test modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors.

H5.1. Having a hysterectomy will be a significant covariate with S.C. Upstate Hispanic women's knowledge about cervical cancer and the Pap test to significantly modify the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior.

H5.2. Having a relative with cancer will be a significant covariate with S.C. Upstate Hispanic women's knowledge about cervical cancer and the Pap test to significantly modify the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior.

H6. S.C. Upstate Hispanic women's degree of agreement to cervical cancer screening cues (cues to action) modified significantly the predictive effect of perceived threats (i.e.

susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior.

H6.1. Access to regular medical care, familism and a relative with cancer will be significant covariates with cues to cervical cancer and modified significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior.

Summary

The purpose of this study was to predict S.C. Upstate Hispanic women's cervical cancer screening behavior by examining selected cervical cancer and screening perceived threats, benefits, barriers and their degree of self efficacy. The study also examined how S.C. Upstate Hispanic women's knowledge about cervical cancer and cervical cancer screening and selected socio-demographic, socio-economic, and cultural factors modified Hispanic women's cervical cancer and screening perceived threats, benefits, barriers, self efficacy, and screening behavior. The ultimate goal was to use the study findings to make recommendations to better eliminate known barriers and provide appropriate interventions to increase the rate of cervical screening among South Carolina Upstate Hispanic women.

This chapter provided an overview of the theoretical framework that guided this study. The Health Belief Model history, utilization, strengths and limitations were reviewed. A modified HBM was presented, along with a review of relevant precedent studies related to the additional factors included in the model. In addition, study results regarding cervical cancer and screening in the U.S. and elsewhere were summarized,

including cervical cancer epidemiology and prevalence of cervical cancer screening in the U.S. and among Hispanics in particular. Chapter 2 concluded by stating the hypotheses that were tested.

Chapter 3 outlines the research methodology used in this study to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors.

CHAPTER THREE

Methods and procedures

The purpose of this study was to examine selected cervical cancer and cervical cancer screening beliefs and actions among Hispanic women, 18 to 65 years old, who at the time of the survey resided in or near the cities of Greenville, Simpsonville, Fountain Inn, and Greer (Greenville County), Spartanburg (Spartanburg County), Walhalla (Oconee County) and Laurens (Laurens County) in the Upstate of South Carolina. The study was conducted from November 22, 2010 through March 15, 2011.

Study design

The study was a cross-sectional survey, without a comparison group, of a convenience sample of Hispanic women residents in or near seven cities of S.C. Upstate at the time of the survey.

Setting and population served

The Upstate is the region of South Carolina that includes the 10 counties of the I-85 corridor in the west corner of the state. The population estimate for the S.C. Upstate in 2009 was 1,359,699 (U.S. Census Bureau, 2009). The Upstate is the fastest growing region in the state with Greenville as the largest city and the base of most commercial activity. In addition, together with Spartanburg, Greenville is one of the five counties with the numerically highest concentrations of Hispanics, as well as the highest percentage of Hispanic immigrant growth (Young, 2005).

Four cities in Greenville County and one city in each of Spartanburg, Oconee, and Laurens Counties were included in this study. To increase the likelihood of efficient and

fast sample recruitment. Seven cities were selected by convenience based on the percentage of the Hispanic origin or descent population, as well as the availability of personal contacts at churches and English as a Second Language (ESL) schools where Hispanic attended regularly (Table 3.1).

Table 3.1 Total Population and Percentage of Hispanic Residents in Four Counties and Six Cities in the Upstate of South Carolina

County	City	Year	Total population	Hispanic population %
Greenville	Greenville	2006	57,428	3.4
		2000	56,002	3.4
	Simpsonville	2000	14,352	4.6
	Fountain Inn	2000	6,017	2.4
	Greer*	2009	33,280	4.2
Spartanburg	Spartanburg	2006	38,561	1.8
		2000	39,673	1.8
Oconee	Walhalla	2000	3,081	15.4
Laurens	Laurens	2000	9,916	2.4

Source: U.S. Census Bureau 2000 and 2006 Population Estimates

*Source: Neighborhoodlink.com (estimates not available at U.S. Census Bureau).

Data were collected at selected places within the sampled cities. The selected test sites included faith-based organizations, ESL schools, Hispanic associations, and community centers where Hispanics gathered on an ongoing basis.

Sample

To participate in the study, a woman had to be between the ages of 18 and 65 years and self-identified as being of Hispanic/Latino origin. For this study, Hispanic/Latino

origin referred to women by birth or descent from or related to any Latin American or Caribbean country, or Puerto Rico. Puerto Ricans are U.S. citizens by birth but in a variety of characteristics resemble the Hispanic immigrant population (Pew Hispanic Center & Pew Forum on Religion & Public Life, 2007). Similarly, the female participants had to reside in or near the selected for the study.

The decision to include women 18 to 65 years of age was made based on current U.S. Preventive Task Force guidelines (2003) which recommend starting regular screening within 3 years of onset of sexual activity or age 21, whichever comes first, and screening at least every three years until age 65. Screening is not recommended for women beyond age 65, if they are not otherwise at high risk for cervical cancer. In addition, the Best Chance Network Program of the American Cancer Society provided, at the time of this study, free Pap tests until age 65. Since a greater proportion of the sample was represented by low-income families and women at sites also serving low-income families, limiting the sample to women ages 18 up to age 65 was considered to give all participating women the same probability of accessing cervical cancer screening services. Lastly, including women over the age 18 eliminated the need to obtain parental permission for participation.

Sample size

Sample selection was based on non-probabilistic sampling methods, as the sample was drawn by convenience. Power analysis indicated that 173 respondents were needed to achieve a reliable sample.

The magnitude of the critical effect size for the test (Δ) was determined by examining the R^2 values found in previous research studies that included one or more of the five predictors used in this study based in a modified HBM: perceived severity, perceived susceptibility, perceived barriers, perceived benefits, and self-efficacy, and which included U.S. Hispanic populations. The following formulas for a two-sample binomial test were used to obtain the small delta (δ) and Delta (Δ) (Kraemer & Thiemann, 1987):

delta (δ):

$$\text{Delta } (\Delta): \boxed{\Delta = (e^{2\delta} - 1)/(e^{2\delta} + 1)^{1/2} - \arcsin \pi_y^{1/2}}$$

The average R^2 for the five predictors under study were obtained from results of previous studies (Byrd, Peterson, Chavez, & Heckert, 2004; Fulton, Rakowski & Jones, 1995; Lopez & McMahan, 2007; Mandelblatt, Gold, Malley et al., 1999). Based on these studies' results, the critical average effect size obtained was 0.231385. Seeking 90% power at the 5% significance level, the power table showed that 173 subjects were required as the estimated sample size needed to find similar effects.

A total of 250 questionnaires from Hispanic women ages 18 to 65 were collected. Of these, in 220 (88%) questionnaires participants answered all the items of the CPC-28 scale that measured the HBM components (Urrutia, 2009). Therefore, this 220 questionnaire were considered sufficiently complete to include in this study and represented the total sample. Table 3.2 presents the number of questionnaires completed by city and county. The cities of Greenville and Greer represented the study sites with the greater percentage of both completed and incomplete questionnaires.

Table 3.2 Numbers and Percentage of Questionnaires Sufficiently Completed and Used in the Study; South Carolina Upstate, December 2010.

County	City	Number and percentage of questionnaires			
		Sufficiently complete		Incomplete	
		#	%	#	%
Greenville	Greenville	64	29.1	9	30
	Simpsonville	25	11.4	5	17
	Fountain Inn	9	4.1	1	3
	Greer	58	26.4	6	21
Spartanburg	Spartanburg	20	9.1	2	6
Laurens	Laurens	21	9.5	5	17
Oconee	Walhalla	23	10.5	2	6
Total		220	100	30	100

Recruitment

The participants were recruited at various community settings including community centers, churches, Hispanic associations, and ESL schools. Table 3.3 presents the name and type of sites where the sample was obtained, by counties and cities. Twelve sites were surveyed. Forty-two percent of the sites were located in Greenville City (5).

There is evidence in the research literature that many minority groups responded favorably to direct, personal contacts from known individuals to participate in research studies and programs (Karwalajtys et al., 2009). In this study, participants were approached primarily through coordinators, directors, or leaders from the participating organizations. After a direct contact in person or by telephone, with program coordinators and directors, a research site letter was sent reviewing what was requested and scheduling an appropriate time when potential participants could complete the study's questionnaire.

The research site letter contained information about the principal investigator, the purpose of the study, the procedures followed for survey completion, confidentiality issues and rewards received by the participants (Appendix A). The site coordinator was to return this letter signed and dated to the principal investigator as evidence of their agreement to participate. This letter was submitted to Clemson's Institutional Review Board (IRB) before conducting the survey at the specific research site.

To supplement the above recruitment procedure, word of mouth recruitment was also used, with a snowball technique. Women who chose to participate were asked to refer their friends and acquaintances. Given the successful recruitment process at the pre-selected sampling sites, it was not necessary to conduct community meetings at women's homes or selected locations to complete recruitment as originally planned. Trained bilingual data collectors oriented participants about how to complete the questionnaire. More explanation on this training is provided in the following section.

Data collection

Procedure

The questionnaire was comprised of nine sections and included a total of 124 questions (See English and Spanish versions of the questionnaire in Appendix B). Most of the questionnaire was first developed in English and then translated into Spanish. Four of the six scales used were available from the original authors in both English and Spanish. The questionnaire was back-translated into Spanish by an independent translator to ensure accuracy and the use of culturally appropriate language (Bracken & Barona, 1991).

Table 3.3 Data Collection Sites in the South Carolina Upstate

Type of organization	Name of the Site	County/City					
		Greenville				Spartan - burg	Laurens
		Greenville	Simpsonville	Fountain Inn	Greer	Spartan burg	Oconee
Church	St. Mary Magdalene Catholic Church Russell Memorial Presbyterian Church Iglesia Católica Santísima Trinidad	X				X	
	Holy Spirit Catholic Church					X	
	Iglesia Bautista Puerta Abierta						X
	Centro Internacional de Restauracion					X	
Hispanic Association	Hispanic American Women Association Red Cross: Hispanic volunteers	X	X				
English as a Second Language (ESL) and/or literacy school	Life Long Learning Center Golden Strip Learning Center Oconee Literacy ESL Program	X		X			X
Community Organization	Café Cultura/Center for Community Services		X				

The back-translation process involved three steps: 1) translation from the original language (i.e. English or Spanish) to the target language (i.e. Spanish); 2) blind back-translation (i.e. translation from Spanish back to English by a bilingual individual unfamiliar with the original measure); and 3) translation-back-translation repetition (Bracken & Barona, 1991). The instrument was repeatedly translated from the source

language to the target language until the two different versions were considered to be very similar in content.

A pilot study was conducted in November, 2010 to estimate the length of time to complete the questionnaire and to evaluate the presence of potential difficulties in understanding the questions. A convenience group of seven women of Hispanic descent, ages 20 to 49 years, were chosen to test the understandability of the questionnaire. The average length of time for questionnaire completion was 27 minutes, with a range of 22 to 33 minutes (Table 3.4). The pilot study results were intended to be used to modify questionnaire wording and formatting; however, participants did not make recommendations for questionnaire modification and thought the questionnaire was understandable as presented. The piloted questionnaire was submitted to Clemson University's IRB for approval. Both, the English and Spanish versions of the questionnaire were approved by the IRB (See IRB approval in Appendix J).

Table 3.4 Times Required Completing Questionnaire during Pilot Study

Subject	Time of onset (AM)	End time (PM)	Amount of time (Minutes)
1	8:22	8:44	0:22
2	8:22	8:51	0:29
3	8:22	8:51	0:29
4	8:22	8:51	0:29
5	8:22	8:55	0:33
6	8:22	8:47	0:25
7	8:22	8:50	0:28
Average			0:27

Once the study was approved by the IRB and a time and date was set at each participating site, trained data collectors and the principal investigator were present at the site to coordinate the participants' questionnaire completion and to collect the completed questionnaires. The time to complete the questionnaires was arranged after activities conducted at the site were finalized (i.e. after the conclusion of the mass or the ESL class). Data collectors read the oral consent to participate in the research study to the entire group of participants. If participants agreed to participate, they were asked to remain in their seats to complete the questionnaires. Those who did not agree to participate were dismissed themselves by leaving the room.

Data collectors offered the option of administering the questionnaire in Spanish or English to the women who gave oral consent. Data collectors encouraged women to complete all the questions. However, participants were aware of the voluntary nature of the survey and that they were not required to complete all questions. All questionnaires were completed and returned on site. No surveys were mailed, and participants did not have the option to take a survey home and mail it back to the principal investigator.

A total of 14 participants required assistance to complete the survey (6.4% of the total sample). Data collectors read the questionnaire in Spanish to participants with limited English literacy skills. These women were assisted by one of the data collectors in a separate room from those who could complete the questionnaire by themselves. When there was just one person with literacy problems at a particular site, a data collector interviewed the woman using the questionnaire and the participant marked the chosen response on her copy of the questionnaire. When there was more than one woman with

literacy issues, the questionnaire was read to them and they were able to mark responses by themselves into the questionnaire.

The investigator trained a staff of eight bilingual (English and Spanish) data collectors. At least three were present at each site at the time of questionnaire completion. All eight data collectors successfully completed the CITI Human Subjects Protection Course Curriculum required of all researchers conducting studies under Clemson University affiliation. The training emphasized the importance of allowing study participants to complete the questionnaire by themselves.

Based on the pilot study, data collectors were given standard ways to explain concepts or to answer questions. However, to avoid introducing interviewer bias into the study, data collectors encouraged participants to select answers to questions that best described their opinion. In addition, all data collectors were given the same set of written directions to use with respondents, along with the same introductory remarks that explained the purpose of the survey and their rights as research participants.

During training, each data collector practiced introducing the survey and answering a set of “typical questions” (i.e. what is the Pap test?). In addition, they were requested to submit to the principal investigator all questions that were not included in the set of “typical questions”. However, the principal investigator was able to be present at all sites during survey application. Therefore data collectors, who assisted the principal investigator, did not have to further submit to the principal investigator those questions asked by participants during questionnaire completion.

As an incentive, a lapel pin donated by the South Carolina Cancer Alliance was given to each participant. This lapel pin was a symbolical gift to remind them of their support to fight against cervical cancer. In addition to the lapel pin, participants also received educational materials on cervical cancer prevention and screening from the American Cancer Society and the Best Chance Network (Appendix C). In addition, the participants received a flyer with a short explanation about the study, and a page containing the principal investigator's contact information (Appendix D).

A question was included about participants' willingness to help the investigator hold a meeting at their home or other locations with friends and acquaintances so that the questionnaire could be administered to additional participants besides those affiliated with the participating agencies. This question was originally included to make sure that the sample size was achieved. Those women who responded affirmatively to this question were asked to provide their name, contact address, and phone number on a card. These cards were kept separately from the completed questionnaires to ensure respondents' confidentiality. The cards were placed in a secured, locked cabinet at the researcher's office.

A valid sample size was achieved without having to hold meetings in people's homes. Those who completed cards were notified that hosting a meeting in their home was not necessary but that the researcher was grateful for their willingness to host such a meeting. Completed questionnaires were kept in a locked cabinet in the researcher's office. Only the principal investigator had access to these data. The SPSS database file was password protected and no one besides the principal investigator and one dissertation committee

faculty member had access to the data file. No respondent placed any identifiers on completed questionnaires so no additional identifier removal steps were necessary.

Consent procedure

The investigator requested a waiver of written consent from Clemson University's Institutional Review Board (IRB), and an authorization to obtain an oral consent from respondents. This request was approved by the IRB. After introducing themselves, data collectors read the oral consent to participant in the research study to the entire group of potential participants at each location (Appendix E). As part of the oral consent, women were asked to agree to participate by saying "yes" and to remain in their seats.

Participants who did not participate in the study were able to leave the room. Data collection occurred after finalizing activities at the research sites so the women not willing to participate could dismiss themselves by leaving the room.

Confidentiality

The name of the city in which participants completed the questionnaire was pre-coded with a number and written on each completed questionnaire. No names, social security, driver's license or passport numbers, or any other personal identification data were obtained, thereby protecting the anonymity of the participants. Some women were identifiable because they completed a card with their personal data to be contacted further to help organize a meeting with their friends and acquaintances. However, their name was not written on their completed questionnaire and the cards were kept separately from the completed questionnaires. Both questionnaires and cards were kept inside a locked

cabinet in the researcher's office. The cards were destroyed after all data were filed electronically and placed under password protection.

All data collectors signed a confidentiality agreement in which they agreed not to share any information about the participants with anyone except the principal investigator (Appendix F). No agency employees were allowed to be present during the administration of the survey so that participants were not in any way jeopardized by their participation or comments during the survey process.

Study Variables

This study examined the relationships between five HBM variables (perceived susceptibility, severity, benefits, barriers, and self-efficacy) that reflected Hispanic women's perceptions and attitudes related to cervical cancer and screening and their compliance with cervical cancer screening guidelines. It also examined the modifying effect of seven socio-demographic variables (i.e. age, marital status, foreign vs. native born, country of birth, language, current or recent pregnancy, and length of residence in the US), four socio-economic variables (i.e. income, education, availability of health insurance, and regular source of care), women's knowledge of cervical cancer, cues to cervical cancer screening, and three culturally related variables (i.e. acculturation, familism, and fatalism).

The dependent variable, cervical cancer screening compliance, was measured four ways as a dichotomous variable (yes/no): (a) ever had a Pap smear test, (b) had a Pap smear test within the last three years, (c) had a Pap smear test within the last two years,

and (d) had Pap smear test within the past year. Each variable is explained further in Appendix G.

Instruments

Several instruments created or adapted by other researchers for use with Hispanics were incorporated into this study (Appendix G). S.C. Upstate Hispanic women's cervical cancer and screening beliefs were assessed using the Beliefs, Papanicolaou, Cancer – 28/ “Creencias, Papanicolaou, Cancer – 28” [CPC-28] scale (Urrutia, 2009). A scale was developed by the principal investigator to measure participants' knowledge about cervical cancer and screening. Acculturation was measured using the Bi-dimensional Acculturation Scale (BAS) developed by Marin and Gamba (1996). Familism was measured using the Attitudinal Familism Scale (AFS) created by Lugo-Steidel and Contreras (2003). Fatalism was assessed using the Spanish version of the Powe Fatalism Inventory (SPFI), translated and culturally adapted by Lopez-McKee et al. (2007). These instruments are further explained below.

Health belief scale

The CPC-28 scale (Beliefs, Papanicolaou, Cancer – 28/ “Creencias, Papanicolaou, Cancer – 28”) was used in this study to measure four domains of participants' beliefs about cervical cancer and screening and one modifying factor in accordance to the Health Belief Model (Table 3.5) (Urrutia, 2009). This instrument had good psychometric properties when used in prior research with Chilean women. The author's consent to use the CPC-28 scale in this study is included in Appendix H.

Table 3.5 Domains of the CPC-28 Scale (“Papanicolaou, Cancer – 28/Creencias, Papanicolaou, Cancer – 28”)

Domain	Definition	Item's name	Item's number
Barriers to having a Pap test	difficulties perceived by the woman to have the Pap test	problems related with the health care center: Treatment waiting time Appointment Schedules lack of knowledge about the Pap test: how often what age lack of time being afraid Embarrassment	A14 A18 A26 A23 A25 A17 A3 A22 A24
Cues to action to have a Pap test	stimuli perceived by the woman that causes her to have the Pap test	mother's recommendation other family member's recommendation health care professionals: nurse or midwife Physician friend or neighbor media	C5 C7 C3 C4 C6 C8
Severity of cervical cancer	belief woman perceived about how serious it is to have cervical cancer and their sequels	cervical cancer as a serious problem possibility to have a hysterectomy radiation therapy and chemotherapy to die from this disease	A29 A28 A30 A27
Need to have a Pap test	belief that the woman has about the need to have the Pap test according to the requirements	not needing a Pap test if do not have children not needing a Pap test if do not have symptoms not needing a Pap test if do not have intercourse	B3 B2 B4
Susceptibility to cervical cancer	belief that the woman has about the possibility to acquire cervical cancer and to die from this	risk to have a cervical cancer susceptibility because of age possibility to die if the women acquire cervical cancer	B8 B10 B9
Benefit to having a Pap test	belief that the woman has about the good consequences to have a Pap test	Pap test can save my life the reason I get the Pap test is to take care of my health getting a Pap test makes me feel good because it means that I take care of my health	A20 C1 A1

Source: Urrutia, M.T. (2009). Development and testing of a questionnaire: Beliefs about cervical cancer and Pap test in Chilean women. Reproduced with permission.

The average Cronbach's coefficient alpha for this scale was .74. The highest alpha corresponded to the items associated with the "Cues to action to have a Pap test" (.85) and the lower alpha of .64 was associated with the "Benefits to having a Pap test" items. The average inter-item correlation was .083. The CPC-28 has six domains of women beliefs about cervical cancer and screening

The three "needs of having a Pap test domain" items were incorporated into the "susceptibility" domain and reverse coded because their meanings were in opposite direction to the other items of the same domain. Similarly, the "benefits" and "severity" domains were reverse coded in order to follow the same direction of the other domains. Therefore higher values reflected higher degree of perception for the particular domain.

Self-efficacy

A modified version of the Cervical Cancer Screening Self-Efficacy Scale (CCSSE) developed by Fernandez et al. (2009) was used to assess self-efficacy beliefs of S.C. Upstate Hispanic women (See Fernandez's consent to allow use of the CCSSE in Appendix H). The authors tested this scale among low-income Mexican-American women who were residents in Texas, California, and the U.S.-Mexico border at the time of the study.

In Fernandez' study (2009), the CCSSE scale showed good internal consistency with a Cronbach's alpha of 0.95. The authors conducted an exploratory factor analysis (EFA), which indicated a single-factor solution with all seven items loadings >0.73. Self-efficacy scores were obtained by adding the items. High scores indicated high self-efficacy. The results of the logistic regression in Fernandez' study (2009) supported the relationship

between self-efficacy and health behavior. Women with higher self-efficacy were more likely to have had a recent Pap test than women with lower self-efficacy. Therefore, self-efficacy was an important determinant of Pap test screening. Fernandez et al. (2009) used a two-level categorical scale, based on pre-test findings. First, women were asked if they were “sure, undecided, or unsure” and then, depending on the response, women were asked about the strength of their confidence.

For the purpose of this study, Bandura’s (2001) recommendations on self-efficacy scale construction were followed. The author recommended that individuals be presented with items portraying different levels of tasks and to rate the strength of their belief in their ability to execute each task. The strength of their efficacy beliefs was recorded using a 100-point scale, ranging in 10-unit intervals from 0 (“Cannot do”) to 50 (intermediate degrees of assurance, “Moderately certain can do”) to 100 (complete assurance, “Highly certain can do”).

A simpler response format retains the same scale structure and descriptors but uses single unit intervals ranging from 0 to 10. However, Bandura (2001) suggested that scales that use only a few steps should be avoided because they are less sensitive and less reliable. People usually avoid the extreme positions, so a scale with only a few steps may, in actual use, shrink to one or two points. Therefore, an efficacy scale with the 0-100 response format was a stronger predictor of performance than one with a 5-interval scale (Pajares, Hartley, & Valiante, 2001). In addition, Cabassa (2003) suggested that researchers use a wide-range Likert-type scale with Latinos because of this population’s extreme response style.

Acculturation level

To measure participants' acculturation level, the Bi-dimensional Acculturation Scale (BAS) was used (Marin & Gamba, 1996). Theoretically BAS is a bi-dimensional scale created as a new validated version to overcome the criticism of the linear nature (uni-directional) of previous scales (Yamada, Valle, Barrio, & Jeste, 2006). In their analysis of the BAS scores, Marin and Gamba (1996) found high reliability and validity in three language-related dimensions: language use, linguistic proficiency, and preferred language use when using electronic media.

Other researchers have used the long and short versions of BAS as reliable and valid measures of acculturation of Hispanics from various countries of origin (Fernandez et al., 2009; Kaiser et al., 2001; Kaiser et al., 2002; Peragallo & Alba, 2000; Wilkinson et al., 2005; Zayas, Bright, Alvarez-Sanchez, & Cabassa, 2009). Fernandez et al. (2009) used the BAS (Marin, 1996) to assess the level of acculturation in their study to evaluate the effectiveness of lay health worker intervention to increase breast and cervical cancer screening among low-income Hispanic women. The authors found the intervention to be equally effective among women with low levels of acculturation and those who were bicultural and concluded that acculturation had no effect on intervention effectiveness.

Conversely, Harmon et al. (1996) found higher rates of Pap smear compliance among bicultural and highly acculturated Latinas when compared with low-acculturated Latinas. O'Brien et al. (2010) suggested that further research was needed to clarify the relationships between acculturation and Pap smear screening.

The BAS approach (Marin & Gamba, 1996) was selected to measure acculturation in this study because of its good psychometric properties when applied to Mexican-Americans and Central Americans. The BAS was found to be equally reliable and valid for use with Mexican-American and Central Americans. Marin and Gamba (1996) reported an average alpha coefficient reliability score of .90 for all the items. In this study, the items from the three subscales of the BAS were presented to the participants in random order. The final scale had 24 items (12 for each cultural domain). To analyze the BAS scores (Marín, & Gamba, 1996) respondent's answers to the 12 items that measured each cultural domain (Hispanic and non-Hispanic) were averaged across items.

Each respondent was assigned two scores: (a) one for the average of the 12 items making up the Hispanic domain (i.e. items 4 through 6, 13 through 18, and 22 through 24) and (b) another score for the 12 items forming the non-Hispanic domain (i.e. items 1 through 3, 7 through 12, and 19 through 21). The possible total score ranged from 1 to 4 for each cultural domain. The two scores were used to define the level of acculturation of the respondent. In order to assign acculturation categories to the respondents, a score of 2.5 was used as a cutoff to indicate low or high levels of adherence to each cultural domain. Scores above 2.5 in both cultural domains were interpreted as indicating biculturalism on the part of the respondent (Marin & Gamba, 1996). (See Marin and Gamba consent to allow us to use the BAS scale in Appendix H).

Familism

Lugo-Steidel and Contreras (2003) performed a study focusing on the attitudinal components of familism and developed the Attitudinal Familism Scale (AFS). The

researchers chose four components representing attitudinal familism to conceptualize the scale. *Familial interconnectedness* was conceptualized as the belief that all family members must be both physically and emotionally close to each other. *Familial honor* was defined as the belief that an individual has a responsibility not to tarnish the family name and a duty to defend any attacks against the family integrity. The *subjugation of self for family* reflects the belief that a person must be submissive and respect the family's rules (Lugo-Steidel & Contreras, 2003).

Herrera, Lee, Palos, and Torres-Vigil (2008) conducted a study about the cultural influences in the patterns of long-term care use among Mexican American family caregivers. They used the Lugo-Steidel and Contreras's 18-item Attitudinal Familism Scale (2003) with a 10-point rating scale. The Cronbach's alphas for the factors in their study were 0.83 to measure self-sacrifice for the benefit of the family, family connectedness and reciprocity, and belief in familial honor. Similar to Lugo-Steidel and Contreras's study (2003), they found a statistically significant inverse relationship between acculturation and familism ($p < 0.0005$) (Herrera et al., 2008).

Schwartz (2007) conducted a study to assess familism among an ethnically and culturally diverse group of college students in Miami, including Hispanics. The main purpose of Schwartz (2007) study was to examine the extent to which familism was Hispanic-specific versus generalizable to other ethnic groups. The researcher used the AFS (Lugo-Steidel & Contreras, 2003) to assess familism. The results of the study suggested that familism was applicable across Hispanic subgroups, as measured by the AFS, and may take similar forms in Hispanic and non-Hispanic ethnic groups. Zayas et

al. (2009) used the AFS to examine the role of familism in suicide attempts among Hispanic adolescents. They found that familism did not appear to have a major role in suicide attempts in their highly acculturated sample, as they found no differences in attitudinal familism beliefs between attempters and non-attempters.

