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Religiosity/Spirituality and Cancer Risk Assessment for Hereditary Breast and Ovarian Cancer: Latina and non-Latina women in New Mexico

Belinda Vicuna Tellez

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**RELIGIOSITY/SPIRITUALITY AND CANCER RISK ASSESSMENT FOR
HEREDITARY BREAST AND OVARIAN CANCER:
LATINA AND NON-LATINA WOMEN IN NEW MEXICO**

BY

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DISSERTATION

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Psychology

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Albuquerque, New Mexico

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DEDICATION

para mi madre Mxima A. Vicuna

por su amor, su devocin, su sacrificio, y su fortaleza

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ABSTRACT

Introduction: Although cancer risk assessment for high-risk individuals and families can offer life-saving information and options for cancer risk management, Latinas have historically underutilized cancer prevention services. Much needed is a better understanding of what encourages and discourages engagement in cancer risk assessment services among Latino populations. Religiosity/spirituality is potentially relevant to such engagement given religion has often been a central coping resource for Latina cancer survivors.

Aim: This study explored the potential impact of religiosity/spirituality and psychological processes on how Latinas and non-Latinas approach decisions regarding preventative health behaviors.

Methods: As a small subset of a larger research project, a total of 49 women participated in a mixed-methods, two-part study. Participants were all females who had a personal history of breast cancer, were at increased risk for hereditary breast cancer, but had not received any cancer risk assessment counseling or genetic testing. In the first phase of this larger study, focus group participants ($n = 13$) offered their thoughts on how religion/spirituality impacts decisions to get cancer risk assessment. In the second phase, a different group of participants ($n = 36$) who were about to receive a pilot intervention to promote cancer risk assessment were asked about their religiosity, cancer worry, perceptions of cancer risk, and intentions for cancer risk assessment in a baseline survey conducted over the phone. Both quantitative and qualitative data were analyzed.

Results: Religion was significantly more salient for Latina women than for non-Latina women. Controlling for religious salience, Latina women had significantly lower intentions for cancer risk assessment. For Latina women, religious salience was negatively associated with intentions for cancer risk assessment, while for non-Latina women, it was positively associated, although this contrast was non-significant statistically. For women considering themselves at low risk for hereditary breast cancer, religious salience was negatively associated with intentions for cancer risk assessment, but for women considering themselves at high risk, religious salience was positively associated with intentions. However, this contrast was also non-significant.

Conclusion: This