Research on familism and Hispanic cervical cancer screening behaviors using the AFS (Lugo-Steidel & Contreras, 2003) were not identified in the literature review. However, the AFS has proven to be a reliable measure of familism for Hispanics and across other race-ethnicity groups (Schwartz, 2007; Zayas, Bright, Alvarez-Sanchez, & Cabassa, 2009). Therefore, the AFS was used in this study to examine the predictive effect of familism on cervical cancer screening behaviors in a sample of S.C. Upstate Hispanic women. (Lugo-Steidel and Contreras' consent to use the AFS in this study is in Appendix H).

The Attitudinal Familism Scale assessed all relevant aspects of the familism construct (Lugo-Steidel & Contreras, 2003). The factor structure of the AFS included familial support, familial interconnectedness, familial honor, and subjugation of self for family. The AFS was scored on a 10-point Likert scale ranging from 1 (*strongly disagree*) to 10 (*strongly agree*) (Lugo-Steidel & Contreras, 2003). This length of the scale was consistent with recommendations by researchers about the use of a wide-range Likert-type scale with Latinos because of this population's extreme response style (Cabassa, 2003).

The overall AFS showed a high internal consistency in the study conducted by Lugo-Steidel and Contreras (2003). The analyses of each subscale indicated adequate levels of

internal consistency for three of the four subscales. As a result, the more highly acculturated individuals adhered less to overall familism. The 18 items of the scale were factor analyzed using a Principal Components analysis with Oblimin rotation. Four conceptually clear factors (Eigen values greater than 1.0) emerged. The four factors accounted for 51.23% of the variance on the 18 items.

Cronbach's alphas for the factors were .83 for the overall scale, .72 for Familial Support (Items 1, 4, 5, 6, 11, and 16), .69 for Familial Interconnectedness (Items 2, 3, 6, 8, 9, and 10), .68 for Familial Honor (5, 7, 12, 13, and 14), and .56 for Subjugation of Self for Family (Items 5, 10, 12, 15, 17, and 18). All subscales were significantly inter-correlated. The validity of the scale was tested with correlations between all familism sub-scales, acculturation scores, generational status, and exposure to the U.S. A significant negative correlation was found between linear acculturation scores and overall familism (Lugo-Steidel & Contreras, 2003).

Fatalism

According to Powe (1995), cancer fatalism involves prevailing attitudes of pessimism and lack of control with respect to cancer. The Spanish, culturally adapted version of the Powe Fatalism Inventory (SPFI) was used to measure fatalism beliefs of the participants in this study (Lopez-McKee's consent to allow use of the SPFI in this study is found in Appendix H). The SPFI scale was translated and culturally adapted by Lopez-McKee et al. (2007). The authors translated the original 15 item PFI (Powe Fatalism Inventory) (Powe, 1995) to provide a valid Spanish language measure of cancer fatalism. The objective of this measure was to provide a reliable instrument to evaluate the effects of

cancer fatalism to promote effective cancer screening behavior among people of Hispanic origin.

The SPFI was culturally adapted by incorporating suggested changes to the consensus version of the SPFI made by two separate focus groups (Lopez-McKee et al., 2007). The participants were mostly of Mexican-American origin. An expert committee determined that the SPFI had a reading level below sixth-grade. The psychometric properties of the instrument were evaluated with a convenience sample of 175 participants of Mexican American descent who reported being fluent in English and Spanish.

The principal components analysis indicated the following four factors: predestination (items 1 to 6), pessimism (items 7 to 11), imminent death (items 12 and 13), and fear (items 14 and 15) (Lopez-McKee et al., 2007). The coefficient alpha reliability estimates of the SPFI obtained in their sample of Mexican-Americans was 0.81. The study by Lopez-McKee et al. (2007) showed psychometric evidence that the translated and culturally adapted SPFI was equivalent to the English version (PFI) in measuring cancer fatalism.

Cervical cancer knowledge

The scale to assess S.C. Upstate women's knowledge of cervical cancer and screening was developed by the principal investigator based on corresponding breast and cervical cancer scales developed by Lopez and McMahan (2007) and Breslow, Sorkin, Frey, and Kessler (1997). The scale included 10 items. Items 1 – 3 were related to knowledge of Human Papilloma Virus (HPV) and its role in cervical cancer; items 4 – 6 corresponded to risk factors associated with cervical cancer; items 7 and 8 were related with usefulness

of the Pap test and manifestations of cervical cancer; and items 9 and 10 corresponded to cervical cancer screening guidelines. The scale's reliability and validity were tested in this study and data are reported in Chapter Four.

Data analysis plan

Data management

Once data collection was completed all questionnaires were reviewed for completeness. As previously mentioned, 30 questionnaires were dropped from the study because they were incomplete. The investigator numbered the remaining 220 questionnaires sequentially. Further, the investigator entered the data from each questionnaire into a database created for this study in SPSS 17.0. Since the investigator introduced each case individually into the database, there was no possibility of entering duplicate cases.

A code book was developed that assigned numbers to the categories of all categorical and ordinal variables in the study. For instance, for Language spoken at home, two categories were created: Spanish was 1 and English was 2. This procedure reduced the chance for errors in data entry. In addition, it facilitated the analysis of ordinal variables or scales as it made possible to calculate the mean and standard deviation for scale categories.

The investigator checked every case and responses to make sure that every number was in a right column. Frequencies were run on each variable to identify missing data or data error. Table frequencies and descriptive statistics including the mean, standard deviation, minimum and maximum values; were run to identify mistakes in the data and

potential outliers. From the two continuous variables in the study, age and years of residence in the U.S., only the second reported a significant skewed distribution. This represents the recent immigration patterns of S.C. and thus, it was not transformed.

Categorical variables' missing values ranged from 0 to 15 (years of residence in the U.S.). Ordinal variables missing values ranged from 0 to 5 (a cue to action). For purposes of analysis, missing values were coded as 9. Therefore, missing values were not included into the statistical analysis. A table containing all variables transformation procedures was included in Appendix K. The possibility of collinearity among the independent variables in this study was explored through correlation analysis.

SPSS 17.0 was used for data analysis. A bivariate analysis using correlations and the chi-square was conducted. Hypotheses were tested within a generalized linear model framework. This approach allowed the investigator for modeling non-normal distributions and for selecting the method of linearizing the relationship between the independent variables (IVs) and the dependent variable (DV). The DV variable (Having obtained a Pap test in the past three years: every year, twice, once, ever had, never had) had an ordinal distribution. Given the ordinal nature of the DV, a multinomial distribution and a cumulative logit link function were selected.

Descriptive analysis

A descriptive univariate analysis was conducted. Frequency distributions were reported for discrete variables with absolute values and percentages. The mean and its standard deviation were calculated for continuous variables.

Bivariate analysis

An exploratory correlation with a one-tailed significance level was conducted between the health beliefs of the participants and the socio-demographic and socio-economic variables selected for the study. One table presented the correlations with HBM scale, knowledge about cervical cancer and Pap test scale, cues to cervical cancer screening scale, family and personal history of cancer, and hysterectomy; while the other socio-demographic and socio-economic variables such as marital status, country of origin, income, and education were grouped into another table.

A bivariate analysis of dependent and independent variables using Chi-square tests was performed. For nominal data, Chi-square analysis examined differences between the socio-economic and socio-demographic variables among different levels of S.C. Upstate Hispanic women's compliance with cervical cancer screening.

Generalized Linear Modeling

A generalized linear model was used with the dependent variable modeled as a multinomial distribution and using a cumulative logit link function. A cumulative logit function treats each category of the dependent in an ordered fashion; that is, each level of the dependent contains the levels below it. An ordered logit analysis was used to predict the probabilities of cervical cancer screening compliance given different combinations of beliefs and modifier variables.

The generalized linear model based in an ordered logit analysis was used to test the hypotheses about the relationship of S.C. Hispanic women's cervical cancer screening compliance in the past three years and their perceived threats of cervical cancer (a latent

construct as a result of combining perceived susceptibility to and perceived severity of cervical cancer), perceived benefits, barriers, and self-efficacy to cervical cancer screening. The theory and empirical research evidence about the Health Belief Model was used as an explanatory tool to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors and to statistically test the hypotheses.

A set of direct relationships between the IVs (Hispanic women's perceptions on cervical cancer screening) and the DV (cervical cancer screening history) were examined. In addition, the modifiers' effects on the direct relationships were tested. The modifiers tested were the socio-demographic and socio-economic variables, cervical cancer knowledge, cues to cervical cancer screening, and three cultural predictors (fatalism, familism, and acculturation level).

Methodological limitations of the study

This study had a cross-sectional design and data collection occurred at one point in time. Therefore, assessment of the temporal relationships among variables could not be examined. The researcher's reliance on self-reports about participant's perceptions and beliefs may have underestimated the real frequency of cancer screening and overestimated participants' intentions and beliefs about cancer and cancer screening.

It was possible that self-report was biased and influenced by a cultural inclination to appear cooperative, or "*simpatia*", which has been described as a characteristic of Hispanics (Suarez, 1994; Marin & Triandis, 1985). Latinos may behave in a socially desirable manner as a way to have positive interactions. Therefore, Latinos may readily agree with statements they may not understand or be in accord with as a way to maximize

this cultural value (Arredondo, Pollack, & Constanzo, 2008). This bias may have produced an under-estimation of the reported barriers and an over-estimation of the amount of Pap screening.

Since this study was based on the selection of a convenience sample, selection bias may also have been present. Most participants were recruited at community-based organizations (CBOs) such as community centers, ESL schools, and churches. Therefore, the sample may have been represented by Hispanic women who were more affiliated or engaged with community institutions, and may have been more aware or informed of the issues covered by the survey, and more prone to seek help through organizations they trusted.

In addition, the sample was collected in places located in four counties in the S.C. Upstate, specifically the cities of Greenville, Simpsonville, Fountain Inn and Greer in Greenville County; Spartanburg city in Spartanburg County; Laurens city in Laurens County, and Walhalla city in Oconee County. Women who lived in other rural areas in these counties may have had different beliefs and actions that were not represented by the sample's responses. Furthermore, not all the Latin American countries were represented in the sample. The study sample was over represented by Mexican participants. Therefore, these results may not be able to be used to make inferences to Hispanics from all countries of origin, nor to the entire population of U.S. Hispanics.

Summary

Chapter three included methods and procedures used to examine the events under study. A brief description of the study design, setting and population served, sample and

sample size calculation techniques were included. The procedure for participant's recruitment, data collection, consent procedure, and confidentiality issues were thoroughly explained. Variables and selected instruments and scales used were described. The data analysis plan followed to assess study findings was described. Finally, the methodological limitations of the study were detailed.

Chapter four outlines relevant findings of the study.

CHAPTER FOUR

Results

The results of the data analysis are presented in the following sections. This analysis includes participants' demographic characteristics, including knowledge about cervical cancer and the Pap test, cultural factors and Pap test compliance. Bivariate analysis comparing Pap test compliance among categories of socio-demographic and socio-economic factors; inter-correlations among predictors, and generalized linear modeling to test the effect of S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test on their cervical cancer screening compliance is also presented. The effect of selected modifiers on S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test is also presented.

Demographic data analysis

The total sample size was 220 Hispanic women between the ages of 18 and 65 years who at the time of the study were residents at or near the cities of Greenville, Simpsonville, Fountain Inn and Greer in Greenville County; Spartanburg in Spartanburg County; Laurens in Laurens County; and Walhalla in Oconee County. All seven cities are located in the Upstate region of South Carolina. The socio-demographic and socio-economic characteristics of the participants are presented in Table 4.1. The mean age of the participants was 38.21 years of age, with a standard deviation of 10.96 years. The participants' age ranged from 19 to 65 years. More than half of the women were 20 to 39 years of age (56.1%) and were married (54.9%).

Table 4.1 Socio-demographic and Socio-economic Characteristics of Hispanic Women from Seven Cities in Upstate South Carolina

Variable	Categories	Total	%
Age (years)	15-19 20-29 30-39 40-49 50-59 60-65	2 49 66 56 24 8	1.0 23.9 32.2 27.3 11.7 3.9
	Total	205	100.0
Marital Status	Single Partnered Married Widowed/Separated/Divorced	26 44 118 27	12.0 20.5 54.9 12.6
	Total	215	100.0
Native vs. Foreign Born	Native born (U.S.) Foreign born (P.R. and other LA countries)	8 212	3.6 96.4
	Total	220	100.0
Country of Birth	Mexico Central America South America Caribbean USA	114 23 60 4 8	54.5 11.0 28.7 1.9 3.8
	Total	209	100.0
Length of residence in the U.S. (years)	Less than 5 6 to 10 11 to 14 More than 15	30 84 43 48	14.6 41.0 21.0 23.4
	Total	205	100.0
City of residence	Laurens City Greenville Simpsonville Fountain Inn Greer Spartanburg City Walhalla	21 64 25 9 58 20 23	9.5 29.1 11.4 4.1 26.4 9.1 10.5
	Total	220	100.0
Language	Speak English poor to very poorly Speak English well to very well	123 97	55.9 44.1
	Total	220	100.0

Variable	Categories	Total	%
Education Attainment	Less than high school High school or GED Technical or vocational Some college College Degree master degree or graduate studies	77 57 23 27 29 7	35.0 25.9 10.5 12.3 13.2 3.1
	Total	220	100.0
Family Income	\$10,000.00 or less \$10,001.00 to \$19,999.00 \$20,001.00 to \$39,999.00 \$40,001 or more	58 56 68 24	28.2 27.2 33.0 11.7
	Total	206	100.0
Current Pregnancy	Yes No	10 209	4.6 95.4
	Total	219	100.0
Last 3 years Pregnancy	Yes No	54 161	25.1 74.9
	Total	215	100.0
Availability of health insurance	Yes No	51 162	23.9 76.1
	Total	213	100.0
Availability of a medical home	Yes No	73 140	34.3 65.7
	Total	213	100.0
Source of regular medical care	Private physician/group practice same Dr. Group practice, different Dr./hospital outpatient dept./clinic not with hospital Free clinic/hospital emergency room I do not go for regular medical care	73 95 24 21	34.3 44.6 11.3 9.9
	Total	45	100.0

Ninety-six percent of the participants were born in a Latin American country, including Puerto Rico. The majority of these women (54.6%) were born in Mexico and 28.7% were born in South America. Most of the South American women came from Colombia (22.3%). Forty-one percent of the participants had resided in the U.S. for 6 to

10 years, and 21% for 11 to 14 years. Only 23.4% had resided in the U.S. for more than 15 years. Greenville city had the greatest percentage of participants in the sample with 29.1%, and the city with the smallest percentage of participants surveyed was Fountain Inn (4.1%). From the four counties surveyed, Greenville County provided the highest percentage of surveyed participants (71.0% of the total sample of 220).

More than half of the participants reported that they spoke English poorly to very poorly (55.9%). Sixty-one percent of the Hispanic women achieved only a high school diploma or less, and 35% of this group reported not graduating from high school. Only 13.2% of the participants received a college degree and 3.1% a master's or PhD degree. Fifty-five percent had a yearly family income of \$19,999.00 or less. Only 11.7 % reported an annual family income of \$41,000 or more. Seventy-five percent of the women were married or partnered; 12% were single and 13% widowed, separated, or divorced.

Being pregnant is considered a factor that protects against cervical cancer because pregnant women have access to the Pap test as part of the prenatal examination (Arredondo, Pollack, & Constanzo, 2008; Bazargan, Bazargan, Farooq, & Baker, 2004). Although only 4% of the participants were pregnant at the time of the survey, 25% reported being pregnant within the last three years.

The availability of health insurance is an important factor to increase access to health care and preventive services (Bazargan et al., 2004; Scarinci, Beech, Kovach, & Bailey, 2003). Only 24% of the participants reported having health insurance at the time of the survey. Similarly, only 34.3% reported receiving regular health care services. From this

group, 34% reported receiving care from a private physician or at a group practice where they saw the same doctor, 44% received health care at places where they usually saw various doctors, and 10% reported not receiving regular medical care.

Bivariate analysis

Chi-square analysis was performed to examine the differences in cervical cancer screening compliance among individuals using selected socio-economic and socio-demographic variables. Table 4.2 presents the results of the bivariate analysis of the socio-demographic and socio-economic variables under study with cervical cancer screening compliance using the Chi-square test, based on a 95% significance level. Rates of non-screening or screening that failed to meet national guidelines were significantly associated with age. S.C. Upstate Hispanic women 50 years of age and older reported the significantly lower percentage of obtaining a Pap test every year in the last three years (41%, $p < 0.05$). Hispanic women 40 – 49 (56%, $p < 0.05$) and 30 – 39 (48%, $p < 0.05$) years of age reported significantly higher percentages of obtaining a Pap test every year in the last three years.

Differences in cervical cancer screening compliance based on access to regular medical care were also significant. Participants who reported having access to regular medical care reported a greater percentage of having had a Pap test every year in the last three years (53%, $p < 0.05$). Pregnant during the last three years and ability to speak English were significant. Both variables, yielded a Pearson Chi-square significance level of $p = 0.047$ ($p < 0.05$).

Table 4.2 Percentages and Significance of Papanicola Test Compliance Based in Selected Socio-demographic and Socio-economic Characteristics of South Carolina Upstate Hispanic Women

Variable	Categories	Papanicola test compliance												Chi-Sq Sig.	
		Never had		At least once in my life		At least once in the last 3 years		Twice in the last 3 years		Every year in the last 3 years		Total			
		#	%	#	%	#	%	#	%	#	%	#	%		
Age (years)	Less than 29	8	16	4	8	6	12	10	20	23	45	51	25	0.025	
	30-39	0	0	11	17	7	11	16	24	32	48	66	32		
	40-49	0	0	9	16	8	14	10	18	29	52	56	27		
	50-65	2	6	3	9	6	19	8	25	13	41	32	16		
Total		10	5	27	13	27	13	44	21	97	47	205	100		
Marital Status	Single	4	15	3	12	4	15	5	19	10	38	26	12	0.137	
	Partnered	2	5	7	16	3	7	15	34	17	39	44	20		
	Married	2	2	15	13	17	14	24	20	60	51	118	55		
	Wid/Sep/Div	1	4	2	7	5	19	5	19	14	52	27	13		
	Total	9	4	27	13	29	13	49	23	101	47	215	100		
Country of Birth	Mexico	5	4	15	13	10	9	26	23	58	51	114	55	0.341	
	Central A.	3	13	3	13	4	17	5	22	8	35	23	11		
	South A.	2	3	8	13	12	20	12	20	26	43	60	29		
	Caribbean	0	0	0	0	2	50	1	25	1	25	4	2		
	USA	1	13	0	0	1	13	1	13	5	63	8	4		
	Total	11	5	26	12	29	14	45	22	98	47	209	100		
Length of residence in the U.S. (years)	< than 5	5	17	5	17	2	7	7	23	11	37	30	15	0.120	
	6 to 10	4	5	12	14	9	11	17	20	42	50	84	41		
	11 to 14	0	0	7	16	7	16	11	26	18	42	43	21		
	> than 15	1	2	4	8	9	19	14	29	20	42	48	23		
	Total	10	5	28	14	27	13	49	24	91	44	205	100		
Last 3 years Pregnant	Yes	0	0	3	6	10	19	16	30	25	46	54	25	0.047	
	No	11	7	24	15	18	11	33	20	75	47	161	75		
	Total	11	5	27	13	28	13	49	23	100	47	215	100		
Language	Very poorly	4	9	9	20	6	13	8	18	18	40	45	20	0.047	
	Poorly	0	0	15	19	10	13	21	27	32	41	78	35		
	Well	5	6	4	5	11	14	15	19	42	55	77	35		
	Very well	2	10	0	0	2	10	6	30	10	50	20	9		
	Total	11	5	28	13	29	13	50	23	102	46	220	100		

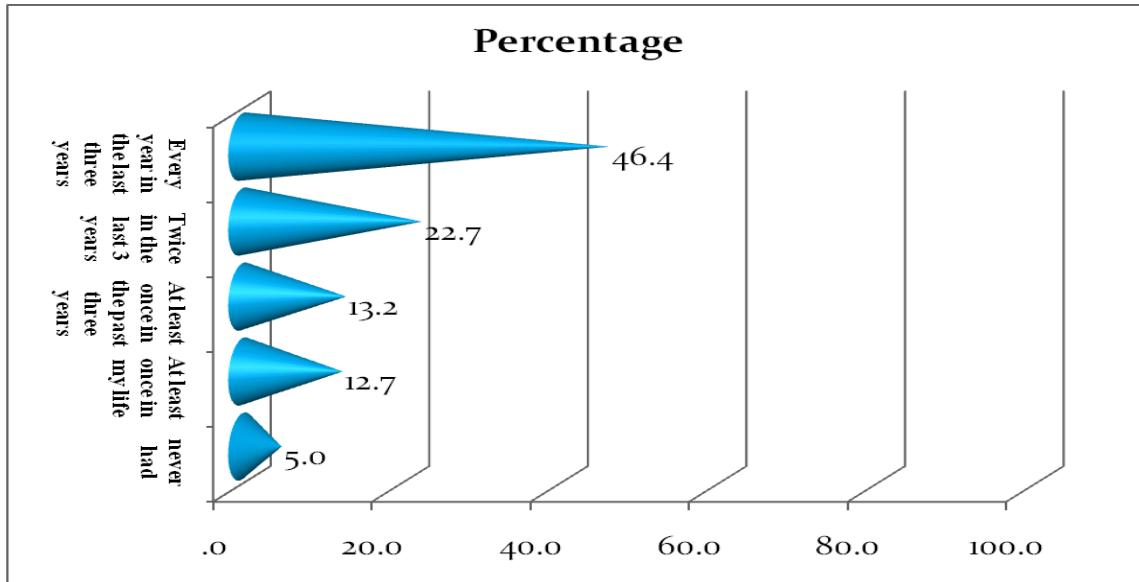
Variable	Categories	Papanicola test compliance												Chi-Sq Sig.	
		Never had		At least once in my life		At least once in the last 3 years		Twice in the last 3 years		Every year in the last 3 years		Total			
		#	%	#	%	#	%	#	%	#	%	#	%		
Education	< High School	5	6	16	21	12	16	12	16	32	42	77	35	0.320	
	HS/GED	2	4	3	5	7	12	14	25	31	54	57	26		
	Voc/Tech	2	9	3	13	0	0	5	22	13	57	23	10		
	Some college	2	7	1	4	5	19	8	30	11	41	27	12		
	College degree	0	0	4	14	4	14	10	34	11	38	29	13		
	Master or graduate	0	0	1	14	1	14	1	14	4	57	7	3		
Total		11	5	28	13	29	13	50	23	102	46	220	100		
Family Income	\$10,000 or less	4	7	14	24	4	7	14	24	22	38	58	28	0.182	
	\$10,001-\$19,999	2	4	5	9	11	20	13	23	25	45	56	27		
	\$20,001-\$39,999	3	4	7	10	9	13	12	18	37	54	68	33		
	\$40,001 or more	1	4	1	4	2	8	7	29	13	54	24	12		
	Total	10	5	27	13	26	13	46	22	97	47	206	100		
Regular source of care	Yes	6	3	18	10	22	12	39	22	94	53	179	84	0.000	
	No	4	12	9	26	5	15	11	32	5	15	34	16		
	Total	10	5	27	13	27	13	50	23	99	46	213	100		
Health insurance	Yes	1	2	3	6	8	16	13	25	26	51	51	24	0.358	
	No	9	6	24	15	20	12	34	21	75	46	162	76		
	Total	10	5	27	13	28	13	47	22	101	47	213	100		

Cervical cancer screening compliance

Figure 4.1 presents the percentages of cervical cancer screening compliance. Eighteen percent of the participants reported they either never had a Pap smear (5%) test or had been tested just once in their life (13%). About one-third of the participants (36%)

reported they had a Pap test once or twice in the last three years. Almost half of the participants (46%) reported they had a Pap test every year in the last three years.

Figure 4.1 S.C. Upstate Hispanic Women's Cervical Cancer Screening Compliance



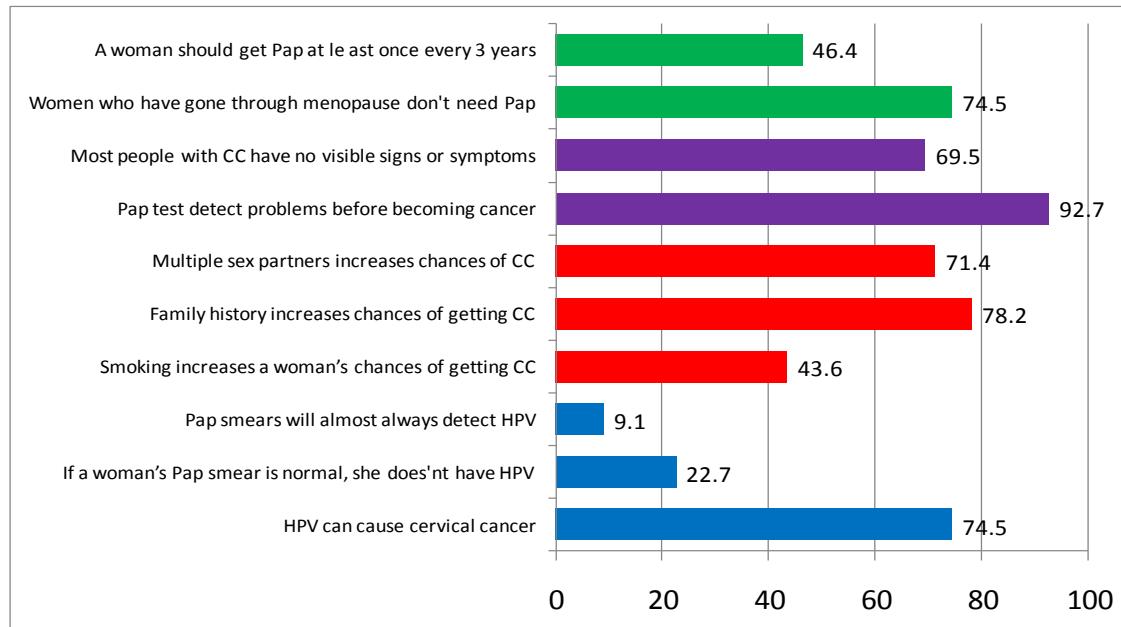
Knowledge about cervical cancer and the Pap test

Figure 4.2 includes the percentages of correct responses to questions related to knowledge about cervical cancer and Pap testing. Responses to the items related to knowledge about the Human Papilloma Virus (HPV) and its role in cervical cancer, showed that although three-quarters of the participants (75%) recognized HPV as a cause of cervical cancer; they had very little knowledge about how it was diagnosed (9.1%), or how to interpret negative Pap test results (23%).

Smoking was the least identified risk factor (44%) when compared to family history of cervical cancer (78%) or multiple sexual partners (71%). Most of the participants recognized that Pap testing helped to detect early cervical cancer (93%). Some of the participants' responses demonstrated confusion about when to get screened. Twenty-five

percent believed women undergoing menopause did not need to get screened for cervical cancer, and less than half (46%) were aware that women should get screened for cervical cancer at least once every three years.

Figure 4.2 Knowledge about Cervical Cancer and Pap Testing: Percentage of Correct Responses by Knowledge Awareness Items



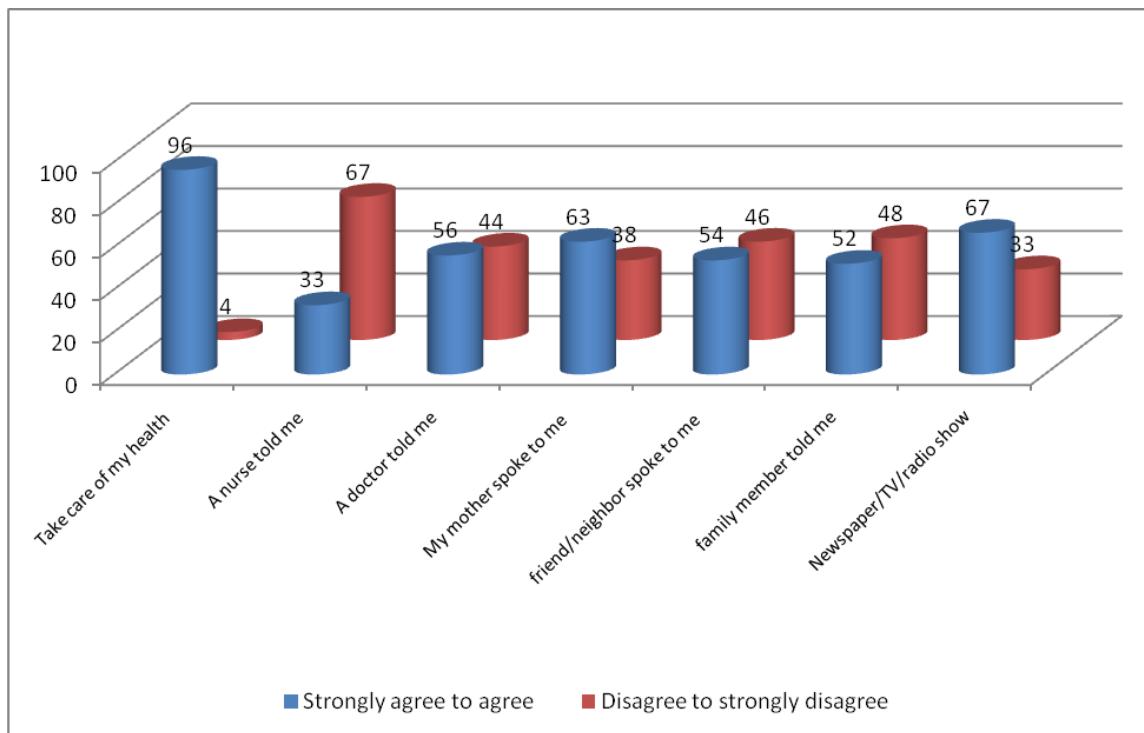
Cues to cervical cancer screening

The percentage of participants who agreed or strongly agreed to selected cues to cervical cancer screening is presented in Figure 4.3. The most important cues to cervical cancer screening were participants' perception that having the Pap smear was important to take care of their health (96%). Having read or watched messages about cervical cancer and the Pap test screening in the newspaper, radio, or television (67%), as well as being told by their mothers to get screened (63%) were reported by two-thirds of the participants as important cues to get screened for cervical cancer. More than half (56%)

reported being told by a doctor to get screened as an important cue to get their Pap test.

Only one-third (33%) mentioned being told by a nurse as an important cue.

Figure 4.3 Percentages of Participants who Agreed or Strongly Agreed with Selected Cues to Cervical Cancer Screening According to CPC-28 (Urrutia, 2009)

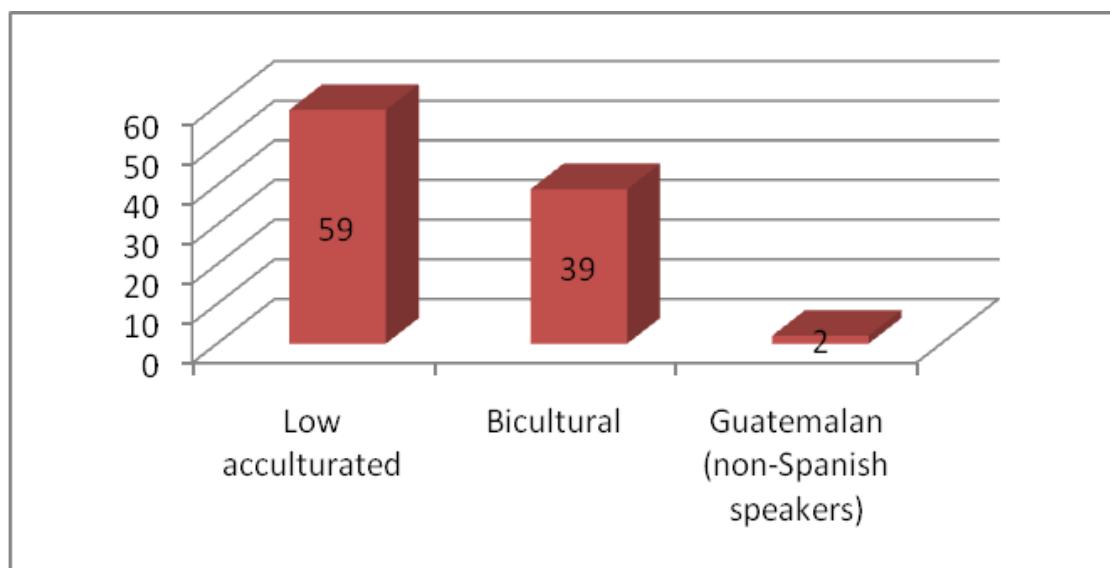


South Carolina Upstate Hispanic women's socio-cultural values and attitudes

Acculturation, familism, and fatalism were identified as relevant cultural values and attitudes associated with Hispanic women's cervical cancer screening behaviors in the literature. Acculturation is a multidimensional process whereby minority group members gradually adopt the attitudes, values, and norms of the majority group. The results indicated that for the majority of Hispanic women in this study little acculturation had occurred (Figure 4.4).

More than half of the participants scored as low-acculturated (59%) on the Bi-dimensional Acculturation Scale (BAS) (Marin & Gamba, 1996), with just more than one third (39%) having scores indicating being bicultural. Therefore, language preference and comfort level in engaging in selected host culture activities did differ among respondents in accordance with the Bi-dimensional Acculturation Scale (BAS) (Marin & Gamba, 1996). Two-percent of the participants were from Guatemala and spoke neither Spanish nor English.

Figure 4.4 Percentages of Participants by Acculturation Level According to BAS Scale (Marin & Gamba, 1996)



Figures 4.5 and 4.6 present the mean scores of familism and fatalism beliefs and attitudes found. Respondents reported high average levels of familistic attitudes (mean = 7.89; SD = 1.23; range 3.38 – 10.00) based on the Attitudinal Familism Scale (AFS) scores (Lugo-Steidel & Contreras, 2003).

The cervical cancer fatalistic beliefs reported by the participants were low (mean = 3.67; SD = 2.90; range 0.00 – 15.00). Cervical cancer fatalism was assessed with the Spanish, culturally adapted version of the Powe Fatalism Inventory (SPFI) (Lopez-McKee et al., 2007). Individuals who scored low on fatalistic beliefs are more likely to endorse preventive health beliefs such as cervical cancer screening (Powe & Finnie, 2003).

Figure 4.5 Average and Range Level of Familism According to the AFS Scale

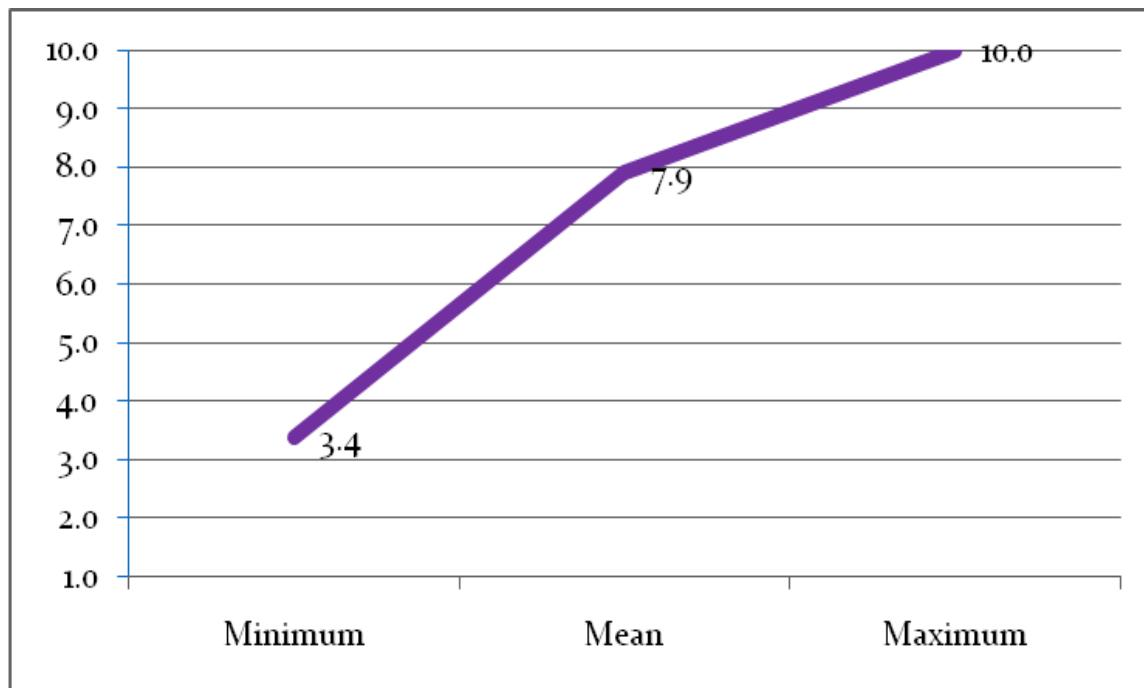
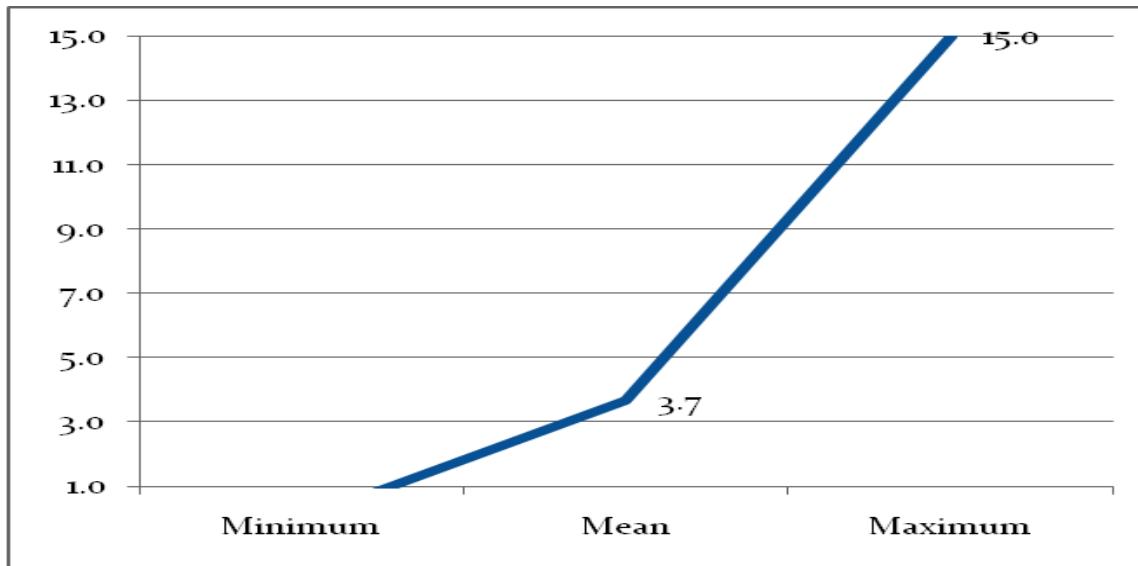


Figure 4.6 Average Level and Range of Cervical Cancer Fatalism Beliefs According to the SPFI Scale



Inter-correlations among predictors of cervical cancer screening behaviors

The role of socio-demographic and socio-economic factors in determining cervical cancer screening compliance among Hispanic women appeared to be strongly moderated by other socio-cultural variables such as acculturation, fatalism, familism, and length of residence in the U.S. (Fatone & Jandorf, 2009; Watts et al., 2009). The possibility of collinearity among the independent variables in this study was explored through correlation analysis.

Table 4.3 presents the inter-correlations among socio-demographic, socio-economic, and cultural factors. Although there were significant correlations among variables, these were lower than 0.7, indicating the absence of collinearity among these study factors. Therefore, the effects of the predictors in S.C. Upstate Hispanic women's cervical cancer screening compliance were not significantly predicted by the other independent variables (IVs) in the study. Respondent's length of residence in the USA, pregnancy, and

acculturation were significantly correlated with participant's age. Length of residence in the USA was significantly and inversely correlated ($r = -.45$, $p < 0.01$) and pregnancy during the last three years was significantly and positively correlated ($r = .41$, $p < 0.01$) with participant's age.

Acculturation ($r = .41$, $p < 0.01$) and education ($r = .37$, $p < 0.01$) were significantly and positively correlated with family income. The greater the acculturation level, as measured by the BAS scale (Marin & Gamba, 1996) and the educational level of the participant, the higher was the reported family income. This result is consistent with other studies that showed a positive correlation between acculturation and education with family income among Hispanics (Wu, Black, & Markides, 2001).

The findings (Table 4.4 and Figure 4.7) indicated that for S.C. Upstate Hispanic women in this study perceived susceptibility and perceived self-efficacy were important components of the Health Belief Model (HBM). There was also a significant correlation between perceived susceptibility and perceived severity of cervical cancer ($r = 0.47$, $p < 0.01$), perceived benefits ($r = 0.35$, $p < 0.01$), and perceived barriers ($r = 0.26$, $p < 0.01$). There was a significant correlation between perceived self-efficacy and perceived barriers ($r = 0.29$, $p < 0.05$), perceived benefits ($r = 0.17$, $p < 0.05$), perceived severity ($r = 0.16$, $p < 0.05$), and perceived susceptibility ($r = 0.26$, $p < 0.01$).

The findings also indicated that knowledge about cervical cancer and Pap testing was significantly related to the perceived susceptibility to cervical cancer ($r = 0.16$, $p < 0.05$), and perceived self-efficacy to cervical cancer screening ($r = 0.18$, $p < 0.05$). In addition, cues to cervical cancer screening was significantly related with perceived benefits ($r =$

0.15, $p < 0.052$) and perceived severity of cervical cancer ($r = 0.16$, $p < 0.05$). Having been diagnosed with cancer or having a relative with cancer was not significantly related to the perceptions or the knowledge about cervical cancer and Pap testing. However, having a hysterectomy was significantly and inversely related with knowledge about cervical cancer and Pap tests ($r = -.15$, $p < 0.05$).

Figure 4.7 Positive Inter-correlations among HBM Perceptions to Cervical Cancer and the Pap test Reported by S.C. Upstate Hispanic Women

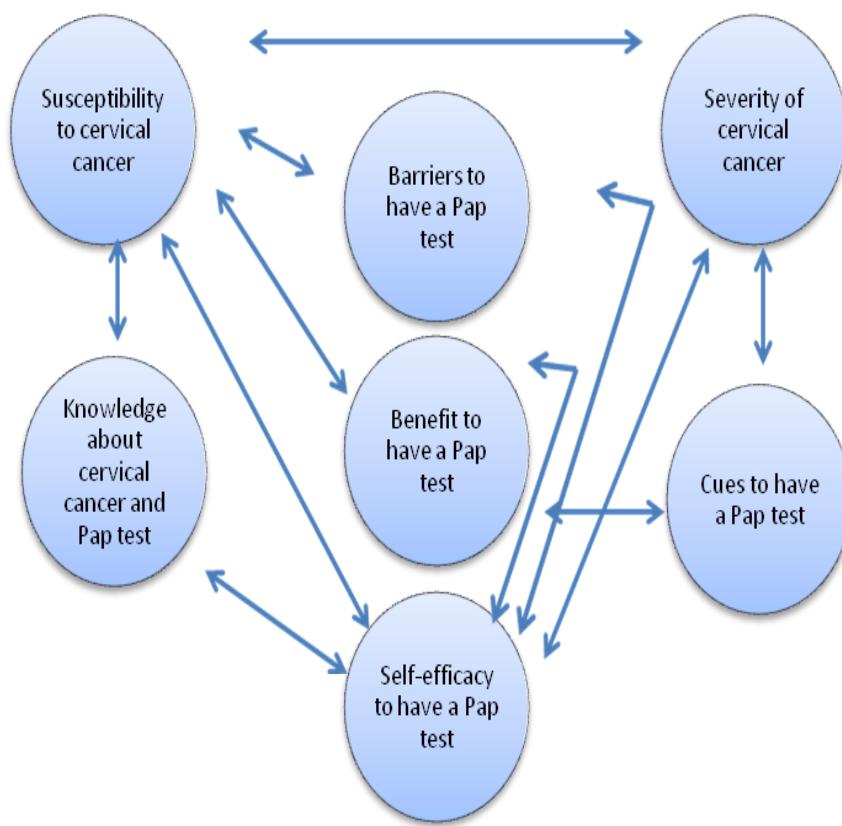


Table 4.3 Inter-correlations between Socio-demographic, Socio-economic, and Cultural Factors (n = 220)

Variables	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X1.Age												
X2.Marital status		.371**										
X3.Region of birth	.061		.027									
X4.Length residence USA	-.45**	-.32**		-.067								
X5.Current Pregnancy	.100	.079	-.179*		-.056							
X6.Pregnancy last 3 years	.405**	.123	.144*	-.173*		.093						
X7.Family income	.224*	.275**	.168*	-.25**	.037		.169*					
X8.Education	.203*	.145*	.288**	-.173*	.069	.233*		.366**				
X9.Regular health care	-.113	-.174*	-.069	.176*	-.060	-.110	-.36**		-.180*			
X10.Insurance	.187*	.073	.124	-.123	-.045	.222*	.014	.146*		.307**		
X11.Acculturation	.068	.117	.214*	-.34**	.073	.100	.413**	.376**	-.24**		.075	
X12.Familism	.088	.079	-.006	.012	.098	.027	-.031	-.094	-.058	.089		-.005
X13.Fatalism	-.084	-.031	-.001	.122	-.039	-.109	-.112	-.27**	.005	-.130	-.099	.135

* $p < .05$. ** $p < .01$.

Table 4.4 Inter-correlations between HBM Perceptions, Cues to action, Knowledge about Cervical Cancer and Pap Testing, Cancer History and Hysterectomy (n = 220)

Variables	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1.Perceived barriers										
X2.Perceived benefits		.144*								
X3.Perceived severity		.078	.477**							
X4.Perceived susceptibility		.257**	.346**	.465**						
X5.Perceived self- efficacy		.287**	.173*	.163*	.261**					
X6.Cervical cancer knowledge		.127	.104	.128	.164*	.178*				
X7.Cues to action		-.081	.152*	.157*	.052	.022	.057			
X8.Diagnosed with cancer		-.050	-.027	.029	-.040	-.062	-.019	.071		
X9.Immediate family with cancer		-.105	-.055	-.024	-.026	-.113	-.089	.014	.088	
X10.Hysterectomy		-.062	.070	-.033	-.022	.029	-.147*	-.051	-.014	.060

* $p < .05$. ** $p < .01$.

S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test

Table 4.5 presents the percentages of S.C. Upstate Hispanic women's responses to HBM perceptions related items according to the CPC-28 scale (Urrutia, 2009).

Participants reported high percentages of perceived susceptibility to cervical cancer as 75% either strongly agreed or agreed that they were at risk for developing cervical cancer, and 88% informed that cervical cancer is one of the most common cancers in women their age.

Similarly, perceived severity related items had high scores with more than 90% of participating women reported that cervical cancer is a serious illness and that it may lead to death. Additionally, more than 90% of participants indicated that Pap test was important because they feel good about taking care of their health, and 89% indicated that screening may save their life. These responses reflected high perceived benefits from the Pap test among the participants.

Lack of knowledge about when to obtain a Pap test was found to be a barrier as 18% of participants strongly agreed or agreed that they do not get a Pap test because they do not know at what age they need to start obtaining one or how often they need to obtain the Pap test. Eighty-eight percent of participants strongly disagreed or disagreed with embarrassment as a reason for not obtaining the Pap test.

Table 4.5 South Carolina Upstate Hispanic Women's Perceptions of Cervical Cancer and the Pap Test: Absolute Values and Percentages

Perceptions/Items	n	Strongly agree		Agree		Disagree		Strongly disagree	
		#	%	#	%	#	%	#	%
Perceive susceptibility									
I am at risk for developing cervical cancer	218	102	46.4	64	29.1	21	9.6	31	14.2
If I have cervical cancer, I can die	216	116	53.7	66	30.6	17	7.9	17	7.9
Cervical cancer is one of the most common cancers among women my age	218	118	54.1	73	33.5	19	8.7	8	3.7
If I do not have symptoms, I do not need a Pap test	220	16	7.3	7	3.2	56	25.5	141	64.1
If I have not had children, I do not need a Pap test	217	11	5.1	11	5.1	59	27.2	136	62.7
If I do not have intercourse, I do not need a Pap test	218	21	9.6	20	9.2	59	27.1	118	54.1
Perceived severity									
Cervical cancer may lead to death	219	157	71.7	40	18.3	5	2.3	17	7.8
Cervical cancer may lead to a woman having a hysterectomy	216	148	68.5	46	21.3	12	5.6	10	4.6
Cervical cancer is a serious health problem	219	172	78.5	33	15.1	3	1.4	11	5
Cervical cancer can lead to a woman needing to receive chemotherapy or radiotherapy treatment	216	152	70.4	39	18.1	10	4.6	15	6.9
Perceived barriers									
I do not have time to get a Pap test	219	12	5.5	11	5	52	23.7	144	65.8
I have not taken the Pap test because they treat me badly in the health care center	217	8	3.74	4	1.8	56	25.8	149	68.7
I do not know at what age it is necessary to have a Pap test	216	19	8.8	20	9.3	41	19	136	63
I have not taken a Pap test because when I go, I need to wait a long time to be seen	219	16	7.3	11	5	46	21	146	66.7

Perceptions/Items	n	Strongly agree		Agree		Disagree		Strongly disagree	
		#	%	#	%	#	%	#	%
I have not taken the Pap test because I am afraid to find out if I have cancer	218	11	5	8	3.7	46	21.1	153	70.2
I have not taken the Pap test because the health care center is only open during hours when I cannot go	220	9	4.1	7	3.2	55	25	149	67.7
I have not taken the Pap test because I am embarrassed to have a genital exam	220	11	5	14	6.4	49	22.3	146	66.4
I do not know how often I need to get a Pap test	220	17	7.7	22	10	46	20.9	135	61.4
I have not taken a Pap test because it is difficult to get an appointment	217	12	5.5	8	3.7	53	24.4	144	66.4
Perceived benefits									
The Pap can save my life	218	167	76.6	28	12.8	5	2.3	18	8.3
Getting a Pap test makes me feel good because it means that I take care of my health	219	182	83.1	29	13.2	5	2.3	3	1.4
I get a Pap test to take care of my health	219	189	86.3	22	10	2	0.9	6	2.7

Reliability of the scales

Table 4.6 describes the Cronbach's alphas and measures of central tendency obtained in this study for all the scales used to measure the HBM and the other constructs. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. If the Cronbach's alpha coefficient is below .50, it would not be considered a very reliable test (Gliem & Gliem, 2003). Most of the scales used reported good internal reliability ($\alpha > .50$). Perceived benefits ($\alpha = 0.49$), knowledge about cervical cancer and the Pap test ($\alpha = 0.53$), and perceived susceptibility ($\alpha = 0.58$) were found to have the lowest coefficient alphas in this study. However, from these three scales, only perceived benefits reported a Skewness greater than -.8; reflecting that the distribution of the values were significantly skewed (Brown, 1997). No transformation procedure was conducted to normalize the perceived benefits sub-scale.

Table 4.6 Reliability and Frequencies of the Scales Reported by the Original Authors and those Obtained in the Study about Cervical Cancer Screening Behaviors among S.C. Upstate Hispanic Women

Factor	Alpha source study	Alpha in this study	Mean	SD	Skewness	Min. Value	Max. Value	# of items
Perceived barriers	.85	.86	3.49	0.58	-1.29	1.22	4	9
Perceived benefits	.64	.49	3.72	0.48	-2.20	1	4	3
Perceived self-efficacy	.95	.98	9.17	1.45	-3.07	1	10	8
Perceived susceptibility	.65	.58	3.33	0.51	-.76	1.67	4	6
Perceived severity	.84	.75	3.56	0.65	-1.91	1	4	4
Perceive threats	-	.75	3.42	0.48	-1.11	1.9	4	10
Cues to obtain Pap test	.85	.86	2.6	0.91	-0.21	1	4	6
Knowledge	-	.53	5.69	7.86	-.47	0	10	10
Acculturation	.90	.91	1.85	0.48	0.53	1	3.13	24
Familism	.83	.81	7.89	1.23	-.60	3.38	10	18
Fatalism	.81	.78	3.67	2.9	0.97	0	15	15

Multivariate analysis

Generalized Linear Modeling was used to predict the probabilities of cervical cancer screening compliance among S.C. Upstate Hispanic women given a set and different combinations of beliefs and modifiers. The explanatory power of HBM predictors (perceived benefits, barriers, susceptibility, severity, and self-efficacy) of S.C. Upstate Hispanic women's cervical cancer screening behaviors was examined. In addition, the modifying effect of selected variables (socio-demographic, socio-economic, knowledge about cervical cancer and Pap smear test, cues to action, and socio-cultural factors) on S.C. Upstate Hispanic women's perceptions and beliefs about cervical cancer and Pap test were examined.

Table 4.7 presents the results of this model which included only S.C. Upstate Hispanic women's cervical cancer and Pap test perceptions (benefits, barriers, threats [susceptibility and severity], and self-efficacy) effects on their cervical cancer screening behavior. The overall model was significant ($X^2 = 25.03$, $p = 0.000$), expressing that the linear combination of cervical cancer and Pap test perceptions significantly predicted S.C. Upstate Hispanic women's cervical cancer screening behaviors. Therefore, Hypothesis 1, "When S.C. Upstate Hispanic women's perceived threats (i.e. susceptibility, severity), perceived benefits, and self-efficacy are high, and perceived barriers are low, then S.C. Upstate Hispanic women will have a greater likelihood of having been screened for cervical cancer within the past three years", was accepted.

The exponential beta (β) coefficient decreased across levels of the DV from having had a Pap test twice in the past three years ($\beta = -0.627$) to never had been screened for

cervical cancer ($\beta = -3.920$). In the same direction of the compliance level, the odds ratios (OR) or $\text{Exp } \beta$ decreased as well. The OR decreased from having had a Pap test twice in the past three years ($\text{Exp } \beta = 0.534$) to never had a Pap test ($\text{Exp } \beta = 0.020$). Therefore, S.C. Upstate Hispanic women who reported high perceived benefits from screening and threats to cervical cancer, as well as low perceived barriers to screening had a significantly greater chance of having had a Pap smear every year in the last three years previous to the study.

Perceived self-efficacy to obtain screening for cervical cancer (Wald's $X^2 = 12.994$, $p = 0.000$) and perceived threats (susceptibility and severity) to cervical cancer (Wald's $X^2 = 5.926$, $p = 0.015$) were significant predictors of S.C. Upstate Hispanic women's compliance with cervical cancer screening guidelines. Based on model results, the significant effect of perceived threats and self-efficacy increased the odds of cervical cancer screening compliance in this group, as the OR significantly increased by levels of compliance. In addition, participants who perceived low to moderately low threats and self-efficacy had less than half the odds of Pap test compliance than those who perceived moderately high to high threats and self-efficacy ($\text{Exp } \beta = 0.49$; $p = 0.015$ and $\text{Exp } \beta = 0.38$; $p = 0.000$, respectively).

Therefore, high perceived self-efficacy and threats increased the odds of having had a Pap test every year in the last three years. Thus, Hypothesis 1.1, "S.C. Upstate Hispanic women with a higher level of perceived threats (i.e. susceptibility and severity) to cervical cancer will be significantly more likely to have had a Pap test in the last three years previous to the study than those with lower levels of perceived threats (i.e.

susceptibility and severity)”; and Hypothesis 1.4 “S.C. Upstate Hispanic women who believe in their ability to seek and overcome barriers in getting screened (self-efficacy) will be significantly more likely of having had a Pap smear test in the last three years previous to the study than those with lower levels of perceived self-efficacy”, were accepted.

Perceived benefits of the Pap test and barriers to screening were not significant. Therefore, Hypothesis 1.2 “S.C. Upstate Hispanic women who perceived fewer barriers for a cervical cancer screening will be significantly more likely to have had a Pap test in the last 3 years prior to the study than those who perceived more barriers to committing to screening”, and Hypothesis 1.3. “S.C. Upstate Hispanic women with a higher level of perceived benefits of cervical cancer screening will be significantly more likely to have had a Pap test in the last 3 years previous to the study than those with lower levels of perceived benefits” were rejected.

However, a significant interaction between benefit and barriers was identified (Wald’s $X^2 = 8.389$, $p = 0.015$) after the inclusion of selected socio-demographic variables, expressing a combined effect of these two predictors on S.C. Hispanic women’s cervical cancer and Pap test perceptions (Table 4.8). This implies that the effect of perceived benefits on women’s perceptions varies as a function of, or is modified by, their perceived barriers to cervical cancer screening. Therefore, a woman does not weight the benefits of the screening independently of the perceived barriers to screening.

Table 4.7 Generalized Linear Model Including Only S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Test

Tests of model effects		χ^2	df	p					
Predictors	Benefits	0.196	1	0.658					
	Barriers	.787	2	.675					
	Threats	5.926	1	.015					
	Self-efficacy	12.994	1	.000					
Parameter estimates			b	SE b	Wald's χ^2	df	p	Exp b	
Criterion	Compliance	Never	-3.920	0.3928	99.614	1	0.000	0.020	
		At least once in lifetime	-2.444	0.2859	73.080	1	0.000	0.087	
		Once in past 3 yrs.	-1.659	0.2555	42.176	1	0.000	0.190	
		Twice in past 3 yrs.	-0.627	0.2335	7.208	1	0.007	0.534	
		Every year past 3 yrs.	Reference category						
Predictors	Benefits	Low-mod low	-0.131	0.2972	0.196	1	0.658	0.877	
	Barriers	Low	0.298	0.3461	0.743	1	0.389	1.348	
		Mod low	0.053	0.3146	0.029	1	0.865	1.055	
	Threats	Low-mod low	-0.710	0.2916	5.926	1	0.015	0.492	
	Self-effic	Low-mod low	-0.978	0.2712	12.994	1	0.000	0.376	
Test					χ^2	df	p		
Model χ^2					25.03	5	0.000		
Goodness-of-fit = 1.138									

Effect of socio-demographic modifiers

The modifying effect of age, marital status, pregnancy in the past three years, and English speaking proficiency on S.C. Hispanic women's cervical cancer and Pap test perceptions was evaluated (Table 4.8). After the inclusion of these demographic modifiers the model continued to be significant ($X^2 = 41.13$, $p = 0.000$). Perceived threats (Wald's $X^2 = 4.748$, $p = 0.029$) and self-efficacy (Wald's $X^2 = 12.834$, $p = 0.000$) also continued to be significant, and the interaction between benefits and barriers was significant (Wald's $X^2 = 8.389$, $p = 0.015$), and Hypothesis 2, "Selected socio-demographics variables (i.e. age, marital status, foreign vs. native born, country of birth,

language spoken, current or recent pregnancy, and length of residence in the US), modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors”, was accepted.

Age (Wald's $X^2 = 4.527$, $p = 0.033$) and marital status (Wald's $X^2 = 7.278$, $p = 0.007$) were significant covariates. Therefore Hypothesis 2.1 “S.C. Upstate Hispanic women who are older will have a statistically significantly lower frequency of having had a Pap test in the last 3 years than younger women”, and Hypothesis 2.2 “S.C. Upstate Hispanic women who were married or living with a partner will have a statistically significantly higher frequency of having had a Pap test in the last 3 years than single women”, were accepted. In addition, there was a significant interaction between these two modifiers (Wald's $X^2 = 4.649$, $p = 0.031$).

As the level of Pap test compliance increased, the β and OR also increased. Therefore, after the inclusion of the selected socio-demographics modifiers, the linear combination of cervical cancer and Pap test perceptions continued to significantly increase the likelihood of S.C. Upstate Hispanic women having had a Pap test in the last three years. The more the odds ratio were greater than 1.0 for covariates, the more that covariate increased the effect on the dependent variable (Garzon, 2011). In addition, age ($\text{Exp } \beta = 4.198$; $p = 0.033$) and marital status ($\text{Exp } \beta = 3.949$; $p = 0.007$) significantly increased the odds of having had a Pap test every year in the last three years among S.C. Upstate Hispanic women.

The following hypotheses were either rejected or were not tested:

Rejected

- H2.4. S.C. Upstate Hispanic women born in Mexico will have a statistically significantly lower frequency of having had a Pap test in the last 3 years than women born in other Latin American or Caribbean countries.
- H2.5. S.C. Upstate Hispanic women who “almost never” spoke English will have a statistically significantly lower frequency of having had a Pap test in the last 3 years than women who spoke English “often” or “almost always”.
- H2.7. Upstate Hispanic women who reported that they were pregnant in the last 3 years will have a statistically significant higher frequency of having had a Pap test in the last 3 years than women who reported not having been pregnant in the last 3 years.
- H2.8. S.C. Upstate Hispanic women who had been in the United States for a longer time will have a statistically significantly higher frequency of having had a Pap test in the last 3 years, than did women who reported residing in the U.S. for a shorter period of time.

Not tested

- H2.3. S.C. Upstate Hispanic women who are native-born will have a statistically significantly higher frequency of having had a Pap test in the last 3 years than do foreign-born.
- H2.6. S.C. Upstate Hispanic women who reported being currently pregnant will have a statistically significant higher frequency of having had a Pap test in the last 3 years than women who reported not being currently pregnant.

Even though, fifty-six percent of the participants spoke English poorly to very poorly and fifty-five percent of the women were born in Mexico (Table 4.1), these modifiers did not significantly predict Pap test compliance among S.C. Upstate Hispanic women. There were only eight native-born and ten participants who were currently pregnant. Therefore, Hypotheses 2.3 and 2.6 were not tested.

Table 4.8 Moderating Effects of Selected Socio-demographic Factors on S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Smear Test: Tests of Model Effects and Parameter Estimates

Tests of model effects		χ^2	df	p				
Predictors	Benefits	.358	1	.550				
	Barriers	.280	2	.869				
	Threats	4.748	1	.029				
	Self-efficacy	12.834	1	.000				
Covariates	Age	4.527	1	.033				
	Marital status	7.278	1	.007				
	Pregnancy in past 3 yrs.	1.806	1	.179				
	English proficiency	3.418	1	.064				
Interactions	Age*marital status	4.649	1	.031				
	Benefits*barriers	8.389	2	.015				
Parameter estimates			b	SE b	Wald's χ^2	df	p	Exp b
Criterion	Compliance	Never	-0.255	1.5739	.026	1	.871	.775
		At least once in lifetime	1.4166	1.5671	.817	1	.366	4.123
		Once in past 3 yrs.	2.2706	1.5678	2.098	1	.148	9.685
		Twice in past 3 yrs.	3.3213	1.5729	4.459	1	.035	27.695
		Every year past 3 yrs.	Reference category					
Predictors	Benefits	Low-mod low	0.9863	0.5132	3.694	1	.055	2.681
	Barriers	Low	0.071	0.5236	.018	1	.893	1.073
		Mod low	-0.699	0.3211	6.763	1	.009	3.167
	Threats	Low-mod low	-1.089	0.3039	4.748	1	.029	.497
Covariates	Self-efficacy	Low-mod low	1.4347	0.6743	12.834	1	.000	.337
	Age		1.3736	0.5092	4.527	1	.033	4.198
	Marital status		-0.469	0.3494	7.278	1	.007	3.949
	Pregnancy last 3 yrs		0.3209	0.1736	1.806	1	.179	.625
Interactions	English proficiency		-0.516	0.2394	3.418	1	.064	1.378
	Age*Marital status		-0.308	0.7568	4.649	1	.031	.597
	Benefit*Barr	Low-mod low*low	-2.048	0.7356	.166	1	.684	.735
		Low-mod low*mod-low			7.752	1	.005	.129
Test				χ^2	df	p		
Model χ^2				41.13	12	0		
Goodness-of-fit = .953								

Effect of socio-economic modifiers

Table 4.9 presents the results of the generalized linear model analysis of the HBM perceptions on S.C. Upstate Hispanic women's Pap smear test behaviors, after the inclusion of selected socio-economic factors. The selected socio-economic modifiers were income, education, availability of insurance, and access to regular medical care. After their inclusion, the overall model remained significant ($X^2 = 43.076$, $p = 0.000$). Hypothesis 3.0, "Selected socio-economic factors (i.e. income, education, availability of health insurance, and availability or a regular source of care), modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors", was accepted.

The best model fit with socio-economic variables covariates included only income (Wald's $X^2 = 4.975$, $p = 0.026$) and regular medical care (Wald's $X^2 = 8.936$, $p = 0.003$). Hypothesis 3.1, "S.C. Upstate Hispanic women with higher income levels will have a statistically significantly higher frequency of having had a Pap test in the last 3 years than did women with lower income levels", and hypothesis 3.4, "S.C. Upstate Hispanic women who reported having a regular source of health care will have a statistically significantly higher frequency of having had a Pap test in the last three years than did those women without a regular source of health care", were accepted. Perceived threats of cervical cancer (Wald's $X^2 = 6.007$, $p = 0.014$) and self-efficacy to screening (Wald's $X^2 = 8.895$, $p = 0.003$) continued to be significant predictors. Similarly, the interaction

between perceived benefits of screening, and barriers to screening continued to be significant (Wald's $X^2 = 9.293$, $p = 0.010$).

Educational level (Wald's $X^2 = 0.799$, $p = 0.304$) and availability of health insurance (Wald's $X^2 = 0.476$, $p = 0.564$) were not significant predictors of S.C. Upstate Hispanic women's compliance with Pap test. Therefore, Hypothesis 3.2, "S.C. Upstate Hispanic women who achieved higher educational levels will have a statistically significantly higher frequency of having had a Pap test in the last 3 years than did those women who achieved lower educational levels", and Hypothesis 3.3 "S.C. Upstate Hispanic women who had health insurance will have a statistically significantly higher frequency of having had a Pap test in the last three years than did those women without health insurance", were rejected.

After the inclusion of the selected socio-economic modifiers (income and regular medical care), the linear combination of cervical cancer and Pap test perceptions continued to significantly increase the likelihood of S.C. Upstate Hispanic women having had a Pap test in the last three years. As the level of Pap test compliance increased, the β and OR also increased.

Although, income (Wald's $X^2 = 4.975$, $p= 0.026$) and regular medical care (Wald's $X^2 = 8.936$, $p = 0.003$) had a significant covariate effect in the model; only income significantly increased the odds of Pap test compliance among S.C. Upstate Hispanic women ($\text{Exp } \beta = 1.376$, $p = 0.026$).

Table 4.9 Moderating Effects of Selected Socio-economic Factors on S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Smear Test: Tests of Model Effects and Parameter

Tests of model effects		χ^2	df	p					
Predictors	Benefits	.000	1	.995					
	Barriers	.977	2	.614					
	Threats	6.007	1	.014					
	Self-efficacy	8.895	1	.003					
Covariates	Income	4.975	1	.026					
	regular medical care	8.936	1	.003					
Interactions	Benefits*barriers	9.293	2	.010					
Parameter estimates			b	SE b					
Criterion	Compliance	Never	-4.359	.6909	39.802	1	.000	.013	
		At least once in lifetime	-2.765	.6219	19.764	1	.000	.063	
		Once in past 3 yrs.	-1.962	.6058	10.488	1	.001	.141	
		Twice in past 3 yrs.	-.839	.5923	2.006	1	.157	.432	
	Every year past 3 yrs.				Reference category				
Predictors	Benefits	Low-mod low	1.037	.5209	3.960	1	.047	2.820	
	Barriers	Low	.392	.4799	.668	1	.414	1.480	
		Mod low	.819	.4341	3.561	1	.059	2.269	
	Threats	Low-mod low	-.762	.3108	6.007	1	.014	.467	
Covariates	Self-efficacy	Low-mod low	-.879	.2946	8.895	1	.003	.415	
	Income		.319	.1431	4.975	1	.026	1.376	
	Regular med. care		-1.085	.3629	8.936	1	.003	.338	
Interactions	Benefit*Barriers	Low-mod low*low	-.804	.7281	1.220	1	.269	.447	
		Low-mod low*mod-low	-2.299	.7579	9.199	1	.002	.100	
Test				χ^2	df	p			
Model χ^2				43.076	9	0			
Goodness-of-fit = 1.212									

Effect of cultural modifiers

Research evidence has shown that behavior is significantly influenced by culture; in particular health-seeking behavior and health care utilization (Hayden, 2009; Johnson, Mues, Mayne, & Kiblawi, 2008). The modifying effect of three cultural factors (familism, fatalism, and acculturation) were recognized as having an influence on cervical cancer screening behavior among Hispanic women in the research literature

(Arredondo, Pollack, & Constanzo, 2008; Boyer, Williams, Clark, & Marshall, 2000; Johnson, Mues, Mayne, & Kiblawi, 2008) (Table 4.10). After including these three cultural factors in the model, only familism showed an adequate fit (Wald's $X^2 = 5.619$, $p = 0.018$); and therefore Hypothesis 4, "Three culturally-related factors (i.e. familism, fatalism, and acculturation) modified significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior", was rejected.

Familism had a significant effect in the model (Wald's $X^2 = 5.619$, $p = 0.018$). The model also continued to be significant ($X^2 = 30.758$, $p = 0.000$). Therefore, Hypothesis 4.2, "S.C. Upstate Hispanic women with higher familialistic belief scores, as measured by the AFS scale (Lugo-Steidel & Contreras, 2003), had a significantly higher frequency of having had a Pap test in the last three years previous to the study compared to women with lower familialistic belief scores", was accepted.

Hypothesis 4.1, "S.C. Upstate Hispanic women, who were highly acculturated, as measured by the BAS scale (Marín, & Gamba, 1996), had a significantly higher frequency of having had a Pap test in the last three years previous to the study compared to lower acculturated women", and Hypothesis 4.3 ". S.C. Upstate Hispanic women that had high fatalistic views toward cervical cancer, as measured by the SPFI scale, were significantly less likely to have had a Pap test in the last three years previous to the study compared to women with lower fatalistic belief scores", were rejected. It is important to note that this study population, as represented by the sample of S.C. Upstate Hispanic

women, reported low acculturation or biculturalism, as well as a low average level of cervical cancer fatalism.

As the level of Pap test compliance increased, the β and OR also increased. From never had a Pap test ($\beta = -6.026$, Exp $\beta = .002$) to obtaining a Pap test twice in the past three years ($\beta = -2.657$, Exp $\beta = .070$). Therefore, after the inclusion of familism as a modifier, the linear combination of cervical cancer and Pap test perceptions continued to significantly increase the likelihood of S.C. Upstate Hispanic women having had a Pap test in the last three years. In addition, perceived threats (Wald's $X^2 = 3.925$, $p = 0.048$) and self-efficacy (Wald's $X^2 = 13.595$, $p = 0.000$) continued to be significant. After adding the effect of familism as a covariate into the model the interaction between benefits and barriers was not significant (Wald's $X^2 = 9.571$, $p = 0.144$).

Table 4.10 Moderating Effects of Selected Socio-cultural Factors on S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Smear Test: Tests of Model Effects and Parameter Estimates

Tests of model effects		χ^2	df	p					
Predictors	Benefits	.339	1	.560					
	Barriers	.368	2	.832					
	Threats	3.925	1	.048					
	Self-efficacy	13.595	1	.000					
Covariates	familism	5.619	1	.018					
Parameter estimates		b	SE b	Wald's X^2	df	p	Exp b		
Criterion	Compliance	Never	-6.026	.9850	37.426	1	.000	.002	
		At least once in lifetime	-4.524	.9334	23.489	1	.000	.011	
		Once in past 3 yrs.	-3.715	.9130	16.557	1	.000	.024	
		Twice in past 3 yrs.	-2.657	.8944	8.827	1	.003	.070	
		Every year past 3 yrs.	Reference category						
Predictors	Benefits	Low-mod low	-.173	.2975	.339	1	.560	.841	
		Barriers	.211	.3479	.367	1	.545	1.235	
		Mod low	.085	.3160	.073	1	.788	1.089	
		Threats	-.588	.2966	3.925	1	.048	.556	
Covariates	Self-efficacy	Low-mod low	-1.008	.2733	13.595	1	.000	.365	
		Familism	-.260	.1096	5.619	1	.018	.771	
Test			χ^2	df	p				
Model χ^2			30.758	6	0.000				
Goodness-of-fit = 1.035									

Effect of knowledge about cervical cancer and Pap test

Table 4.11 presents the results of the generalized linear model analysis of the HBM perceptions on S.C. Upstate Hispanic women's Pap smear test behaviors, after the inclusion of knowledge about cervical cancer and the Pap test. Knowledge was assessed through a 10 item scale including questions about the relationship between HPV and cervical cancer, Pap test guidelines, and risk factors for cervical cancer. Knowledge as a covariate did not have a significant effect ($\text{Wald}'s X^2 = 3.459, p = 0.063$) after its inclusion. Therefore Hypothesis 5.0, "Women's knowledge about cervical cancer and the Pap test modified significantly the statistical power of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy to predict S.C. Upstate Hispanic women's cervical cancer screening behaviors", was rejected. However, the overall model was significant ($X^2 = 33.532, p = 0.000$). Perceived threats of cervical cancer ($\text{Wald}'s X^2 = 6.771, p = 0.009$) and self-efficacy to screening ($\text{Wald}'s X^2 = 11.603, p = 0.001$) continued to be significant predictors.

The covariate effect of having a relative with cancer and having a hysterectomy was also examined because women who reported these factors may have had increased access to information about cervical and other cancers. The assumption was made that women who had a hysterectomy had increased direct contact with a gynecological physician and therefore learned more about the female reproductive system. Having a hysterectomy had a significant covariate effect ($\text{Wald}'s X^2 = 7.979, p = 0.005$). As a result Hypothesis 5.1, "Having a hysterectomy will be a significant covariate with S.C. Upstate Hispanic women's knowledge about cervical cancer and the Pap test to significantly modify the

predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior", was accepted.

However, having a relative with cancer was not a significant covariate (Wald's $X^2 = 2.623$, $p = .105$) and Hypothesis 5.2 "Having a relative with cancer will be a significant covariate with S.C. Upstate Hispanic women's knowledge about cervical cancer and the Pap test to significantly modify significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior" was rejected.

The interaction between knowledge about cervical cancer and the Pap test and having a relative with cancer was statistically significant (Wald's $X^2 = 3.921$, $p = 0.048$). Therefore, these two variables did not predict independently S.C. Upstate Hispanic women's cervical cancer screening behaviors.

After the inclusion of knowledge about cervical cancer and the Pap test, having a relative with cancer, and having a hysterectomy as modifiers, the linear combination of cervical cancer and Pap test perceptions continued to significantly increase the likelihood of S.C. Upstate Hispanic women having had a Pap test in the last three years ($X^2 = 33.532$, $p = 0.000$). As the level of Pap test compliance increased, the β and OR also increased. From never had a Pap test ($\beta = 0.714$, $\text{Exp } \beta = 2.043$) to obtaining a Pap test twice in the past three years ($\beta = 4.156$, $\text{Exp } \beta = 63.801$).

Table 4.11 Moderating Effects of Knowledge about Cervical Cancer and Pap Test on S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Smear Test: Tests of Model Effects and Parameter Estimates

Tests of model effects		χ^2	df	p				
Predictors	Benefits	.005	1	.943				
	Barriers	.690	2	.708				
	Threats	6.771	1	.009				
	Self-efficacy	11.603	1	.001				
Covariates	knowledge	3.459	1	.063				
	relative with cancer	2.623	1	.105				
	hysterectomy	7.979	1	.005				
Interactions	knowledge * relative with cancer	3.921	1	.048				
Parameter estimates			Wald's χ^2	df				
Criterion	Compliance		b	SE b	p	Exp b		
	Never		.714	1.884	.144	1	.704	2.043
		At least once in lifetime	2.256	1.879	1.441	1	.230	9.541
		Once in past 3 yrs.	3.079	1.881	2.679	1	.102	21.74
		Twice in past 3 yrs.	4.156	1.889	4.838	1	.028	63.80
	Every year past 3 yrs.		<i>Reference category</i>					
Predictors	Benefits	Low-mod low	-.023	.3124	.005	1	.943	.978
	Barriers	Low	.284	.3524	.651	1	.420	1.329
		Mod low	.049	.3235	.023	1	.881	1.050
	Threats	Low-mod low	-.775	.2977	6.771	1	.009	.461
Covariates	Self-efficacy	Low-mod low	-.944	.2772	11.603	1	.001	.389
			.441	.2371	3.459	1	.063	1.554
	Knowledge		1.388	.8573	2.623	1	.105	4.008
Interactions	Relative with cancer		1.307	.4626	7.979	1	.005	3.694
		Hysterectomy						
	knowledge*relative with cancer	Low-mod low*low	-.283	.1427	3.921	1	.048	.754
Test			χ^2	df	p			
Model χ^2			33.532	9	0.00			
Goodness-of-fit = .931								

Effect of cues to cervical cancer screening

Cues to cervical cancer screening (cues to action) are strategies to activate the decision-making process to get screened for cervical cancer (Hayden, 2009). The results of the generalized linear model analysis of the HBM perceptions on S.C. Upstate Hispanic women's Pap smear test behaviors, after the inclusion of cues to cervical cancer as a covariate are presented in Table 4.12. Although approaching significance, there was a non-significant covariate effect of cues to action in the model (Wald's $X^2 = 3.774$, $p = 0.052$). Therefore, Hypothesis 6 "S.C. Upstate Hispanic women's degree of agreement to cervical cancer screening cues (cues to action) modified significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior", was rejected.

However, after cues to cervical cancer inclusion as a covariate, the overall model continued to be significant ($X^2 = 55.688$, $p = 0.000$). Perceived threats of cervical cancer (Wald's $X^2 = 4.152$, $p = 0.042$) and self-efficacy to screening (Wald's $X^2 = 8.774$, $p = 0.003$) continued to be significant predictors.

Regular medical care, familism, and having a relative with cancer were included as covariates, into the model with knowledge about cervical cancer and the Pap test as predictor, under the assumption that a woman who reported higher values on these predictors might have had a greater likelihood of having been in contact with information about cervical and other cancers. For instance, regular medical care might have increased the probability of a doctor recommending they get screened; familistic values might have increased the likelihood that a relative would have encouraged the participant to get

screened; and having a relative with cancer might have increased the likelihood of having been in contact with educational materials and information about cancer prevention.

Regular medical care (Wald's $X^2 = 14.898$, $p = 0.000$), familism (Wald's $X^2 = 6.619$, $p = 0.010$), and having a relative with cancer (Wald's $X^2 = 6.428$, $p = 0.011$) were included as covariates in the model. These three factors had a significant covariate effect. As a result, Hypothesis 6.1 "Regular medical care, familism, and a relative with cancer will be significant covariates with cues to cervical cancer and modified significantly the predictive effect of perceived threats (i.e. susceptibility, severity), benefits, barriers and self-efficacy on S.C. Upstate Hispanic women's cervical cancer screening behavior", was accepted.

After the inclusion of cues to cervical cancer as a covariate, the linear combination of cervical cancer and Pap test perceptions continued to significantly increase the likelihood of S.C. Upstate Hispanic women having had a Pap test in the last three years ($X^2 = 55.688$, $p = 0.000$). As the level of Pap test compliance increased, the β also increased. From never had a Pap test ($\beta = -10.990$) to obtaining a Pap test twice in the past three years ($\beta = -7.173$). However, there were smaller odds of the participants having had a Pap test in the last three year as compared with models including other covariates. From never had a Pap test ($\text{Exp } \beta = 0.000$) to obtaining a Pap test twice in the past three years ($\text{Exp } \beta = 0.001$).

Table 4.12 Moderating Effects of Cues to Cervical Cancer Screening on S.C. Upstate Hispanic Women's Perceptions of Cervical Cancer and Pap Smear Test: Tests of Model Effects and Parameter Estimates

Tests of model effects		χ^2	df	p				
Predictors	Benefits	.004	1	.949				
	Barriers	1.070	2	.586				
	Threats	4.152	1	.042				
	Self-efficacy	8.774	1	.003				
Covariates	Cues to action	3.774	1	.052				
	regular medical care	14.89 8	1	.000				
	familism	6.619	1	.010				
	relative with cancer	6.428	1	.011				
Interactions	benefit * barrier	6.153	2	.046				
	cues to action* relativewithcanc	6.543	1	.011				
Parameter estimates			b	SE b				
Criterion	Compliance	Never	- 10.990	1.9566	31.549	1	.000	.000
		At least once in lifetime	-9.277	1.9037	23.748	1	.000	.000
		Once in past 3 yrs.	-8.389	1.8808	19.894	1	.000	.000
		Twice in past 3 yrs.	-7.173	1.8548	14.957	1	.000	.001
		Every year past 3 yrs.	Reference category					
Predictors	Benefits	Low-mod low	.990	.5196	3.628	1	.057	2.691
	Barriers	Low	.369	.4831	.585	1	.445	1.447
	Threats	Mod low	.521	.4145	1.582	1	.209	1.684
	Self-efficacy	Low-mod low	-.858	.2895	8.774	1	.003	.424
Covariates	Cues to action		-1.056	.5437	3.774	1	.052	.348
	regular med. care		-1.385	.3589	14.898	1	.000	.250
	familism		-.310	.1204	6.619	1	.010	.734
	relative w. cancer		-2.201	.8680	6.428	1	.011	.111
Interactions	benefit * barrier		-1.102	.7329	2.262	1	.133	.332
	cues* relativeCa.	Low-mod low*low	-1.805	.7400	5.950	1	.015	.164
Test					χ^2	df	p	
Model χ^2					55.688	12	0.000	
Goodness-of-fit = .977								

Summary

The socio-demographic and socio-economic profile of the participants was described. Differences in Pap test compliance among the categories of socio-demographic and socio-economic variables were analyzed using the Chi-square test. Correlations among socio-demographic, socio-economic and cultural factors were calculated and discussed to identify potential collinearity among these independent variables. In addition, correlations among S.C. Upstate Hispanic women's perceptions of cervical cancer and Pap test, knowledge about cervical cancer and Pap test, cues to cervical cancer screening, and family history of cancer were examined. Last, the results of HBM model testing with generalized linear modeling were presented. The major findings supported the application of the Health Belief Model to explain cervical cancer screening behaviors in the population of S.C. Upstate Hispanic women. Chapter 5 presents the discussion of these findings, and recommendations and implications for research and practice.

CHAPTER FIVE

Discussion

The relevant findings of this study are presented in this chapter. The discussions of the key findings is organized using a modified version of the Health Belief Model (Rosenstock, 1966) and presented in the following order: The predictive effect of cervical cancer screening compliance with recommended guidelines of S.C. Upstate Hispanic women's perceived threats (susceptibility and severity) to cervical cancer, perceived self-efficacy to obtain the Pap test, perceived benefits of the Pap test, and perceived barriers to obtain the Pap test. In addition, the modifying effect of socio-demographic and socio-economic selected factors, knowledge about cervical cancer and the Pap test, cues to cervical cancer screening (cues to action), and selected socio-cultural factors (acculturation, familism, and fatalism) on women's perceptions of cervical cancer and the Pap test are discussed. The chapter ends with a discussion of implications for future research and practice.

This study sought to contribute to the understanding of what influences S.C. Upstate Hispanic women's use of cervical cancer screening by testing a theoretical model, the Health Belief Model (Rosenstock, 1966) which explained the multiple factors present in a person's decision to obtain cervical cancer screening (Glanz, Rimer, & Lewis, 2002; Janz, Champion, & Strecher, 2002; National Cancer Institute, 2003). The model was enhanced by the inclusion of three cultural constructs relevant to Hispanic women: fatalism, familism, and acculturation.

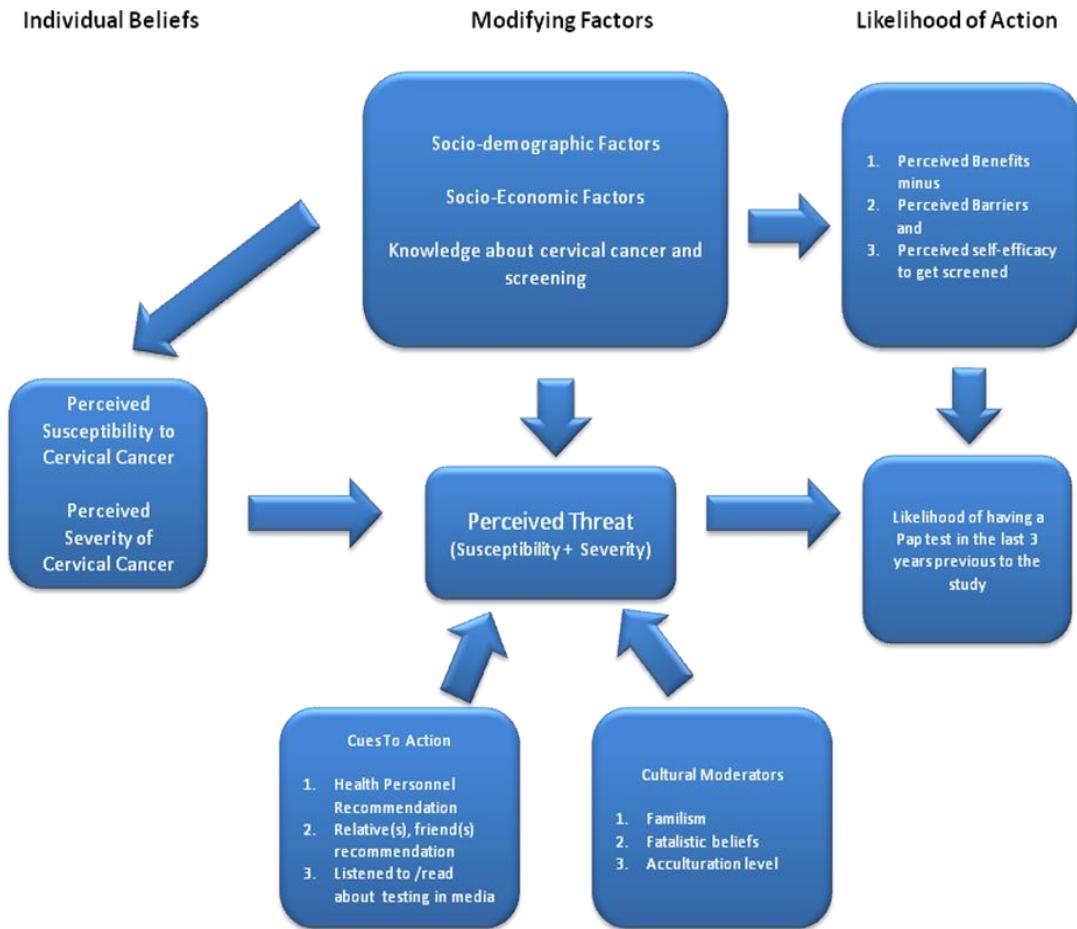
Key Findings

The Health Belief Model and S.C. Upstate Hispanic women's cervical cancer screening

In this study, a modified version of the HBM was used with the intention to examine the effect of selected empirically supported Health Belief Model's rational beliefs, or perceptions, in explaining the differences in motivation of S.C. Upstate Hispanic women's decisions to obtain screening for cervical cancer according to national guidelines (U.S. Preventive Task Force, 2003). Figure 5.1 presents the modified version of the HBM used in this study. This model incorporated selected socio-economic and socio-demographic variables, knowledge about cervical cancer and cervical cancer screening, selected socio-cultural factors (acculturation, familism, and fatalism), and cues to cervical cancer screening (cues to action), as potential modifiers of S.C. Upstate Hispanic women's perceptions of cervical cancer and compliance with cervical cancer screening.

According to Rosenstock (1966), knowledge, beliefs, barriers, interpersonal influences, and cues operate to influence a person's decision to take a health action. All elements considered by Rosenstock were included in this modified version of the HBM. The inclusion of external or social factors such as economic, demographic, and cultural elements that influence one's perceptions and ultimately health behavior, in addition to the personal factors increased the strength of the HBM as an explanatory model in this study.

Figure 5.1 A Modified Health Belief Model Used as the Conceptual and Analytic Framework for the Study of Upstate South Carolina Hispanic Women's Cervical Cancer Beliefs, Knowledge and Screening Behavior



Source: Reproduced and modified from Janz, Champion and Strecher (2002). Used with permission.

Overall, findings suggested that the modified HBM was a good fit to examine cervical cancer screening in this sample of S.C. Upstate Hispanic women. The results of the study supported the major tenants of the theory. Participants who reported high perceived benefits from screening and threats to cervical cancer, as well as low perceived barriers to screening had a significantly greater chance of having had a Pap smear every

year in the last three years previous to the study. Perceived self-efficacy and threats were the strongest predictors of S.C. Upstate Hispanic women's cervical cancer screening behaviors. A discussion of this study's results in regard to the Health Belief Model is outlined below.

The 2010 Census showed that the Latino population grew 43% during the last decade in the U.S. This growth occurred primarily in the Southern states. South Carolina had the largest Hispanic population percent growth between 2000 and 2010. The Hispanic population in S.C. grew by 148% during this period (Pew Hispanic Center, 2011). Therefore, the results of this study are important to understand cervical cancer screening behaviors in states with rapidly growing Hispanic communities. In addition, the study's HBM can be used to understand cervical cancer screening related factors among low-acculturated or bicultural Hispanic women immigrants to the Southern region of the U.S. The results could be applied with caution to other states with similar migratory movements, including newly arrived, predominantly Mexicans, and rapidly expanding Hispanic communities.

Perceived threats: susceptibility to and severity of cervical cancer

Rosenstock (1966) theorized that the extent of perceived susceptibility to and the severity of a health problem (threat perceptions) provided the energy or force to act. Previous research has portrayed perceived severity as one of the weakest HBM predictors (Janz, Champion, & Strecher, 2002). Explanations for such weaknesses included the fact the perceptions of severity only influenced motivation when severity exceeded a certain threshold (Abraham & Sheran, 2000). For instance, an event that might influence high

levels of perceived severity could be the death of an immediate relative or friend due to cervical cancer. To overcome the potential weakness of perceived severity as a predictor into the model in this study, this construct combined with perceived susceptibility as a latent construct labeled perceived threats was analyzed. Threat perception provides women with energy or the motivation to undergo cervical cancer screening, according to national guidelines (Abraham & Sheeran, 2000; Rosenstock, 1966). In this study, perceived threats were strong predictors of S.C. Upstate Hispanic women's compliance to cervical cancer screening guidelines.

Previous studies found that a Hispanic woman's perceived susceptibility to and severity of cervical cancer was influenced by a lack of knowledge about cervical cancer (Hayden, 2009; Johnson et al, 2008). This study found that the majority of the participants provided responses that reflected a high level of knowledge about cervical cancer and the importance of the Pap test. For instance, 93% of the participants recognized that Pap testing helped to detect early cervical cancer, and about three-quarters of the participants recognized family history of cervical cancer and multiple sexual partners as important risk factors for cervical cancer. These findings indicated that S.C. Upstate Hispanic women understood that a Pap test successfully detected cervical cancer early. These results differed from previous findings that a significant proportion of Hispanic women's believed that cervical cancer screening is unnecessary (Austin, Ahmad, McNally, & Stewart, 2002; Johnson, Mues, Mayne, & Kiblawi, 2008; Scarinci, Beech, Kovack, & Bailey, 2003).

The level of knowledge reported in this study about cervical cancer and the Pap test could partially explain the significant effect of perceived threats found. Perceived susceptibility and severity were assessed through examination of selected items of the CPC-28 scale (Urrutia, 2009). Seventy-five percent of the participants either strongly agreed or agreed that they were at risk for developing cervical cancer, and 88% indicated that cervical cancer was one of the most common cancers in women their age. In addition, perceived susceptibility was significantly and positively correlated with knowledge about cervical cancer and the Pap test, severity, benefits, barriers, and self-efficacy perceptions of S.C. Upstate Hispanic women. The positive correlation between knowledge about cervical cancer and the Pap test and susceptibility indicated that, as a woman's knowledge increased, their susceptibility to cervical cancer also increased. Similar correlations were found by Urrutia (2009) and Allahvendipour and Emami (2008) in their studies.

Higher fertility rates among Hispanic women compared with other race-ethnicities in the U.S. have been described by other researchers (Consortium for Latino Immigration Studies, 2007; Hamilton, Martin, & Ventura, 2006). One-quarter of the study participants reported a pregnancy during the last three years. Being pregnant would bring them into contact with a physician and might have influenced the high rates of perceived threats (susceptibility and severity) found in this study (Fernandez-Esquer, Espinoza, Torres, Ramirez, & McAllister, 2003), and consequently, account for some of the 82% compliance with cervical cancer screening guidelines. Therefore, increased contact with

health care services through gynecological care as part of reproductive health care of the participants might have had an impact.

The strength of the threat perceptions, as predicted by the HBM, did determine cervical cancer screening behaviors in this sample. The level of Pap test compliance found in this study might also be associated, in part, with having the support of a male partner and the women's age. Our sample was represented primarily by young (median age 38 years) and married or partnered S.C. Upstate Hispanic women. Research has shown a positive association between being married and having the support of and resources provided by a male partner. Research has consistently found a positive association between being young and married with cervical cancer screening compliance (Thiel de Bocanegra, Trinh-Shevrin, Herrera, & Gany, 2009).

Even though most of the participants in this study recognized the importance of the Pap test for cervical cancer early detection, most demonstrated some confusion about the screening guidelines. Fifty-four percent did not know how often they needed to obtain the Pap test. These findings are similar to other studies that consistently found that Hispanic women displayed both accurate and inaccurate knowledge about cervical cancer screening guidelines (Byrd, Chavez, & Wilson, 2007; Parra-Medina et al., 2009; Scarinci, Beech, Kovach, & Bailey, 2003).

Physicians also face challenges in implementing screening guidelines due to the differences in recommendations and time for screening across organizations (Fatone & Jandorf, 2009). These organizations periodically review and update guidelines based on research evidence. For instance, research findings published by ACOG showed evidence

that Pap test could be obtained every two years with similar early detection effectiveness and avoiding unnecessary testing (Saraiya et al., 2010). This indicated a need for education about the most recent cervical cancer screening guidelines (Fatone & Jandorf, 2009; Saraiya et al. 2010; Warren, Gullett, & King, 2009).

Three-quarters of the participants recognized the Human Papilloma Virus (HPV) as the main cause for cervical cancer; few of them understood how this disease was diagnosed or how to interpret a negative Pap test result in regards to HPV. Many believed that a negative Pap test result also meant being negative for HPV infection. This finding indicated a need for more education about HPV and its role as the main risk factor for cervical cancer (WHO, 2006a). Education about HPV also has implications to educate S.C. Upstate Hispanic women about the importance of vaccinating their children against HPV according to recommended guidelines (WHO, 2006b).

A family history of cervical cancer and having multiple sexual partners were identified as risk factors for cervical cancer by about three-quarters of the sample. Despite the lower educational and acculturation level reported by the participants, most of them knew about these risk factors. Research has shown that education and acculturation are correlated with knowledge about cervical cancer and the Pap test (Tompkins, 2003; Wu, Black, & Markides, 2001). It is of concern that 25% of Hispanic women did not identify family history of cervical cancer and having multiple sexual partners as risk factors. Forty-percent of the participants reported having a family member with various types of cancer. Family history has been identified as an important factor to increase perceived susceptibility to the disease in the population (McFarland,

2003). Therefore, efforts should be undertaken to increase knowledge about these risk factors among Hispanic women.

The finding that only 44% of the participants identified smoking as a risk factor for cervical cancer was also of concern, as smoking (including passive smoking) has been consistently identified in the research literature as an independent risk factor for cervical cancer (CDC, March 2009; Hoenil, 2005; Janicek & Averette, 2001; PAHO, 2007). The presence of cigarette carcinogens in cervical mucus has been described as a possible biological explanation for the epidemiologic association between smoking and cervical cancer (Burger, Hollema, Gouw et al., 1993; Prokopczyk, Cox, Hoffman et al., 1997; Schiffman, Haley, Felton et al., 1987). With the objective of increasing perceived susceptibility to cervical cancer among newly arrived immigrant Hispanic women educational efforts targeting this group and their spouses or partners should also emphasize the role of smoking as a risk factor for cervical and other cancers.

Johnson et al. (2008) found that Hispanic women in their study held beliefs that cervical cancer was easily cured and was not as serious as other forms of cancer. These beliefs reflected a low perception of the severity of cervical cancer. The findings from this study differed from those results as more than 90% of participating S.C. Upstate Hispanic women reported that cervical cancer was a serious illness and that it might lead to death. Although the results indicated high levels of cervical cancer perceived severity in this sample, these results need to be treated with caution given the reported tendency of Hispanic women to ignore symptomless conditions (Boyer et al., 2000).

Perceived self-efficacy to obtain a Pap test

Together with perceived threats, perceived self-efficacy was the strongest predictor of participants' compliance with a Pap test. Perceived self-efficacy is a leading concept in Bandura's (1986) Social Cognitive Theory (SCT). The theory argues that cognitive, self-regulatory, and self-reflective processes are central to human adaptation and change. Following recommendations from Rosenstock, Stretcher, and Becker (1988), self-efficacy was added to the HBM as an independent variable or "perception" with the objective of increasing the explanatory power of the model. In this study the hypothesized relationships between the theoretical constructs of the HBM and self-efficacy were supported.

This study demonstrated that self-efficacy had significant explanatory powers to predict cervical cancer screening behaviors among S.C. Upstate Hispanic women. Participants reported significant high rates of cervical cancer screening self-efficacy in this study. Generalized Linear Modeling results supported the theoretical relationships between self-efficacy and cervical cancer screening behavior in that S.C. Upstate Hispanic women with higher self-efficacy were more likely to have had a Pap test every year in the last three years than women with lower self-efficacy. Similarly, participants who perceived low to moderately low self-efficacy had less than half the odds of Pap test compliance than those who perceived moderately high to high self-efficacy ($OR=0.38$; $p=0.000$) (Table 4.6).

This study used a cervical cancer screening self-efficacy scale developed by Fernandez, et al. (2009). In Fernandez' study, self-efficacy was found to be significantly

correlated with greater knowledge about cervical cancer and testing. Findings from this study also showed a positive correlation between knowledge of cervical cancer and testing and self-efficacy. Therefore, if the knowledge about cervical cancer and the Pap test are increased, S.C. Upstate Hispanic women's self-efficacy to obtain the Pap test also increases. Cervical cancer screening self-efficacy was significantly and positively correlated with perceived barriers to Pap test, benefits of the Pap test, severity of, and susceptibility to cervical cancer in this study. Self-efficacy has been found to be an important determinant of many health behaviors (Gonzalez & Gonzalez, 1990; Lorig, Ritter & Gonzalez, 2003; Kang, Deren, Andia, Colon & Robles, 2004), and these findings indicated it is also important for Pap test screening behavior in Hispanic women.

An emerging theme from this study was the importance of self-efficacy and familism. Since 96% of the women in this study were first generation immigrants, the findings must be considered in conjunction with the women's migration experience. This migration experience provided a backdrop for access to health care, self-efficacy, and social network participation (churches, community-based organizations and service centers). Women who immigrate face a difficult transition, separation from family, friends and kin, and the loss of a familiar way of life. SCT (Bandura, 1995) argues that migration can result in a decrease in one's sense of self-efficacy after repeated failures in attempts to master the new environment. However, the theory also recognizes that migration experiences can increase a person's sense of self-efficacy, if one perceives success at mastering the new environment.

SCT leads one to focus on the perception of self-efficacy gains and losses based on the migration experience; however, it also places the concept of self-efficacy within the context of familism which leads one to also consider the quality, strength and importance of the social context of self-efficacy. For S.C. Upstate Hispanic women participating in this study, inter-connectedness and relationships among family members was very important as reflected by the reported high average levels of familistic attitudes based on Attitudinal Familism Scale (AFS) scores (Lugo-Steidel & Contreras, 2003).

Consideration must be given to the nature and extent of social relationships present within the family, as well as social relationships established through church affiliation, community groups and centers. In addition, how these relationships influence perceptions of self-efficacy and attempts to access resources such as health care. The combination of a positive sense of self-efficacy and a strong sense of familism appears to affect positively the immigrant Hispanic woman's ability and willingness to access health care services including obtaining a Pap test.

The study's self-efficacy findings were consistent with the HBM and SCT. However, the findings suggest that examining the social and cultural contexts in which self-efficacy is perceived and experienced by immigrant women is important. Studying how immigrants form trust relationships that produce greater self efficacy related to managing their health care maintenance may be important future research. Social capital formation addresses aspects of the social context absent from current HBM and SCT self-efficacy theory. Such research might have implications for further understanding Hispanic

women's health maintenance behaviors (Kreuter & Lezin, 2002) and also help health practitioners to plan more effective interventions.

One possible explanation for the high level of self-efficacy found in this study might be related to where the sample was obtained. The participants who volunteered for this study were recruited from churches, English as a Second Language classes, community centers, or Hispanic associations and may be, therefore, women who were more motivated to learn, make connections, and to be more actively involved with their social context. It is possible that Hispanic women who are not part of or integrated into these types of community organizations might have lower self-efficacy scores.

Two-percent of the Guatemalan women who participated in the study spoke neither English nor Spanish at the time of the survey. It is possible that, even though these women were involved with a faith based organization at the time of the study, the barriers faced by them to understand English or Spanish-cervical cancer related messages might have reduced their sense of self-efficacy to obtain the Pap test.

Perceived benefits of and barriers to cervical cancer screening

According to the HBM, the perception of benefits of cervical cancer screening less perceived barriers to get screened provided the preferred path of action (Rosenstock, 1966). In agreement with this theory, the model tested in this study showed that for S.C. Upstate Hispanic women perceived benefits and barriers acted together to determine women's likelihood of getting screened. Generalized Linear Modeling findings showed the existence of a significant interaction between benefit and barriers (Wald's $X^2 = 8.389$, $p = 0.015$).

These results demonstrated that there was a combined effect between these two predictors on S.C. Hispanic women's cervical cancer and Pap test perceptions. Therefore, S.C. Upstate Hispanic women did not weigh the benefits of the screening independently of the perceived barriers to screening. Similar results were found in a study conducted by Janz, Champion, and Strecher (2002). Educational efforts targeting S.C. Upstate Hispanic women or recent Hispanic immigrants to the U.S. South should prioritize and emphasize helping these women find ways to overcome barriers to screening for cervical cancer while at the same time promoting the benefits to screening. The availability of programs and ways to access cervical cancer screening services where they live may contribute to the lower barrier perceptions among this population.

According to Janz et al. (2002), a person's beliefs about the effectiveness of an action influenced a particular course of action. In this study, more than 90 % of the participants believed the Pap test was important because they felt good about taking care of their health and 89% because the screening might save their life. These findings are consistent with studies that found that Hispanic women's belief about the capacity of Pap smear to decrease the risk of cervical cancer are perceived as important benefits (Johnson, Mues, Mayne, & Kiblawi, 2008).

There is research evidence that a person weighs the potential effectiveness of an action against the perception of potential barriers (Janz et al., 2002). S.C. Upstate Hispanic women's perceptions about the factors that act as impediments to cervical cancer screening (perceived barriers) were found to be significant in this study, but only in interaction with cervical cancer screening perceived benefits. Eighteen percent of the

participants strongly agreed or agreed that they did not obtain a Pap test because they did not know at what age they needed to start obtaining one or how often they needed a Pap test. These results are consistent with the findings regarding S.C. Upstate Hispanic women's lack of knowledge about cervical cancer screening guidelines.

A surprising and positive finding in this study was that 88% of participants strongly disagreed or disagreed with embarrassment as a reason for not obtaining the Pap test. In other studies embarrassment has been found to be an important barrier to cervical cancer screening among Hispanic women (Barata, Mai, Nowlett, Gagliardi, & Stewart, 2008; Byrd, Chavez, & Wilson, 2007; Johnson, Mues, Mayne, & Kiblawi, 2008).

Studies found lower fear among Hispanic women who received a Pap test frequently, due to an increased opportunity to learn about cancer prevention. However, Hispanic women who hold extreme cervical cancer fatalistic beliefs reported beliefs that cervical cancer cannot be cured, or perceived it as a death sentence which might increase their fear (Austin, Ahmad, McNally, & Stewart, 2002). S.C. Upstate Hispanic women participating in this study reported low average rates of cervical cancer fatalistic beliefs as measured by the Spanish and culturally adapted version of the Powe Fatalism Inventory (SPFI) (Lopez-McKee et al., 2007). Thus, the low perception of barriers as measured by the CPC-28 (Urrutia, 2009) found in this study were consistent with the low fatalistic views reported by them.

Socio-demographic and socio-economic modifiers

In this study more than half of the participants were from Mexico, were recent immigrants, spoke English poorly to very poorly, lived on an income of less than

\$20,000.00 a year, were young (median age 38 years), and achieved only a high school degree or less. In addition, almost all the participants were foreign-born. These demographic characteristics are consistent with the S.C. Hispanic residents described by the U.S. Census (Migration Policy Institute, 2007; U.S. Census Bureau, 2009).

Although the sample was primarily low income, had limited education, were recent immigrants, and uninsured Hispanic women; 82% of the participants reported having had a Pap test at least once during the last three years. This rate of Pap test compliance is close to the Healthy People 2010 objective for Pap test rate in the U.S. This objective specifies that 85% of all women should have at least one Pap test within the preceding three years (U.S. Department of Health and Human Services [DHHS], 2009).

Consistent with previous research, study results indicated that demographic variables played a significant role in health seeking behaviors (Calle, Flanders, Thon, & Martin, 1993; Morgan, Park & Cortes, 1995; Suarez, 1994). Age and marital status were significant socio-demographic covariates in this study and influenced S.C. Upstate Hispanic women's perceptions of cervical cancer and Pap test screening behaviors. Similarly, income and availability of a regular source of care were also found to be significant covariates.

Cervical cancer screening compliance significantly differed according to age in this study. Hispanic women 50 years of age and older were significantly less likely to obtain a Pap test every year during the last three years than women less than 50 years of age. Studies found that being younger was positively associated with cervical cancer screening (Borrayo & Reyes, 2002; Calle, Flanders, Thum, & Martin, 1993; Suarez,

1994). S.C. Upstate Hispanic women older than 50 years of age may address cervical cancer screening barriers differently than younger women. Watts et al. (2009) found that older Hispanic women preferred speaking Spanish at home and receiving health care information in Spanish, compared to younger women. Therefore, educational programs and programmatic strategies to increase compliance with the Pap test among S.C. Upstate Hispanic women should emphasize targeting women older than 50 years of age.

Findings from the current study suggested that Upstate Hispanic women who reported receiving Pap smears frequently were more likely to be married and 30 to 49 years of age in comparison to those who rarely obtained screening. Knowledge of cervical cancer and its prevention also accounted for differences in screening behaviors among these groups. One possible explanation is that these women received the Pap smear as a component of routine prenatal care, or as part of a routine medical care for sexually active women.

Income was a significant modifying factor of S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test. Participants who reported low incomes were less likely to obtain cervical cancer screening. This finding showed that income is still a barrier to screening for some Upstate Hispanic women. The influence of income on screening behaviors for cervical cancer can be used by health care providers to specifically target those women with lower incomes. Similarly, availability of a regular source of care was found to be a significant socio-economic covariate in this study.

Less than one-quarter of the participants reported having health insurance. This factor might have influenced the 18% of the participants who never had or had the Pap test just once in their life. However, the role of availability of health insurance in cervical cancer

screening compliance appeared not to be highly relevant factor (Fatone & Jandorf, 2009). Perhaps health insurance was not found to be as important as in other studies because of a context-specific situation in the Upstate area. One explanation was the availability of federal, state or community funded health centers (e.g. New Horizons Family Health Services, Greenville Free Clinic, and the Best Chance Network) that offered bilingual cervical cancer screening services for the underinsured and uninsured.

The low relevance of availability of health insurance as a barrier to cervical cancer screening might also be due partly to the moderating effect of other variables (Watts, Joseph, & Velazquez, 2009). Continuity of care and having regular access to a medical home may help bridge the gap in access to cancer prevention services for minority women. Only 34% of the participants reported having a medical home; however, two-thirds reported visiting the same or different physicians for care and therefore had access to a regular source of care.

In this study, participants who reported having access to a regular source of care were significantly more likely to report having been screened every year in the last three years. This finding is similar to results of other studies conducted among U.S. Hispanic women about the relationship between access to a regular source of care and Pap test compliance (Bazargan et al., 2004; Fernandez-Esquer & Cardenas-Turanzas, 2004; Owusu et al., 2005). Therefore, despite participants' low access to a medical home, most of them reported having access to some type of medical care that in turn could have increased the likelihood of obtaining cervical cancer screening.

Previous studies have found that language barriers contributed to health disparities for LEP clients, fewer visits to health care providers, poor compliance with treatments and follow-up care, and communication problems between the client and provider (Fox & Stein, 1991; Perez-Stable, Napoles-Springer & Miramontes, 1997; Fiscella, Franks, Doescher & Saver, 2002; Jacobs, Agger-Gupta & Chen, 2003; De Alba & Sweningston, 2006). Fifty-six percent of the participants in this study said that they spoke English poorly or very poorly. These individuals are considered to have limited English proficiency (LEP). They were not able to speak, read, write or understand the English language well enough to interact effectively with health care providers. However, the results of this study did not find LEP to be a significant barrier to Pap screening behavior in S.C. Upstate Hispanic women. Language as a modifier did not significantly predict Pap test compliance among S.C. Upstate Hispanic women.

The results of this study are similar to other recent studies that found LEP was not a significant barrier to obtaining health care (Fagan, Diez & Reinert, 2003; Karliner, Jacobs, Chen & Mutha, 2007; Dang, Lee, Tran & Kagawa-Singer, 2010). These studies noted the positive impact of the combined effect of Title VI requirements of the Civil Rights Act of 1964 and Executive Order 13166 signed in 2000, and the 14 National Standards for Culturally and Linguistically Appropriate Services in Healthcare (CLAS) from the U.S. Department of Health and Human Services Office of Minority Health (DHSS, 2001). In accordance with this act, hospitals and clinics who are recipients of federal funds must provide interpretive services to LEP clients. This study, and those previously cited, add to the growing body of breast and cervical cancer screening

literature that finds that the requirement for interpreter services seemed to have a positive impact for LEP clients.

Cultural moderators

Previous research has shown that cultural values influenced cervical cancer screening behavior among Hispanic women (Arredondo, Pollack, & Constanzo, 2008; Boyer, Williams, Clark, & Marshall, 2000; Johnson, Mues, Mayne, & Kiblawi, 2008). The sample of S.C. Upstate Hispanic women in this study reported little acculturation, high average levels of familistic beliefs, and low cervical cancer fatalistic beliefs. The low acculturation scores did not significantly deter women from securing a Pap test. Acculturation is a long-term process (Marin & Gamba, 1996), and these low scores might reflect the study participants' recent immigrant status, and the strong value given to family relationships, also known as familism. Spanish speaking abilities are needed for participants to be able to maintain close contact with their relatives and extended family.

The present study added to the literature regarding acculturation. First, it demonstrated that the broad construct of "acculturation" is complex and multidimensional. Measures of acculturation should take into account attitudes and behaviors, country of origin, length of time in country, language, and concepts relevant to Hispanic women such as familism and fatalism. The results of this study demonstrated that one should not assume that low levels of acculturation and low levels of LEP would be indicative of low levels of cervical cancer screening.

Given the characteristics of this sample regarding acculturation, comparisons of cervical cancer screening levels between low and highly acculturated immigrant

Hispanics could not be calculated. Previous research found that more acculturated women were more likely to obtain a Pap smear when compared with women with low levels of acculturation (Arredondo, Pollack, & Constanzo, 2008; Byrd, Peterson, Chavez, & Heckert, 2004; Harmon et al., 1996; Watts, Joseph, & Velazquez, 2009; Wu, Black, & Markides, 2001).

The research related to the role of acculturation in cervical cancer screening behavior among Hispanics has been mixed. Some studies reported a positive correlation with cervical cancer screening (Buller, Madiano, de Zapien, Meister et al., 1998; Suarez & Pulley, 1995) and others found no relationship (Abraido-Lanza, Chao & Florez, 2005; Zambrana, Breen, Fox, Gutierrez-Mohamed, 1999). The low acculturation score must also be considered in context with the high score for familism. The family is of high importance, and their opinions, advice and information about cervical cancer screening was probably influential.

For this sample of S.C. Upstate Hispanic women, interconnectedness and relationships among family members was very important. They have not yet fully acculturated and adopted the more individualistic values of the U.S. (Hope & Heller, 1989). Research has shown that individuals, including Hispanics, who reported higher levels of familism were more likely to engage in healthy behaviors and less likely to practice risky ones (Gaines, Marellich, Bledsoe, & Steers, 1997; Perea & Slater, 1999; Rinderle & Montoya, 2008).

Cervical cancer screening behaviors among this sample might have been influenced by the strong familialistic beliefs reported by the participants. The high reported rates of

screening, during the last three years, could have been positively affected by participants' interest in caring for oneself for the sake of the family. In addition, the influence of familism is supported by participant's identification of mothers, friends, and relatives' encouragement as important cues to get screened for cervical cancer. This study's results are similar to Parra-Medina's et al. (2009) and Watts' et al. (2009) findings.

Several studies reported that Hispanic women tended to hold fatalistic views about cervical cancer (Arredondo, Pollack, & Constanzo, 2009; Boyer, Williams, Clark, & Marshall, 2000; Scarinci, Beech, Kovach, & Bailey, 2003). The results of this study did not support these findings. On the contrary, this study's results were more consistent with Abraido-Lanza's et al. (2003) proposal to examine more thoroughly the assumption that fatalism is a cultural trait among Latinos.

Fatalism has been positively associated with a low educational level (Nierderdeppe & Gurmankin, 2007). Even though sixty-one percent of the sample had a high school education or less, this study found a low average level of reported cervical cancer fatalistic beliefs. In the present study, the high level of knowledge about cervical cancer could have mediated the relation between fatalism and cervical cancer screening practices. Hispanic women who were aware of and knowledgeable about cervical cancer and its prevention were less fatalistic about the disease and were also more likely to have engaged in screening behaviors.

Cues to cervical cancer screening

In agreement with the research literature, S.C. Upstate Hispanic women reported that a physician's recommendation was a positive cue to obtain cervical cancer screening

(Austin, Ahmad, McNally, & Stewart, 2002; Johnson, Mues, Mayne, & Kiblawi, 2008; Watts et al. 2009). These results were consistent with the findings of Austin et al. (2002) who reported that a physician's recommendation was one of the most important cues to cancer screening among Hispanics.

A recommendation by a nurse was the least reported cue to cervical cancer screening by the participants. Nurses are in an advantageous position to deliver educational messages to patients because they tend to spend more time with the patients (Urrutia, 2009). Therefore, it is important to reconsider nurses' role in recommending the Pap test to S.C. Upstate Hispanic women during their health encounters. This is particularly important for low resourced women who may be getting health care through free clinics or centers where nurses and nurse practitioners do most of the health screening. Therefore, the possibility also exists that participants have categorized nurse practitioners as doctors into this study.

The most important cue identified as motivation to get screened in this study was "to take care of their health". This implied that participants were self-motivated to make a decision to get screened. In addition, self-motivation to obtain screening reflects the participant's high sense of cervical cancer screening self-efficacy. Self-efficacy was identified in this study as one of the strongest predictors of Hispanic women's cervical cancer screening compliance.

The second most important cue to obtain the Pap test reported by participants was having heard, read or watched messages about cervical cancer and the Pap test in the newspaper, radio, or television. Participants reported that the information received from

media about cervical cancer and the Pap test was important cues to seek screening. Therefore, media, in particular the Spanish media, has an important role to play in motivating Hispanic women to get screened for cervical cancer. Researchers have recommended that media-based cervical cancer prevention campaigns are effective when these programs are delivered and implemented in a culturally and linguistically sensitive manner (Vellozzi, Romans, & Rothenberg, 1996).

Community outreach strategies directed towards Hispanic women that include the use of the media are effective strategies to increase screening. In addition, these strategies include the use of appropriate language materials, use of lay health workers, and presentations at community and workplace settings. Churches are also important in reaching Hispanic women. Other researchers have found that churches socially influence women to participate in cancer screening (Castro, Elder, Tafoya-Barrazo, & Moratto, 1995; Frank-Stromborg Wassner, Nelson, Chilton, & Wholeben, 1998).

A mother's recommendation for screening was the most important cue to get screened, followed by a friend or neighbor, and lastly a relative. The importance of close family relationships was found to be relevant motivators of health-seeking behaviors for these participants. This finding was consistent with the significant predictor effect of familism found in this study.

Limitations and Strengths

There are several limitations in the present study. The study used a volunteer, convenience sample obtained from LEP classes, churches and Hispanic community organizations. Additionally, data were based on self-reported Pap smear behaviors, which

may lead to an over-or-under estimation of actual screening behavior. Evidence has shown that women both underestimate (Caplan et al. 2003) and overestimate (Suarez, Goldman & Weiss, 1995) cancer screening tests. Future studies could eliminate this bias by asking the participants to provide the dates they obtained their Pap test.

Another limitation of this study was the single geographic focus of Upstate South Carolina. While the results might generalize to other Southern states with an influx of new Hispanic immigrants, generalization to other areas of the U.S. must be made with caution. Another limitation is that these findings are not generalizable to high SES Hispanic women.

This study collected data at a single point in time. There is a need for longitudinal studies that examine the sequencing of events that lead to obtaining cervical cancer screening services to determine if an annual Pap test leads to subsequent cervical cancer screening. Future research might evaluate if S.C. Upstate Hispanic women obtain follow-up screens and associated treatment when a cervical cancer screen indicates abnormal results. Research has shown that Hispanic women tend to obtain less follow-up for abnormal Pap test results when compared with women of other race-ethnicities in the U.S. (Parra-Medina et al., 2009). Lack of follow-up after an abnormal Pap test result has been identified as an important factor that can increase the risk of cervical cancer (CDC, March 2009; Warren, Gullett, & King, 2009).

The results of this study indicated that the acculturation construct is complex and multidimensional. This study did not include a measure of ethnic identity. In fact, few studies examining cancer screening behaviors in immigrants have done this. The

addition of an ethnic identity scale might provide a better understanding of acculturation, its interaction with demographic variables, familism, and the concepts within theoretical frameworks such as the HBM.

Despite these limitations, there are several strengths. The current findings made an important contribution to the existing research in the field. Theoretically-based models of behavior are important for the development of effective intervention programs. This study used the Health Belief Model (Rosenstock, 1966), and the results demonstrated that the HBM can be used to examine and understand cervical cancer screening behaviors among Hispanic women. This study contributed by incorporating more and modifiers not previously studied, as well as studying an ethnically or racially specific sample (Hayden, 2009; Tanner-Smith & Brown, 2010).

Evaluating Hispanic women's behaviors within a theoretical framework provided a more organized and clear picture of how various concepts and variables interacted and influenced S.C. Upstate Hispanic women's cervical cancer screening behaviors. The current findings, if confirmed and extended, could have important implications for researchers and health care providers developing cervical cancer prevention programs.

The fact that many of the measures used in this study existed in Spanish and had adequate to good reliability and validity was a strength. The tests of reliability demonstrated good reliability of the instruments used in this study. In addition, the study took into account macro-social influences on cervical cancer screening behavior. Results of the current study provided some evidence of the extent to which cultural factors play a

role in cervical cancer screening behaviors in conjunction with the HBM concepts and the demographic variables.

Summary of recommendations for future research and practice

Recommendations for practice

The following are recommendations for practice:

- The results of this study could be applied with caution to other states with similar migratory movements, including newly arrived, predominantly Mexicans, and rapidly expanding Hispanic communities.
- Educational programs and programmatic strategies to increase compliance with the Pap test among S.C. Upstate Hispanic women should emphasize targeting women older than 50 years of age.
- Recognize that family members play an important role in encouraging Hispanic women of all ages to obtain Pap screening.
- Educate Hispanic women about the most recent cervical cancer screening guidelines, HPV and its role as the main risk factor for cervical cancer.
- Educate Hispanic women about cervical cancer risk factors: family history of cervical cancer, multiple sexual partners, and smoking.
- Provide a comprehensive approach that combines access to regular health care, screening at a medical home, and clear and culturally adapted information about cervical cancer, HPV and cervical cancer screening.
- Increase the availability of programs and access to cervical cancer screening services in the community where Hispanic women reside.

- Emphasize the nurses' role in recommending the Pap test to Hispanic women during their health encounters; particularly low resourced women.
- Community outreach strategies directed towards Hispanic women should include: the media (i.e. Spanish radio, TV, and newspapers), Spanish language materials, lay health workers, and presentations at community and workplace settings. Churches are particularly important sites to reach Hispanic women.

Recommendations for future research

Future research studies should:

- Incorporate the Hispanic women's migration experience as a component of the conceptual framework and analysis.
- Explore the role played by Hispanic women's nature and extent of social relationships present within the family, as well as those established through organizational affiliation, in their attempts to access resources such as health care.
- Incorporate social capital formation in the application of the HBM and self-efficacy theory framework to Hispanic women's cervical cancer screening behaviors.
- Study the barriers to cervical cancer screening of subgroups such as the Guatemalan participants who do not speak Spanish or English.
- Develop longitudinal studies to examine the sequencing of events that lead to a cervical cancer screening follow-up according to recommended guidelines.

- Examine the acculturation construct as it relates to Pap screening behavior. The addition of an ethnic identity scale might provide a better understanding of acculturation, and its interaction with demographic variables, familism, and constructs within theoretical frameworks such as the HBM.
- Determine if the HBM framework used in this study applies to other Hispanic women's health behaviors.

Conclusions

Cervical cancer screening is well known to be associated with early cervical cancer detection and thus with reductions in cancer morbidity and mortality. In Hispanic populations where cancer rates are disproportionately high, it is important to identify barriers to cervical cancer screening and to develop interventions that reduce those barriers. This study used theoretically driven analyses to determine why S.C. Upstate Hispanic women engaged or did not engage in cervical cancer screening.

Using the Health Belief Model (Rosenstock, 1966) as a framework the study results found evidence to support the hypothesized relationships between cervical cancer screening and health beliefs. Perceived threats (susceptibility and severity) and self-efficacy were the strongest predictors of cervical cancer screening behavior. The results also indicated that perceived benefits and barriers acted together to determine the women's likelihood of getting screened. The importance of familism demonstrated the need to incorporate relevant cultural concepts when examining screening behaviors in minority groups.

Health care providers and policy makers working with Hispanic women need to recognize the importance of individual characteristics and behaviors, such as acculturation, knowledge about cervical cancer and screening, age, marital status, income and access to a medical home as crucial facilitators or impediments to cervical cancer screening among Hispanic women. The HBM can be used as a framework to design culturally appropriate cervical cancer screening interventions. Further research is needed to determine if this framework applies to other Hispanic women's health behaviors.

Knowledge about cervical cancer and the Pap test, selected socio-demographic and socio-economic variables (i.e. age, marital status, income and access to a medical home.), familism, and selected cues (i.e. mother's recommendation, physicians recommendation, and Spanish media) to cervical cancer screening were determining factors that influenced S.C. Upstate Hispanic women's perceptions of cervical cancer and the Pap test, and their cervical cancer screening behaviors.

In this new era of cervical cancer prevention that includes HPV testing, Pap smears and HPV immunization, health care providers need to assure that Hispanic women receive information from trusted, culturally preferred sources which highlight both benefits and threats as well as where to access care. Comprehensive approaches that combine access to regular care and screening at a medical home and provide clear, accurate and culturally adapted information about cervical cancer, HPV and screening appear to increase cervical cancer screening compliance. Recognizing the importance of family members in encouraging women of all ages to get screened appears to increase Hispanic women's motivations and subsequent action to get screened.

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APPENDICES

Appendix A: Research site letter

Letter head of Participating Organization

November __, 2010

Clemson University's Office of Research Compliance
223 Brackett Hall
Clemson, SC 29634-5704

To whom it may concern:

Dr. Arelis Moore de Peralta, a Clemson University PhD candidate, has our permission to conduct research at our facility for her study entitled "Health beliefs and socio-cultural factors that predict cervical cancer screening behaviors among Hispanic women in the Upstate of South Carolina". The purpose of this study is to examine specific actions and beliefs about cervical cancer and the Papanicolaou (Pap) test among native and foreign born Hispanic women, 18 to 65 years of age, who reside in or near seven conveniently selected cities in Upstate SC. We understand that the principal investigator of this study is Dr. Bonnie Holaday from Clemson University's Institute on Family and Neighborhood Life.

Prior to beginning the survey process, either Dr. Moore or one of the DCs will coordinate with us the best date and time for data collection. Dr. Moore and her data collectors (DCs) will recruit Hispanic women 18 to 65 years who use our services by attending one of our meetings and inviting them to participate. At the research session, Dr. Moore and her DCs will read the verbal consent to the women who come to the research session. We understand that participation will be voluntary, and neither we nor Dr. Moore and her team will in no way indicate that lack of participation has negative consequences relative to their involvement in our organization's programs and services. Hispanic women will complete voluntarily a survey lasting about 30 minutes. After explaining to the women what Dr. Moore would like them to do, those who verbally agree to participate will remain into the room to complete the questionnaire. Those who do not want to participate will be given opportunity to leave the room.

I acknowledge that neither I nor any staff member from the organization will be present when the questionnaire is completed to ensure privacy for the participants. The questionnaires will be completed and submitted on site. No questionnaires will be mailed or emailed. Once the questionnaires are completed, all participants will receive educational materials on cervical cancer prevention from the American Cancer Society and a coupon as a gift of appreciation for participating in this research project. Dr. Moore has agreed to provide me with a copy of the Clemson University IRB approval letter prior to recruiting Hispanic women affiliated with our organization's services.

If there are any questions, please contact my office.

Signed,

Signature (if submitted in hardcopy) of the authorizing individual

Name and title of the authorizing individual

Name of the institution/research site with which the authorizing individual is affiliated (if not on letterhead)

Appendix B: Cervical Cancer Screening Beliefs Questionnaire: English version.

Cervical Cancer Screening Beliefs Questionnaire

Would you prefer to complete the questionnaire in English or Spanish?	
English <input type="checkbox"/>	Spanish <input type="checkbox"/>
City Code: <input type="text"/>	How old were you on your last birthday? <input type="text"/> Years old
What is your current marital status? <input type="checkbox"/> Single <input type="checkbox"/> Partnered <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/>	
Are you, yourself of Hispanic or Latino origin or descent such as Mexican, Puerto Rican, Cuban, Dominican, Central or South American, Caribbean or some other Latin American background? Yes <input type="checkbox"/> No <input type="checkbox"/> Refused <input type="checkbox"/>	
Were you born in the United States, the island of Puerto Rico or in another country? U.S. <input type="checkbox"/> Puerto Rico <input type="checkbox"/> Another country <input type="checkbox"/> Refused <input type="checkbox"/>	
(If in another country) In what country were you born?	
When did you first come to live to the United States: Month <input type="text"/> Year <input type="text"/>	
What is your family's income from all sources? (please mark one box) less than \$5,000 <input type="checkbox"/> \$5,000-\$9,999 <input type="checkbox"/> \$10,000-\$14,999 <input type="checkbox"/> \$15,000-\$19,999 <input type="checkbox"/> \$20,000-\$29,999 <input type="checkbox"/> \$30,000-\$39,999 <input type="checkbox"/> \$40,000-\$49,999 <input type="checkbox"/> \$50,000 or more <input type="checkbox"/>	
How far did you go in school? I never went to school <input type="checkbox"/> Up to 4 th grade <input type="checkbox"/> Up to 8 th grade <input type="checkbox"/> Some high school but I did not graduate <input type="checkbox"/> High school graduate <input type="checkbox"/> GED <input type="checkbox"/> Business, technical, or vocational school after high school <input type="checkbox"/> Some college, no 4-year degree <input type="checkbox"/> College graduate <input type="checkbox"/> Post-graduate training or professional schooling after college <input type="checkbox"/>	
When was the last time that you visited a doctor? Month <input type="text"/> Year <input type="text"/>	
Where do you go for regular medical care? A private physician or group practice where we see the same doctor <input type="checkbox"/> each time <input type="checkbox"/> A group practice where we may see a different doctor each time <input type="checkbox"/> A hospital outpatient department or clinic <input type="checkbox"/> A clinic not connected with a hospital <input type="checkbox"/> Other (Specify) <input type="text"/>	
I DON'T GO FOR REGULAR MEDICAL CARE <input type="checkbox"/>	

In general, how do you pay for your health care?

I pay for it myself or a relative

I have health insurance or are covered by an HMO or preferred provider plan

I have Medicaid, Medicaid, CHIPS, or other public program

Other (Specify) _____

Are you currently pregnant?	Have you been pregnant in the last 3 years?	
Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Cervical cancer screening history:

Have you ever had a Pap test? Yes No

Have you had a Pap test within the past 3 years? Yes No

Have you had a Pap test within the past 2 years? Yes No

Have you had a Pap test within the last year? Yes No

Please read about how frequent you communicate in Spanish and English. For each question, please tell me the response that best reflects your opinion; in a scale from 1 (Almost never) to 4 (Almost always). There are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Language Use Subscale	Almost never	sometimes	often	Almost always
	1	2	3	4
How often do you speak English?				
How often do you speak English with your friends?				
How often do you think in English?				
How often do you speak Spanish?				
How often do you speak Spanish with your friends?				
How often do you think in Spanish?				
Linguistic Proficiency Subscale	Very poorly	poorly	well	Very well
	1	2	3	4
How well do you speak English?				
How well do you read in English?				
How well do you understand television programs in English?				
How well do you understand radio programs in English?				

How well do you write in English?			
How well do you understand music in English?			
How well do you speak Spanish?			
How well do you read in Spanish?			
How well do you understand television programs in Spanish?			
How well do you understand radio programs in Spanish?			
How well do you write in Spanish?			
How well do you understand music in Spanish?			
Electronic Media Subscale	Almost never	sometimes	often
	1	2	3
How often do you watch television programs in English?			
How often do you listen to radio programs in English?			
How often do you listen to music in English?			
How do you watch television programs in Spanish?			
How often do you listen to radio programs in Spanish?			
How often do you listen to music in Spanish?			

Please read some ways a person interact and live with their family. For each question, please tell me the response that best reflects your opinion. In a scale from 1 (strongly disagree) to 10 (strongly agree). There are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Items	Scale									
	1	2	3	4	5	6	7	8	9	10
	Strongly Disagree					Strongly Agree				
Children should always help their parents with the support of younger brothers and sisters, for example, help them with homework, help the parents take care of the children, and so forth.										

Items	Scale									
	1	2	3	4	5	6	7	8	9	10
	Strongly Disagree					Strongly Agree				
The family should control the behavior of children younger than 18.										
A person should cherish the time spent with his or her relatives.										
A person should live near his or her parents and spend time with them on a regular basis.										
A person should always support members of the extended family, for example, aunts, uncles, and in-laws, if they are in need even if it is a big sacrifice.										
A person should rely on his or her family if the need arises.										
A person should feel ashamed if something he or she does dishonors the family name.										
Children should help out around the house without expecting an allowance.										
Parents and grandparents should be treated with great respect regardless of their differences in views.										
A person should often do activities with his or her immediate and extended families, for example, eat meals, play games, or go somewhere together.										
Aging parents should live with their relatives.										
A person should always be expected to defend his/her family's honor no matter what the cost.										
Children younger than 18 should give almost all their earnings to their parents.										
Children should live with their parents until they get married.										
Children should obey their parents without question even if they believe they are wrong.										
A person should help his or her elderly parents in times of need, for example, helping financially or sharing a house.										
A person should be a good person for the sake of his or her family.										

Items	Scale									
	1	2	3	4	5	6	7	8	9	10
	Strongly Disagree					Strongly Agree				
A person should respect his or her older brothers and sisters regardless of their differences in views.										

Beliefs about Papanicolaou and Cervical Cancer

The following sentences are some ideas related to the Papanicolaou test (PAP) and cervical cancer (uterine cervix cancer). Please indicate with a cross the alternative that best describes your belief about each one of the sentences. There are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Items	Strongly agree	agree	disagree	Strongly disagree
Getting a Pap test makes me feel good because it means that I take care of my health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have time to get a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken the Pap test because they treat me badly in the health care center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not know at what age it is necessary to have a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken a Pap test because when I go, I need to wait a long time to be seen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Pap can save my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken the Pap test because I am afraid to find out if I have cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken the Pap test because the health care center is only open during hours when I cannot go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken the Pap test because I am embarrassed to have a genital exam	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not know how often I need to get a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not taken a Pap test because it is difficult to get an appointment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cervical cancer may lead to death				
Cervical cancer may lead to a woman having a hysterectomy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cervical cancer is a serious health problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cervical cancer can lead to a woman needing to receive chemotherapy or radiotherapy treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following sentences are related to **the need that you have to take the Pap test, and the risk of having Cervical Cancer.** Please indicate the degree to which you agree or disagree with each statement. Remember, there are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Items	Strongly agree	agree	disagree	Strongly disagree
If I do not have symptoms, I do not need a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I have not had children, I do not need a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I do not have intercourse, I do not need a Pap test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am at risk for developing cervical cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I have cervical cancer, I can die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cervical cancer is one of the most common cancers among women my age	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following sentences are some reasons women have for getting a Pap test. Please indicate the degree of agreement in each sentence, thinking about **the reasons that have made you or would make you get a Pap test.** Remember, there are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Items	Strongly agree	agree	disagree	Strongly disagree
To take care of my health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because a nurse or midwife told me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because a doctor told me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because my mother spoke to me about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because a friend or neighbor spoke to me about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because members of my family told me to get it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because I listened to or read something in the newspaper or in a television or radio program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer the following questions. Mark your answers with a circle. There are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

I think that if a person will get cancer, no matter what type of meals this person eat, anyway he or she will get cancer.	YES	NO
I think that if someone has cancer, it is too late to try to seek for treatment.	YES	NO
I think that a person can eat fat food all his/her life, but if he/she is not meant to have cancer, he/she will not develop cancer.	YES	NO
I think that if someone will get cancer, will get it no matter what that person does.	YES	NO
I think that if someone gets cancer; it was his/her destiny.	YES	NO
I think that if someone gets cancer, that person is going to die soon	YES	NO
I think if a person gets cancer that is the way that person was meant to die.	YES	NO
I think that people it's scary to get screened for cancer because it gives them fear that really they would have cancer.	YES	NO
I think that if someone with cancer touches you, you will get cancer.	YES	NO
I think some people don't want to know if they have cancer, because they do not want to know if they are already dying from this disease.	YES	NO
I think that if someone has cancer, it doesn't matter if it's found early or late, because the person will die of cancer anyway.	YES	NO
I think that if someone has cancer and receives treatment to heal; that person will die anyway from this disease.	YES	NO
I think that if someone is destiny to have cancer, it does not matter what the doctors and nurses tell this person to do, the person will get cancer anyway.	YES	NO
I think that if it's someone's destiny to have cancer, it doesn't matter if the person eat healthy food; he/she will get cancer anyway.	YES	NO
I think that cancer would kill a person, no matter when it's found or how it's cured.	YES	NO

Do you think you are able to get your Pap test or cervical screening? Please rate your degree of confidence by recording a number from 0 to 100 using the scale given below. There are no good or bad answers in this questionnaire, therefore if you are unsure or do not know an answer, feel free to answer what you believe.

Items	Cannot do at all			Moderately can do			Highly certain can do				
	0	10	20	30	40	50	60	70	80	90	100
How sure are you that you can discuss having a Pap test with your health care provider even if (s)he does not bring it up?											
How sure are you that you can schedule a Pap test appointment and keep it?											
How sure are you that you can keep having a Pap test even if you had to go to a new office to get one?											
How sure are you that you can ask your primary care physician for a referral to get a Pap test?											
How sure are you that you can go to get your next Pap test?											
How sure are you that you can get a Pap test even if you are worried that it will be painful											
How sure are you that you can get a Pap test even if a friend discouraged you from having one?											
How sure are you that you can get a Pap test even if you had to pay for it?											

Please answer true or false for the following statements:

Statements	True	False	Don't know
Human Papiloma Virus (HPV) can cause cervical cancer			
If a woman's Pap smear is normal, she does not have Human Papiloma Virus (HPV)			
Pap smears will almost always detect Human Papiloma Virus (HPV)			
Smoking increases a woman's chances of getting cervical cancer			
Family history increases a woman's chances of getting cervical cancer			
Having multiple sex partners increases a woman's chances of getting cervical cancer			
Pap test can detect problems before they become cancer			
Most people with cervical cancer have no visible signs or symptoms			
Women who have gone through menopause do not need a Pap test			
A woman should get a Pap test at least once every 3 years			

Please complete these final questions:

Have you been diagnosed with cancer? Yes <input type="checkbox"/> No <input type="checkbox"/> If the answer is yes, What type of cancer?
Have been someone of your immediate family (grandfathers, parents, uncles/aunts, brothers or sisters) diagnosed with cancer? Yes <input type="checkbox"/> No <input type="checkbox"/> If the answer is yes, What type of cancer?
Have you got a hysterectomy? Yes <input type="checkbox"/> No <input type="checkbox"/>
Would you like to support this research by gathering a group of women inside your community to complete this questionnaire? Yes <input type="checkbox"/> No <input type="checkbox"/> If the answer is yes, please complete one of the given cards with your contact information to arrange this meeting

Cervical Cancer Screening Beliefs Questionnaire: Spanish version.

Cuestionario Creencias sobre Citología Cervical o Papanicolau

¿Prefería usted completar este cuestionario en Español o en Inglés?	
Ingles <input type="checkbox"/>	Español <input type="checkbox"/>
Código de ciudad: <input type="text"/> ¿Cuántos años tenía usted en su último cumpleaños? <input type="text"/>	
¿Cuál es su estado civil? <input type="checkbox"/> Soltera <input type="checkbox"/> Vive son su pareja <input type="checkbox"/> Casada <input type="checkbox"/> Separada <input type="checkbox"/> Divorciada <input type="checkbox"/> Viuda	
¿Es usted, de origen hispano o Latino tal como, mexicana, puerto riqueña, cubana, dominicana, centro o sudamericana, u otra ascendencia Latino Americana? Si <input type="checkbox"/> No <input type="checkbox"/> Rehusa contestar <input type="checkbox"/>	
¿Nació usted en los Estados Unidos, la isla de Puerto Rico o en otro país? Estados Unidos <input type="checkbox"/> Puerto Rico <input type="checkbox"/> Otro país <input type="checkbox"/> Rehusa contestar <input type="checkbox"/>	
(Si en otro país) ¿En qué país nació usted? _____	
¿En qué fecha llegó usted a vivir por primera vez a los Estados Unidos: Mes <input type="text"/> Ano <input type="text"/>	
Considerando todas las fuentes de ingreso en el hogar, ¿ Cuál es el ingreso anual de su familia? (por favor solo marque un cuadro) menos de \$5,000 <input type="checkbox"/> \$5,000-\$9,999 <input type="checkbox"/> \$10,000-\$14,999 <input type="checkbox"/> \$15,000-\$19,999 <input type="checkbox"/> \$20,000-\$29,999 <input type="checkbox"/> \$30,000-\$39,999 <input type="checkbox"/> \$40,000-\$49,999 <input type="checkbox"/> \$50,000 o mas <input type="checkbox"/>	
¿Cuál es el nivel de educación más alto que usted completó? Nunca fui a la escuela <input type="checkbox"/> Hasta el 4 ^{to} grado <input type="checkbox"/> Entre el 5to y el 8 th grado <input type="checkbox"/> Parte de la preparatoria o secundaria pero no me gradué <input type="checkbox"/> Diploma de preparatoria o secundaria <input type="checkbox"/> Diploma de educación abierta GED <input type="checkbox"/> Diploma técnico vocacional después de preparatoria o secundaria <input type="checkbox"/> Parte de la universidad pero sin título <input type="checkbox"/> Graduado de la universidad <input type="checkbox"/> Educación de post-grado pero sin título <input type="checkbox"/> Maestría (MS, MA) <input type="checkbox"/> Doctorado <input type="checkbox"/>	
¿Cuándo fue la última vez que usted visitó un doctor? Mes <input type="text"/> Año <input type="text"/> Si nunca ha visitado un doctor favor poner "0" en la casilla correspondiente al mes y al año.	
¿A dónde va regularmente para recibir atención médica? Doctor privado o firma de doctores en donde vemos al mismo doctor siempre <input type="checkbox"/> Firma de doctores en donde quizás veamos a doctor diferente siempre <input type="checkbox"/> Hospital o clínica en el departamento para pacientes externos <input type="checkbox"/>	

Clínica no relacionada con un Hospital <input type="checkbox"/>	A la emergencia de un Hospital <input type="checkbox"/>
Otro lugar (especifique) _____	Yo no he buscado atención medica de forma regular <input type="checkbox"/>
¿Generalmente, como paga usted por recibir atención médica o de salud?	
Nosotros mismos pagamos <input type="checkbox"/>	Tengo seguro médico, estoy cubierta por HMO o un “plan de seguro médico privado” <input type="checkbox"/>
Tengo Medicaid, Medicare, ayuda financiera del hospital u otro programa público <input type="checkbox"/>	Otro (Especifique) _____
¿Está usted embarazada actualmente? Si <input type="checkbox"/> No <input type="checkbox"/>	¿Estuvo embarazada en los últimos 3 años? Si <input type="checkbox"/> No <input type="checkbox"/>
Historia de citología vaginal o prueba de Papanicolaou (Pap):	
¿Alguna vez le han hecho una prueba de Papanicolaou (Pap)? Si <input type="checkbox"/> No <input type="checkbox"/>	
¿Le han hecho una prueba de Papanicolaou en los últimos 3 años? Si <input type="checkbox"/> No <input type="checkbox"/>	
¿Le han hecho una prueba de Papanicolaou en los últimos 2 años? Si <input type="checkbox"/> No <input type="checkbox"/>	
¿Le han hecho una prueba de Papanicolaou en el último año? Si <input type="checkbox"/> No <input type="checkbox"/>	

Por favor lea sobre la frecuencia con la que usted se comunica en Español o en Ingles. Para cada pregunta, por favor díganos la respuesta que mejor refleje su opinión; en una escala de 1 (Casi nunca) a 4 (Casi siempre). No hay respuestas correctas o incorrectas en este cuestionario. De modo que si usted no está segura o no sabe una respuesta, siéntase en la libertad de responder lo que usted considere.

Sub-escala de uso del idioma	Casi nunca	Algunas veces	Con frecuencia	Casi nunca
	1	2	3	4
¿Con que frecuencia habla usted inglés?				
¿Con que frecuencia habla usted inglés con sus amigos?				
¿Con que frecuencia piensa usted en inglés?				
¿Con que frecuencia habla usted español?				
¿Con que frecuencia habla usted español con sus amigos?				
¿Con que frecuencia piensa usted en español?				
Sub-escala de dominio del idioma	Muy mal	Mal	Bien	Muy bien
	1	2	3	4

¿Qué tan bien habla usted en inglés?			
¿Qué tan bien lee usted en inglés?			
¿Qué tan bien entiende usted los programas de televisión en inglés?			
¿Qué tan bien entiende usted los programas de radio en inglés?			
¿Qué tan bien escribe usted en inglés?			
¿Qué tan bien entiende usted la música en inglés?			
¿Qué tan bien habla usted en español?			
¿Qué tan bien lee usted en español?			
¿Qué tan bien entiende usted los programas de televisión en español?			
¿Qué tan bien entiende usted los programas de radio en español?			
¿Qué tan bien escribe usted en español?			
¿Qué tan bien entiende usted la música en español?			
Sub-escala sobre medios de comunicación electrónicos	Casi nunca	Algunas veces	Con frecuencia
	1	2	3
¿Qué tan frecuente mira usted programas de televisión en inglés?			
¿Qué tan frecuente escucha usted programas de radio en inglés?			
¿Qué tan frecuente escucha usted música en inglés?			
¿Qué tan frecuente mira usted programas de televisión en español?			
¿Qué tan frecuente escucha usted programas de radio en español?			
¿Qué tan frecuente escucha usted música en español?			

Por favor lea sobre algunas formas en que una persona interactúa o comparte con su familia. Para cada pregunta, por favor dígame la respuesta que mejor refleja su opinión. En una escala de 1 (Totalmente en desacuerdo) a 10 (totalmente de acuerdo). No hay respuestas correctas o incorrectas en este cuestionario. De modo que si usted no está segura o no sabe una respuesta, síntase en la libertad de responder lo que usted considere.

Enunciados	Escala									
	1	2	3	4	5	6	7	8	9	10
	Completamente en desacuerdo					Completamente de acuerdo				
Los hijos siempre deben ayudar a sus padres con el sostén de sus hermanos menores, por ejemplo, ayudar con las tareas escolares, ayudar a cuidarlos, etc.										
La familia debe controlar el comportamiento de los miembros de la familia menores de 18 años.										
Una persona debe apreciar el tiempo que pasa con sus familiares.										
Una persona debe vivir cerca de donde sus padres viven y deben pasar tiempo con ellos regularmente.										
En caso de una necesidad una persona siempre debe apoyar a otros miembros de su familia, (por ejemplo, tíos, tíos y familiares políticos) aunque sea un gran sacrificio.										
Una persona debe contar con su familia en casos de necesidad.										
Una persona debe sentirse avergonzada si deshonra a su familia.										
Los hijos deben ayudar en las labores de la casa sin esperar pago.										
Los padres y los abuelos deben ser tratados con gran respeto a pesar de sus diferencias de opiniones.										
Una persona debe hacer actividades frecuentemente con su familia, por ejemplo comer, jugar y salir juntos.										
Los padres de edad avanzada deben vivir con sus parientes.										
Una persona siempre debe defender el honor de la familia sin importar el costo.										
Los hijos menores de 18 años deben dar gran parte de sus ingresos económicos a sus padres.										

Enunciados	Escala									
	1	2	3	4	5	6	7	8	9	10
	Completamente en desacuerdo					Completamente de acuerdo				
Los hijos deben vivir con sus padres hasta que se casen.										
Los hijos deben obedecer a sus padres aun cuando piensen que sus padres están equivocados.										
Una persona debe ayudar a sus padres de edad avanzada cuando están en necesidad, por ejemplo, ayudarlos económicoamente o compartir una casa.										
Una persona debe ser buena por consideración a su familia.										
Una persona debe respetar a sus hermanos mayores sin importar las diferencias de opiniones.										

Creencias sobre el Papanicolaou y el Cáncer Cervical

Las siguientes oraciones son algunas ideas relacionadas con el Papanicolaou (Pap) y el cáncer cervical (cáncer del cuello del útero). Por favor marque con una cruz la alternativa que más se acerque a lo que usted cree en cada una de las oraciones. Este cuestionario no considera respuestas buenas o malas, por lo tanto si hay alguna respuesta que usted no esté segura o que no sabe, síntase libre de contestar lo que usted cree.

	Completamente de acuerdo	De acuerdo	En desacuerdo	Completamente en desacuerdo
Tomarme el Pap me hace sentir bien porque significa que yo cuido mi salud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No tengo tiempo para tomarme el Pap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque en el consultorio me tratan mal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo no sé a qué edad es necesario tomarse el Pap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque cuando voy necesito esperar largo tiempo para ser atendida.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El Pap puede salvar mi vida.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque me da miedo saber que tengo cáncer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque el consultorio atiende en horarios en los que no puedo ir.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque me da vergüenza que me examinen los genitales.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo no sé cada cuanto tiempo necesito ir a tomarme el Pap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No me tomo el Pap porque cuesta mucho sacar una cita.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El cáncer cervical (o cáncer de cuello del útero) puede causar la muerte.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El cáncer cervical (o cáncer del cuello del útero) puede llevar a una mujer a tener que someterse a una histerectomía (sacarse el útero o matriz).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completamente de acuerdo	De acuerdo	En desacuerdo	Completamente en desacuerdo
El cáncer cervical (cáncer del cuello del útero) es un problema de salud serio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El cáncer cervical (o cáncer del cuello del útero) puede llevar a una mujer a tener que realizarse un tratamiento con quimioterapia o radioterapia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Las siguientes oraciones son algunas ideas relacionadas con **la necesidad que usted tiene de tomarse el Pap y el riesgo de tener un Cáncer Cervical (cáncer del cuello del útero)**. Por favor señale su grado de acuerdo en cada una de ellas.

Recuerde que no hay respuestas buenas ni malas, por lo tanto si hay alguna respuesta que usted no esté segura o que no sabe, síntase libre de contestar lo que usted cree.

	Completamente de acuerdo	De acuerdo	En desacuerdo	Completamente en desacuerdo
Si no tengo síntomas o molestias, no necesito tomarme un Pap.	0	0	0	0
Si no he tenido hijos, no necesito tomarme un Pap.	0	0	0	0
Si no estoy teniendo relaciones sexuales, no necesito tomarme un Pap.	0	0	0	0
Yo tengo riesgo de desarrollar un cáncer cervical (cáncer del cuello del útero).	0	0	0	0
Si yo tengo cáncer cervical me puedo morir.	0	0	0	0
El cáncer cervical (cáncer del cuello del útero) es uno de los cánceres más comunes entre las mujeres de mi edad.	0	0	0	0

Las siguientes son algunas razones que las mujeres pueden tener par air a tomarse un Pap. Por favor, señale en cada una de ellas su grado de acuerdo, pensando en **las razones que me la han llevado o que la llevarían a tomarse el Pap.** Recuerde que no hay respuestas buenas ni malas.

	Completamente de acuerdo	De acuerdo	En desacuerdo	Completamente en desacuerdo
Para cuidar mi salud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque una enfermera o matrona me lo pidió.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque un doctor me lo pidió.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque mi madre me hablo sobre eso.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque una amiga o vecina me hablo sobre eso.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque miembros de mi familia me dijeron que me lo tomara.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porque escuche o leí algo en el diario o en algún programa de televisión o radio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Por favor responda las siguientes preguntas. Marque sus respuestas con un círculo. No hay respuestas correctas o incorrectas en este cuestionario. De modo que si usted no está segura o no sabe una respuesta, siéntase en la libertad de responder lo que usted considere.

Yo pienso que si a una persona le va a dar cáncer, no importa qué tipo de comidas coma, de todos modos le va a dar cáncer.	SI	NO
Yo pienso que si alguien tiene cáncer, ya es demasiado tarde para tratar de buscar tratamiento.	SI	NO
Yo pienso que una persona puede comer comida con grasa toda su vida, pero si no le toca que le de cáncer, no le va a dar cáncer.	SI	NO
Yo pienso que si a una persona le va a dar cáncer, le va a dar no importa lo que haga.	SI	NO
Yo pienso que si a una persona le da cáncer, así le tocaba.	SI	NO
Yo pienso que si a una persona le da cáncer, esa persona se va a morir pronto.	SI	NO

Yo pienso que si le da cáncer a una persona, ese es el modo en cual le tocaba morirse a esa persona.	SI	NO
Yo pienso que a la gente le da miedo examinarse para el cáncer porque les da miedo que de veras vayan a tener cáncer.	SI	NO
Yo pienso que si a una persona le toca que le de cáncer, le va a dar cáncer.	SI	NO
Yo pienso que algunas personas no quieren saber si tienen cáncer, porque no quieren saber si ya se están muriendo de esa enfermedad.	SI	NO
Yo pienso que si alguien tiene cáncer, no importa si se lo encuentran temprano o tarde, porque de todos modos va a morir de cáncer.	SI	NO
Yo pienso que si alguien tiene cáncer y recibe tratamiento para curarse, de todas maneras se va a morir de esta enfermedad.	SI	NO
Yo pienso que si a una persona le toca que le de cáncer, no importa qué le digan los doctores y enfermeras que haga, de todos modos le va a dar cáncer.	SI	NO
Yo pienso que si a una persona le toca que le de cáncer, no importa si come comidas saludables, pues de todos modos le va a dar cáncer.	SI	NO
Yo pienso que el cáncer matará a una persona no importa cuando lo encuentren o como lo curen.	SI	NO

¿Usted se siente en capacidad de obtener su citología cervical o prueba de Papanicolaou? Por favor valore su grado de confianza mediante el registro de un número desde el 0 al 100, utilizando la escala que se le proporciona en la siguiente tabla. No hay respuestas correctas o incorrectas en este cuestionario, de modo que si usted no está segura o no sabe una respuesta, siéntase en la libertad de responder lo que usted considere.

Preguntas	Absolutamente no puedo hacerlo			Moderadamente puedo hacerlo			Totalmente segura que puedo hacerlo			
	0	10	20	30	40	50	60	70	80	90
¿Qué tan segura está usted de que pueda discutir sobre realizarse una prueba de Papanicolaou con su médico o enfermera, incluso si él/ella no le plantea el tema?										
¿Qué tan segura está usted de que pueda hacer una cita para realizarse una prueba de Papanicolaou y cumplir con esta cita?										
¿Qué tan segura está usted de										

Preguntas	Absolutamente no puedo hacerlo			Moderadamente puedo hacerlo				Totalmente segura que puedo hacerlo			
	0	10	20	30	40	50	60	70	80	90	100
que pueda realizarse una prueba de Papanicolaou, incluso si tuviera que ir a un consultorio o centro de salud diferente o nuevo para usted?											
¿Qué tan segura está usted de que pueda pedirle a su médico o enfermera un referimiento para realizarse la prueba de Papanicolaou?											
¿Qué tan segura está usted de que pueda ir a realizarse su próxima prueba de Papanicolaou?											
¿Qué tan segura está usted de que pueda realizarse la prueba de Papanicolaou, incluso si una amiga la convence de que no lo haga?											
¿Qué tan segura está usted de que pueda realizarse la prueba de Papanicolaou, incluso si tuviera que pagar para que le hagan esta prueba?											

Por favor responda verdadero o falso a los siguientes enunciados. Responda “No se”, cuando no sepa la respuesta:

Enunciados	Verdadero	Falso	No se
El virus del papiloma humano (VPH) puede causar cáncer cervical.			
Si el resultado de la prueba de Papanicolaou de una mujer es normal, ella no tiene el virus del papiloma humano (VPH).			
La prueba de Papanicolaou siempre puede detectar el virus del papiloma humano (VPH)			
El hábito de fumar aumenta la probabilidad de que a una mujer le de cáncer cervical.			
Tener historia familiar de cáncer, aumenta la probabilidad de que a una mujer le de cáncer			

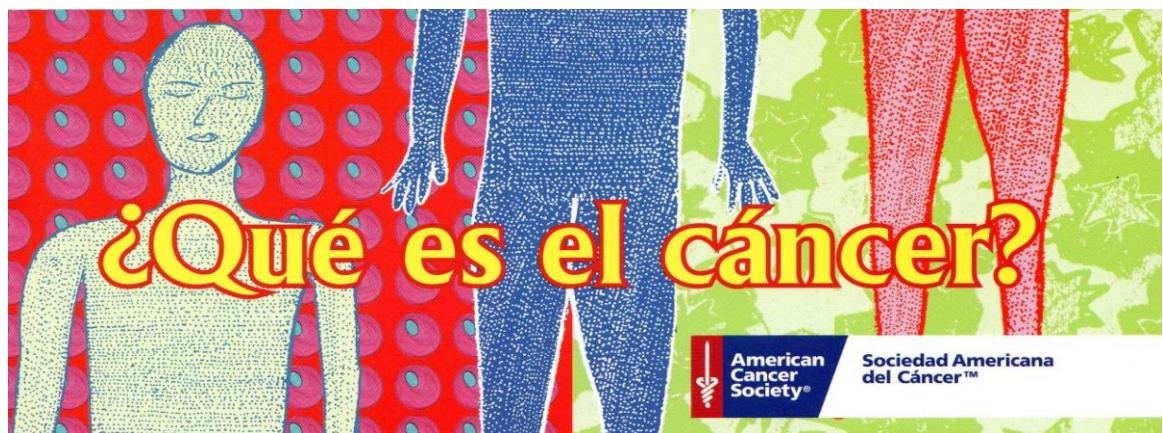
Enunciados	Verdadero	Falso	No se
cervical.			
Tener muchas parejas sexuales aumenta la probabilidad de que a una mujer le de cáncer cervical.			
La prueba de Papanicolaou puede detectar problemas antes de que se conviertan en cáncer.			
Muchas mujeres que tienen cáncer cervical no presentan signos o síntomas aparentes de la enfermedad.			
Las mujeres que pasaron por la menopausia no necesitan realizarse la prueba de Papanicolaou.			
Una mujer debe realizarse la prueba de Papanicolaou por lo menos una vez cada tres años.			

Por favor conteste estas últimas preguntas:

¿Alguna vez le han diagnosticado cáncer? Si <input type="checkbox"/> No <input type="checkbox"/> Si la respuesta es sí, ¿Qué tipo de cáncer?
¿Le han diagnosticado cancer a algun miembro de su familia inmediata (abuelos, padres, tíos/tías, hermanos o hermanas, primos cercanos)? Si <input type="checkbox"/> No <input type="checkbox"/> Si la respuesta es sí, ¿Qué tipo de cáncer?
¿Le han realizado una histerectomía? (cirugía para extirpar o quitar el útero o matriz) Si <input type="checkbox"/> No <input type="checkbox"/> No sé <input type="checkbox"/>
¿Le gustaría apoyar esta investigación reuniendo al interior de su comunidad un grupo de mujeres entre 18 a 65 años, para que completen este cuestionario? Si <input type="checkbox"/> No <input type="checkbox"/> Si su respuesta es sí, por favor registrar sus datos de contacto en una de las tarjetas que le proporcionaremos si nos la solicita. La investigadora principal se comunicará posteriormente con usted para coordinar el encuentro. Esta tarjeta con sus datos personales será guardada bajo llave en un lugar seguro, y será destruida luego de realizado el encuentro.
Este cuestionario fue completado solo por la participante (preguntas no leídas por el facilitador): Si <input type="checkbox"/> No <input type="checkbox"/>

Muchas gracias por su participación!!!!

Appendix C: Educational materials

A vertical collage of nine small photographs of young women's faces, arranged in three columns of three rows.

Virus del papiloma humano (VPH), cáncer del cuello uterino y la vacuna del VPH

Información que necesita saber para usted, su hija y su nieta.

Human Papilloma Virus (HPV), Cervical Cancer, and the HPV Vaccine



American
Cancer
Society®

Sociedad Americana
del Cáncer™

Proteja a sus hijas

Lo que todos los padres deben saber sobre el VPH, el cáncer del cuello uterino y la vacuna del VPH



Protecting Our Daughters

PARA QUE CUMPLAS MUCHOS MÁS.™



Appendix D: Flyer and principal investigator contact information:

English and Spanish Versions

CLEMSON UNIVERSITY
Institute on Family and Neighborhood Life
RESEARCH STUDY

**HEALTH BELIEFS AND SOCIO-CULTURAL FACTORS THAT
PREDICT CERVICAL CANCER SCREENING BEHAVIORS AMONG
HISPANIC WOMEN IN THE UPSTATE OF SOUTH CAROLINA**

The purpose of this study is to examine specific actions and beliefs about cervical cancer and the Papanicolaou (Pap) test among native and foreign born Hispanic women, 18 to 65 years of age, who reside in or near seven conveniently selected cities in Upstate South Carolina.

- You are invited to participate in a research study if you are a Hispanic woman between 18 and 65 years old.
- You will be asked to complete a questionnaire of your beliefs about cervical cancer and the Papanicolaou (Pap) test. This will take about 30 minutes.
- Your participation will allow the researcher to learn about cervical cancer and Pap test beliefs of Hispanic women.

For more information, ask about the study to:

Dr. Arelis Moore de Peralta, the investigator, can be contacted at this phone number, 864-508-1173, Fax: (864) 656-6281
Address: Clemson University's Institute on Family and Neighborhood Life 225 S. Pleasantburg Dr. Suite B-11 Greenville,
SC 29607

Email: arelism@g.clemson.edu

Flyer: Spanish version

CLEMSON UNIVERSITY
Institute on Family and Neighborhood Life
ESTUDIO DE INVESTIGACION

**CREENCIAS DE SALUD Y FACTORES SOCIO-CULTURALES QUE
DETERMINAN EL COMPORTAMIENTO DE LAS MUJERES
HISPANAS DEL UPSTATE DE CAROLINA DEL SUR CON RELACION
A LA PRUEBA DE CITOLOGIA CERVICAL O PAPANICOLAU.**

El propósito de este estudio es examinar las acciones específicas y creencias sobre el cáncer cervical y la prueba de Papanicolaou (Pap) de las mujeres Hispanas de 18 a 65 años de edad, nacidas dentro y fuera de los Estados Unidos y que residen en siete ciudades seleccionadas por conveniencia en el Upstate de Carolina del Sur.

- Usted está invitada a participar en un estudio de investigación si usted es una mujer Hispana/Latina entre los 18 a 65 años de edad.
- Se le pedirá que complete un cuestionario relacionado con sus creencias sobre el cáncer cervical y la prueba de citología cervical o Papanicolaou (Pap). Completar esta encuesta le tomara alrededor de 30 minutos.
- Su participación le permitirá a la investigadora aprender sobre las creencias de las mujeres Hispanas sobre el cáncer cervical y el Papanicolaou.

Para más información, pregunte sobre este estudio a:

Dra. Arelis Moore de Peralta, la investigadora, puede ser contactada en este número de teléfono, 864-508-1173, Fax: (864)
656-6281

Direccion: Clemson University's Institute on Family and Neighborhood Life 225 S. Pleasantburg Dr. Suite B-11 Greenville,
SC 29607

Email: arelism@g.clemson.edu

Principal investigator contact information: English version

CLEMSON UNIVERSITY
RESEARCH STUDY

**HEALTH BELIEFS AND SOCIO-CULTURAL FACTORS THAT
PREDICT CERVICAL CANCER SCREENING BEHAVIORS AMONG
HISPANIC WOMEN IN THE UPSTATE OF SOUTH CAROLINA**

Researcher Contact Information

Arelis Moore de Peralta (864-508-1173 or Fax: 864-656-6281) will gladly answer any questions you may have concerning the purpose, procedures, and outcome of this project. You could also send written communication to 225 S. Pleasantburg Dr. Suite B-11 Greenville, SC 29607.

You can also contact the principal investigator, Dr. Bonnie Holaday, at 864-656-6288. For written communications: Institute on Family and Neighborhood Life, Clemson University, 158 Poole Agricultural Center Clemson, South Carolina 29634-0132

If you have questions about your rights as a research subject you may contact the Office of Research Compliance at Clemson University, at 864-656-3311; Fax: 864-656-4475. For written communications: 223 Brackett Hall, Box 345704, Clemson, SC 29634-5704

Principal investigator contact information: Spanish version

CLEMSON UNIVERSITY
ESTUDIO DE INVESTIGACION

**CREENCIAS DE SALUD Y FACTORES SOCIO-CULTURALES QUE
DETERMINAN EL COMPORTAMIENTO DE LAS MUJERES
HISPANAS DEL UPSTATE DE CAROLINA DEL SUR CON RELACION
A LA PRUEBA DE CITOLOGIA CERVICAL O PAPANICOLAU.**

Información de Contacto de las Investigadoras

Arelis Moore de Peralta (864-250-4666 o Fax: 864-250-4633) contestará encantada cualquier pregunta que pueda tener con relación al propósito, procedimientos, y resultados esperados de esta investigación. Usted puede también enviar una comunicación escrita al 225 S. Pleasantburg Dr. Suite B-11 Greenville, SC 29607.

Usted puede también contactar a la investigadora principal, Dr. Bonnie Holaday, al 864-656-6288. Para comunicaciones escritas: Institute on Family and Neighborhood Life, Clemson University, 158 Poole Agricultural Center Clemson, South Carolina 29634-0132

Si tiene cualquier pregunta sobre sus derechos como participante de esta investigación pude contactar Office of Research Compliance (Oficina para el Cumplimiento de las Investigaciones) de Clemson University, al 864-656-3311; Fax: 864-656-4475. Para comunicaciones escritas: 223 Brackett Hall, Box 345704, Clemson, SC 29634-5704

Appendix E: Oral consent: English and Spanish Versions

English Version

Clemson University
Institute on Family and Neighborhood Life
ORAL CONSENT FORM: Statement of Research Purposes

Title of Project: Health beliefs and socio-cultural factors that predict cervical cancer screening behaviors among native and foreign born Hispanic women in seven cities in the Upstate of South Carolina.

Principal Investigator: Bonnie Holaday, Institute on Family and Neighborhood Life, Clemson University
158 Poole & Agricultural Building, Clemson University, Clemson, SC 29631 USA. Phone: 864-656-6288

Explanation of Research Project:

I am conducting a research project as a PhD candidate of Institute of Family and Neighborhood Life, Clemson University, Clemson, SC. The name of research project is “Health beliefs and socio-cultural factors that predict cervical cancer screening behaviors among native and foreign born Hispanic women in seven cities in the Upstate of South Carolina.” The purpose of my study is to examine specific actions and beliefs relative to cervical cancer and screening for cancer among native and foreign born Hispanic women, 18 to 65 years of age. During my research, I will ask Hispanic women to self-complete a questionnaire to learn about their perceptions related to cervical cancer and screening; their compliance with cervical cancer screening guidelines; their knowledge about cervical cancer, and culturally-based beliefs and attitudes common among Hispanics.

We have chosen to talk to you, since you are a Hispanic woman between the ages 18 and 65 years. You will receive no personal benefit from being part of the study, except educational material about cervical cancer and screening, and a lapel pin from the South Carolina Cancer Alliance as a token of appreciation for your time. This study may benefit society by teaching us about the beliefs that foreign and native born Hispanic women have about cervical cancer and the Pap smear test. The results of this study may be used to develop interventions to increase the rate of cervical screening among U.S. Hispanics. It will take about 30 minutes of your time to complete the questions.

We have a set of questions that we would like to ask you. These questions are about socio-demographic aspects (i.e. age, marital status, where were you born, etc.), socio-economic aspects (i.e. income and educational level), your Papanicolaou (Pap) test history, language use, ways that you interact with your family, beliefs, attitudes and knowledge about Pap test and cervical cancer. We do not anticipate that you will experience any discomfort from taking part of this study. You may skip any question if you do not wish to answer, and you may stop at any time.

If you agree to participate in the study, the researcher will ask you to answer a 123 item questionnaire about beliefs and attitudes about cervical cancer and Papanicolaou test, as well as demographic and socio-economic items. We will do everything we can to protect your privacy. Your answers will be confidential. Your name will not appear in any document. The questionnaire will be identified through a number, which will be assigned on the questionnaire that you will receive. It will not be possible to link your name to the questionnaire. Your identity will not be revealed in any publication that may result from this study. The questionnaires will be secured in the researcher's office, in a locked cabinet.

Your participation in this study is voluntary. You are free to refuse to participate in this study and you can withdraw from the study at any time. Your withdrawal or lack of participation will not affect the treatment you are receiving at this organization that allowed us to meet with you for this study, and even though you withdraw you will still receive the gift.

Do you have any questions about the project [ACTION: No Rush. Wait for at least 10 seconds.] ?

If you want to talk to anyone about this research project, I am leaving you the contact information of the principal investigator for this study. [ACTION: A flyer stating the researcher's name, affiliation, address, telephone and fax numbers, and email address will be provided at this time.] You will also receive a copy of this informational letter.

If you agree to be in this study, please let us know by saying yes and remaining in your seat. If you do not want to be part of the study, please let us know by raising your hand and dismissing yourself. Please have a seat in the next available room until those who agreed finish completing the questionnaire.

[If answered yes and remained seated] Thank you for your agreement in participating in this study. Next, we would like you to complete this questionnaire.

Name and Signature of Investigator

Place Date and Time

Action required: Signed copies of this consent form by the data collectors must be retained on file by the Principal Investigator (PI) to retain proof that this consent was read to the participants and the oral consent procedure was undertook.

Spanish Version

<p>Clemson University Institute on Family and Neighborhood Life FORMULARIO DE CONSENTIMIENTO VERBAL: Enunciado sobre los propósitos de la investigación</p>
<p>Titulo del Proyecto: Creencias de salud y factores socio-culturales que determinan el comportamiento de las mujeres Hispanas del Upstate de Carolina del Sur con relación a la prueba de citología cervical o Papanicolaou.</p> <p>Investigadora Principal: Bonnie Holaday, Institute on Family and Neighborhood Life, Clemson University 158 Poole & Agricultural Building, Clemson University, Clemson, SC 29631 USA. Phone: 864-656-6288</p>
<p>Explicación del Proyecto de Investigación:</p> <p>Estoy realizando un proyecto de investigación para obtener un doctorado (PhD) del Institute on Family and Neighborhood Life, de la Universidad de Clemson, Clemson, SC. El nombre del proyecto de investigación es “Creencias de salud y factores socio-culturales que determinan el comportamiento de las mujeres Hispanas del Upstate de Carolina del Sur con relación al cáncer cervical (cáncer del cuello del útero) y la prueba de citología cervical o Papanicolaou.” El propósito de mi estudio es examinar las acciones específicas y creencias relacionadas con el cáncer cervical (cáncer del cuello del útero) y la prueba de Papanicolaou (Pap) en las mujeres Hispanas de 18 a 65 años de edad, nacidas dentro y fuera de los Estados Unidos. Durante mi estudio, les pediré a las mujeres Hispanas que completen por sí mismas un cuestionario para poder aprender sobre sus creencias relacionadas con el cáncer cervical (cáncer del cuello del útero) y la prueba de Pap, su nivel de cumplimiento con las normas de la Prueba de Pap, su conocimiento sobre el cáncer cervical, y creencias culturales y actitudes comunes entre los Hispanos.</p> <p>Hemos seleccionado el hablar con usted, ya que usted es una mujer Hispana entre los 18 y 65 años de edad. Usted no recibirá ningún beneficio personal por ser parte de este estudio, excepto materiales educativos sobre el cáncer cervical y la prueba de Papanicolaou de la Sociedad Americana del Cáncer, y un botón de la Alianza contra el Cáncer de Carolina del Sur, como una muestra de agradecimiento por haber ofrecido su tiempo al estudio. Este estudio podría beneficiar a la sociedad a través de enseñarnos sobre las creencias que poseen las mujeres Hispanas sobre el cáncer cervical y la prueba de Papanicolaou. Los resultados de este estudio podrían ser utilizados para desarrollar intervenciones y programas para aumentar la tasa de cumplimiento de la prueba de Papanicolaou en las mujeres Hispanas de los Estados Unidos. Le tomara aproximadamente 30 minutos completar las preguntas del cuestionario.</p> <p>Tenemos una serie de preguntas que quisiéramos hacerle. Estas preguntas son sobre aspectos socio-demográficos (Eje. edad, estado civil, en qué país nació, etc.), aspectos socio-económicos (Eje. Ingreso familiar, y nivel educativo), su historial con la prueba de Papanicolaou (Pap), el idioma que utiliza, las formas en las que interactúa con su familia, creencias, actitudes y conocimientos sobre la prueba de Papanicolaou y el cáncer cervical (cáncer del cuello del útero). No podemos predecir si usted va a experimentar algún grado de incomodidad por formar parte de este estudio. Usted puede dejar de contestar cualquier pregunta si no desea hacerlo, y de la misma manera, puede parar de completar este cuestionario en el momento que así lo considere.</p>

Si usted acepta participar en este estudio, la investigadora le va a pedir responder un cuestionario con 123 preguntas sobre sus creencias y actitudes hacia el cáncer cervical y la prueba de Papanicolaou; así como también preguntas sobre aspectos socio-económicos y demográficos. Haremos todo lo posible por proteger su privacidad. Sus respuestas serán confidenciales. Su nombre no aparecerá en el cuestionario ni en ningún otro documento. El cuestionario será identificado solo a través de un número que le será colocado antes de que usted lo reciba. No será posible relacionar su nombre con el cuestionario, ya que su nombre no aparecerá en ningún lugar. Su identidad no será revelada en ninguna publicación sobre los resultados de esta investigación. Los cuestionarios serán almacenados en un gabinete cerrado con llave en la oficina de la investigadora principal.

Su participación en este estudio es voluntaria. Siéntase libre de negarse a participar en este estudio y usted puede también retirarse del estudio en cualquier momento. El retirarse del estudio o su falta de participación no afectara el trato que usted recibe en esta organización, la cual nos ha permitido reunirnos con usted para este estudio, y aun usted decida retirarse del estudio mientras este completando el cuestionario recibirá los materiales educativos y el regalo.

Tiene preguntas sobre el proyecto [ACCION: No se desespere. Espere por lo menos 10 segundos.] ?

Si desea hablar con alguien sobre este proyecto, yo le dejare una hoja con la información de contacto de la investigadora principal de este estudio. [ACCION: Entregar el volante que contiene la siguiente información de la investigadora: nombre, institución, dirección, números de teléfono y fax, y la dirección de correo electrónico.] Usted también recibirá una copia de este formulario de consentimiento verbal.

Si usted está de acuerdo en participar en este estudio, por favor déjenoslo saber al decir que “Si” y permaneciendo en su asiento. Si usted no quiere participar en el estudio, por favor déjenoslo saber al levantar su mano. Usted puede elegir entre permanecer en su asiento o pasar a otro salón disponible en tanto se completa el proceso de llenado del cuestionario. **[Si contesta que si y permanecieron en sus asientos]** Gracias por aceptar participar en este estudio. A continuación, nos gustaría que completara el cuestionario.

Dra. Arelis Moore
Nombre y firma de la investigadora

Lugar y Fecha

Acción requerida: La investigadora principal conservará una copia firmada por la investigadora a cargo como evidencia de que el consentimiento verbal fue leído a las participantes. Todas las participantes deberán recibir una copia de este formulario de consentimiento firmada por la investigadora.

Appendix F: Data collectors confidentiality agreement

CLEMSON UNIVERSITY
Institute on Family and Neighborhood Life
RESEARCH STUDY

**HEALTH BELIEFS AND SOCIO-CULTURAL FACTORS THAT
PREDICT CERVICAL CANCER SCREENING BEHAVIORS
AMONG HISPANIC WOMEN IN THE UPSTATE OF SOUTH
CAROLINA**

I _____ hereby certify that, as a research team member, I will not share or disclosure any information or data related with the above mentioned study, or its participants to anyone, without exceptions.

Signature: _____

Date: _____

Appendix G: Study variables; sources of items and scales

SC Upstate Hispanic women cervical cancer and screening beliefs; Sources of items and scales

Item #	Construct	Description	Scoring	Source
1 – 13	Socio - Demographic and Socio-economic Characteristics	A series of single item measures of the characteristics of the sample.	Nominal dichotomous: Current or recent pregnancy; language preferred to complete questionnaire; Nominal Multichotomous: Marital Status, born in the US; country of birth; availability of regular source of care; availability of health insurance Numerical continuous: age; length of residence in the U.S. Ordinal: Income; education	The Kaiser Family Foundation and the Pew Hispanic Center (2002) survey; Parents and Neighbors study (2008)
14.1 – 14.4	Cervical cancer screening history	Last time the participant got a Pap test	Analyzed as single items, questions 14.1 – 14.4 will be used to determine if the woman had her Pap test: ever, last 3 years, last 2 years and last year.	Fernandez-Esquer, et al., 2003.
15.1 – 15.24	Degree of acculturation	The answers to the 12 items that measure each cultural domain (Hispanic and non-Hispanic) were used to define the level of acculturation of the respondent. Also, a score of 2.5 was used as a cutoff score to indicate low or high level of adherence to each cultural domain.	The 24 items (12 for each cultural domain) were averaged across items for each respondent. The Hispanic domain (items 4 through 6, 13 through 18, and 22 through 24) The non-Hispanic domain (items 1 through 3, 7 through 12, and 19 through 21). The possible total score range was from 1 to 4 for each cultural domain. Higher scores indicated higher degree of acculturation. Also a score above 2.5 in both cultural domains was interpreted as indicating biculturalism on the part of the respondent.	Marin & Gamba, 1996
16.1 – 16.18	Familism	The answers to the items that measures each subscale were used to define the level of familism upheld by the participant.	The AFS comprises four subscales: Familial Support (Items 1, 4, 5, 6, 11, and 16), Familial Interconnectedness (Items 2, 3, 6, 8, 9, and 10), Familial Honor (5, 7, 12, 13, and 14), and Subjugation of Self for Family (Items 5, 10, 12, 15, 17, and 18). Higher values expressed higher levels of familistic attitudes	Lugo-Steidel & Contreras, 2003

Item #	Construct	Description	Scoring	Source
17.1 – 17.28	Cervical cancer and screening beliefs	The CPC-28 scale (Beliefs, Papanicolaou, Cancer – 28/"Creencias, Papanicolaou, Cancer – 28") measures participants' beliefs about cervical cancer and screening in accordance to the Health Belief Model.	In this study we used 5 domains of women's beliefs about cervical cancer and screening from the CPC-28: barriers (C14, C18, C26, C23, C25, C17, C3, C22, C24), cues to action (C5 – C8), severity (A27 – A30), susceptibility (B2 – B4; B8 – B10), and benefits (A20, C1, A1). Items B8, B9 and B10 of the susceptibility domain, and all the items from the benefits and severity were re-coded. Higher values expressed higher level of the specific belief.	Urrutia, 2009
18.1 – 18.15	Cervical cancer fatalism	The Spanish and culturally adapted version of the Powe Fatalism Inventory (SPFI) measures fatalism beliefs of the participants. Lopez-McKee and colleagues (2007) translated the original 15 item PFI (Powe, 1995) to provide a valid Spanish Language measure of cancer fatalism.	The SPFI has the following four factors: predestination (items 1 to 6), pessimism (items 7 to 11), imminent death (items 12 and 13), and fear (items 14 and 15). Higher values expressed higher level of fatalistic beliefs.	Lopez-McKee and colleagues, 2007
19.1 – 19.8	Self-Efficacy	The Cervical Cancer Screening Self-Efficacy Scale (CCSSE) developed by Fernandez and colleagues (2009) was used to measure fatalistic beliefs of the participants. CCSSE has a single-factor solution and all 7 items loadings were >0.73.	The strength of efficacy beliefs were computed on a 100-point scale, ranging in 10-unit intervals from 0 ("Cannot do"); through intermediate degrees of assurance, 50 ("Moderately certain can do"); to complete assurance, 100 ("Highly certain can do"). Self-efficacy scores are obtained by adding the items; thus, high scores indicate high self-efficacy.	Fernandez, Diamond, Rakowski, et al., 2009.
20.1 – 20.10	Cervical cancer knowledge	The cervical cancer knowledge was developed for this study, as an adaptation of knowledge items from Lopez & McMahan (2007) and Brealow, Sorkin, Frey, & Kessler (1997).	The scale includes 10 items. Responses were dichotomous: true or false. Items 1 – 3 were related with Knowledge on HPV and its role on cervical cancer; items 4 – 6 corresponded to risk factors associated with cervical cancer ; items 7 and 8 were related with usefulness of the Pap test and manifestations of cervical cancer; and items 9 and 10 corresponded to cervical cancer screening guidelines.	Developed for this study

Appendix H: Author's consent to use their measurement instruments in this study

Urrutia's consent to use the CPC-28 Scale

FW: Urrutia Soto dissertation

1 message

Bonnie Holaday <HOLADAY@clemson.edu>
To: "arelism@g.clemson.edu" <arelism@g.clemson.edu>

Wed, Sep 22, 2010 at 1:35 PM

-----Original Message-----

From: Hall, Rosemary Fedrigon [mailto:rhall@miami.edu]
Sent: Monday, September 20, 2010 9:34 AM
To: Bonnie Holaday
Cc: murrutis@uc.cl; Hall, Rosemary Fedrigon
Subject: RE: Urrutia Soto dissertation

Hello Professor Holaday,

I have heard from Dr. Urrutia and she will be emailing you regarding the request. She said she does give permission for your student to use the instrument and to cite the dissertation. Dr. Urrutia's email is murrutis@uc.cl<mailto:murrutis@uc.cl>

Thank you.

Rosemary F. Hall, PhD, RN, MSN, BSN
Associate Professor of Nursing
University of Miami School of Nursing and Health Studies
Coral Gables, FL 33146

From: Bonnie Holaday [HOLADAY@clemson.edu]
Sent: Thursday, September 16, 2010 8:05 PM
To: Hall, Rosemary Fedrigon
Subject: RE: Urrutia Soto dissertation

Thanks so much.

From: Hall, Rosemary Fedrigon [rhall@miami.edu]
Sent: Thursday, September 16, 2010 12:22 PM
To: Bonnie Holaday
Subject: RE: Urrutia Soto dissertation

Hello Professor Holladay,

I am looking into your question and will get back to you.
Regards,
Rosemary F. Hall, PhD, RN, MSN, BSN
Associate Professor of Nursing

From: Bonnie Holaday [mailto:HOLADAY@clemson.edu]
Sent: Thursday, September 16, 2010 11:37 AM
To: Hall, Rosemary Fedrigon
Subject: Urrutia Soto dissertation

Dear Dr. Hall,

I am advising a student(Arelis Peralta Moore) whose dissertation will examine cervical cancer screening and Hispanic women in South Carolina. She is using the Helath Belief Model as her theoretical framework. She is interested in using the instrument developed by Maria Teresa Urrutia Soto. Do you know if she has published the results of her research? Do you know how we can reach her to obtain her permission to use

Fernandez' consent to allow us to use the Cervical Cancer Screening Self-efficacy Scale

Self-efficacy scale

4 messages

Arelis Moore <arelism@g.clemson.edu>
To: Maria.E.Fernandez@uth.tmc.edu

Wed, Oct 6, 2010 at 10:35 AM

Dear Dr. Fernandez:

I'm an international student, from the Dominican Republic, pursuing my PhD on International Family and Community Studies at Clemson University, SC. I'm currently conducting my dissertation on "Predictors of cervical cancer screening among Hispanics in the SC Upstate: Application of the Health Belief Model" (including Self-Efficacy). I have a particular interest on exploring how selected cultural values (fatalism, familism and acculturation) influence Hispanic women's perceptions on cervical cancer screening.

I read your very interesting article, published in 2009, titled "Development and Validation of a Cervical Cancer Screening Self-Efficacy Scale for Low-Income Mexican American Women". Due to time limitations, I'm trying to choose and adapt adequate instruments for my study, rather than developing new ones. Particularly, instruments that have been already adapted to and tested with U.S. Hispanics. The Hispanic population at SC Upstate, where the study will be conducted, is predominantly of Mexican origin (~65%). I would like to kindly ask you and your colleagues to allow me to use for my study your Cervical Cancer Screening Self-Efficacy Scale, both English and Spanish versions. I will absolutely acknowledge your authorship as responsible for developing and testing this instrument. Please let me know your thoughts about it, as well as, how should I proceed to formally submit this request,

Thanks so much in advance,

--
Arelis Moore de Peralta, MD, MPH, MEd
International Family and Community Studies, PhDc
Research Assistant
Clemson University/IFNL
225 S. Pleasantburg Dr. Suite B-11
Greenville, SC 29607
Office: 864-250-4666
Cell: 864-508-1173
arelism@g.clemson.edu

Fernandez, Maria E <Maria.E.Fernandez@uth.tmc.edu>
To: Arelis Moore <arelism@g.clemson.edu>
Cc: "Carmack, Chakema C" <Chakema.C.Carmack@uth.tmc.edu>

Thu, Dec 9, 2010 at 6:28 AM

Yes, of course you can use it as long as it is appropriately referenced. Do you need the Spanish

<https://mail.google.com/a/g.clemson.edu/?ui=2&ik=70e9131fab&view=pt&search=inbox&th=12b81f855b5c65...> 12/9/2010

language version? Chakema- please send.

Marin and Gamba's consent to allow using the BAS (1996)

From Gerardo Marin marin@usfca.edu

To Arelis Moore <arelism@g.clemson.edu>

cc "rgamba@ccsf.edu" <rgamba@ccsf.edu>

dateSun, Mar 20, 2011 at 9:34 PM

subjectRe: BAS scale

You have my permission to use the scale. Good luck

Gerardo Marin Ph.D.

Vice Provost

University of San Francisco

2130 Fulton St

San Francisco CA 94117

+1 415 422 2199

Lugo-Steidel and Contreras' consent to use the AFS

From GRAU, JOSEFINA jgrau@kent.edu

To Arelis Moore <arelism@g.clemson.edu>

dateThu, Mar 24, 2011 at 4:14 PM

subjectRE: AFS

Dear Arelis,

You are welcome to use the scale. Here are the Spanish and English versions. Good luck with your research. We would like to hear about your findings.

Josefina

Josefina M. Grau

Associate Professor

Department of Psychology

Kent State University

Kent, OH 44242

Office: 330 672 3106 Fax: 330 672 3786jgrau@kent.edu

Lopez-McKee's consent to use the SPFI Scale

McKee, Gloria <gmckee@utep.edu>
To: Arelis Moore <arelism@g.clemson.edu>

Mon, Sep 20, 2010 at 3:13 PM

Dear Arelis,

Thank you for your interest in using the Spanish Powe Fatalism Inventory (SPFI) with women from the Dominican Republic. I think it will be great to be able to compare your findings with those from using this instrument with 'Mexican-American' women. I'm sending you a copy of the SPFI with this email.

I would like to ask you if it would be possible for your dissertation chair to write a letter for me, stating how the use of the SPFI will help your dissertation research? I am getting my materials ready for tenure, and I need letters from different researchers who have used or are planning to use the SPFI, so that I can place them in my tenure portfolio. Do you think this would be possible? If so, would you please ask her/him to please either send this letter to me at the address below, or to please send me a PDF copy of the letter by email at gmckee@utep.edu. This will be extremely helpful to me.

Thank you,

Gloria Lopez-McKee, Ph.D., R.N.

Clemson University Mail - Powe Fatalism Inventory

Page 3 of 7

The University of Texas at El Paso School of Nursing
1101 N. Campbell Street
El Paso, Texas 79902

From: Arelis Moore [mailto:arelism@g.clemson.edu]
Sent: Saturday, September 18, 2010 10:46 AM
To: McKee, Gloria
Subject: Powe Fatalism Inventory

[Quoted text hidden]

 SPFI culturally adapted.doc
48K

Appendix I: Permission to reproduce and/or modified HBM tables and figures

Campbell, Brenton - Hoboken

From: Goldweber, Paulette - Hoboken on behalf of Permissions - US
Sent: Tuesday, March 15, 2011 10:44 AM
To: Campbell, Brenton - Hoboken
Subject: FW: Republication/Electronic Request Form

Categories: Permissions

Thesis request.

Paulette Goldweber
Associate Manager, Permissions
Global Rights
John Wiley & Sons, Inc.
ph: 201-748-8765
f: 201-748-6008
pgoldweb@wiley.com

-----Original Message-----

From: PermissionsUS@wiley.com on www.wiley.com [mailto:webmaster@wiley.com]
Sent: Tuesday, March 15, 2011 11:24 AM
To: Permissions - US
Subject: Republication/Electronic Request Form

A01_First_Name: Arelis
A02_Last_Name: Moore de Peralta
A03_Company_Name: Clemson University
A04_Address: 225 S. Pleasantburg Dr Suite B-11
A05_City: Greenville
A06_State: SC
A07_Zip: 29607
A08_Country: United States
A09_Contact_Phone_Number: (864) 508-1173
A10_Fax: (864) 250-4633
A11_Emails: arelism@g.clemson.edu
A12_Reference:
A13_Book_Title: Health Behavior and Health Education: Theory, Research and Practice
A40_Book_or_Journal: Book
A14_Book_Author: Glanz, Rimer, & Marcus Lewis
A15_Book_ISBN: 0-7879-5715-1
A16_Journal_Month:
A17_Journal_Year:
A18_Journal_Volume:
A19_Journal_Issue_Number:
A20_Copy_Pages: Page 49; Table 3.1
A21_Maximum_Copies: Dissertation
A22_Your_Publisher: Clemson University
A23_Your_Title: Dissertation Title: HEALTH BELIEFS AND SOCIO-CULTURAL FACTORS THAT PREDICT CERVICAL CANCER SCREENING BEHAVIORS AMONG HISPANIC WOMEN IN SEVEN CITIES IN THE UPSTATE OF SOUTH CAROLINA
A24_Publication_Date: June 2011- Clemson University Web
A25_Format: Intranet
A41_Ebook_Reader_Type:
A26_If_WWW_URL:

PERMISSION GRANTED

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Campbell, Brenton - Hoboken

From: Goldweber, Paulette - Hoboken on behalf of Permissions - US
Sent: Thursday, March 17, 2011 9:56 AM
To: Campbell, Brenton - Hoboken
Subject: FW: Republication/Electronic Request Form

Categories: Permissions

Hi Brent - one for you!

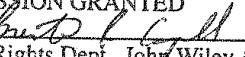
Thanks.

Paulette Goldweber
Associate Manager, Permissions
Global Rights
John Wiley & Sons, Inc.
ph: 201-748-8765
f: 201-748-6008
pgoldweb@wiley.com

-----Original Message-----

From: PermissionsUS@wiley.com on www.wiley.com [mailto:webmaster@wiley.com]
Sent: Wednesday, March 16, 2011 8:45 PM
To: Permissions - US
Subject: Republication/Electronic Request Form

A01_First_Name: Arelis
A02_Last_Name: Moore de Peralta
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Appendix J: Clemson University's Institutional Review Board Approval

From: Nalinee Patin <NPATIN@clemson.edu>
Date: Mon, Nov 15, 2010 at 11:33 AM
Subject: Validation of IRB Protocol #2010-307: Health Beliefs and Socio-Cultural Factors...
To: Bonnie Holaday <HOLADAY@clemson.edu>, Arelis Moore <arelism@g.clemson.edu>

Dear Drs. Holaday and Moore,

The chair of the Clemson University Institutional Review Board (IRB) validated the protocol identified above using exempt review procedures and a determination was made on **November 15, 2010**, that the proposed activities involving human participants qualify as **Exempt** from continuing review under Category **B2**, based on the Federal Regulations (45 CFR 46). This exemption is valid for all organizations with research site letters on file with the IRB.

You may not begin this study because we currently do not have any research site letters on file. However, as we receive the research site letters, you may begin collecting data at those sites.

Please remember that the IRB will have to review all changes to this research protocol before initiation. You are obligated to report any unanticipated problems involving risks to subjects, complications, and/or any adverse events to the ORC immediately.

We also ask that you notify the ORC when your study is complete or if terminated.

Please review the Responsibilities of Principal Investigators (available at <http://www.clemson.edu/research/compliance/irb/regulations.html>) and the Responsibilities of Research Team Members (available at <http://www.clemson.edu/research/compliance/irb/regulations.html>) and be sure these documents are distributed to all appropriate parties.

Please let us know if you have any questions and use the IRB number and title in all communications regarding this study. Good luck with your study.

All the best,

Nalinee D. Patin
IRB Coordinator
Clemson University
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Appendix K: Variables Transformation Procedures

Variables transformation for statistical analysis in the Study about Cervical Cancer Screening Behaviors among S.C. Upstate Hispanic Women, March 2011

Variable	Procedure	Categories	
		From	to
Age	Compute	Continuous	1 = Less than 29 2 = 30-49 3 = 50-69 4 = missing
Marital Status	Recode	single married partnered separated divorced widow	1 = single 2 = married and partnered 3 = separated/divorced/widow 4 = missing
Country of Birth	Compute	Mexico Guatemala, Costa Rica, El Salvador, Honduras, Nicaragua, Panama Colombia, Ecuador, Peru, Uruguay, Venezuela Cuba and Dominican Republic USA	1 = Mexico 2 = Central America 3 = South America 4 = Caribbean 5 = USA
Length of residence in the U.S.	Compute	Continuous	1 = Less than 5 2 = 6 to 10 3 = 11 to 14 4 = more than 15 9 = missing

Variable	Procedure	Categories	
		From	to
English Proficiency	Recode	Speak English poor, Speak English very poorly	1 = Speak English poor to very poorly
		Speak English well, Speak English very well	2 = Speak English well to very well
Income	Recode	less than \$5,000, \$5,000-\$9,999	1 = \$10,000 or less
		\$10,000-\$14,999, \$15,000 - \$19,999	2 = \$10,001 to \$19,999
		\$20,000 - \$29,999, \$30,000 - \$39,999	3 = \$20,001 to \$39,999
		\$40,000 - \$49,999, \$50,000 or more	4 = More than \$40,001
		missing	9 = missing
		I never went to school, Up to 4th grade, Up to 8th grade, Some high school but I did not graduate	1 = less than high school
Educational Level	Recode	High school graduate, GED	2 = high school or GED
		Business, technical, or vocational school after high school	3 = vocational/technical
		Some college, no 4-year degree	4 = some college
		College graduate	5 = college degree
		Post-graduate training or professional schooling not graduated, Post-graduate training or professional schooling after college	6 = graduate studies or master degree
		missing	9 = missing
		I have Medicaid, Medicare, CHIPS, or other public program, I have health insurance or are covered by an HMO or preferred provider plan	1 = insurance
Availability of Health Insurance	Recode	I pay for it myself or a relative, Hospital financial assistance, Free, Other	2 = un-insurance
		missing	9 = missing

Variable	Procedure	Categories	
		From	to
Regular Medical Care	Recode	A private physician or group practice where we see the same doctor each time, A group practice where we may see the same doctor each time, A hospital outpatient department or clinic, A clinic not connected with a hospital, Free Clinic	1 = regular medical care
		I do not go for regular medical care, Hospital Emergency Room	2 = not regular medical care
Cervical Cancer Screening history	Count	Have you ever had a Pap test?, Have you had a Pap test within the past three years?, Have you had a Pap test within the past 2 years?, Have you had a Pap test within the last year?	0 = never had 1 = At least once in my life 2 = At least once in the past 3 years 3 = Twice in the last 3 years 4 = Every year in the last three years
Perceived Benefits	Rank	Scale	1 = Low 2 = Moderately Low 3 = Moderately High 4 = High
Perceived Barriers	Rank	Scale	1 = Low 2 = Moderately Low 3 = Moderately High 4 = High
Perceived Threats (susceptibility + severity)	Rank	Scale	1 = Low 2 = Moderately Low 3 = Moderately High 4 = High

Variable	Procedure	Categories	
		From	to
Perceived Self-efficacy	Rank	Scale	1 = Low 2 = Moderately Low 3 = Moderately High 4 = High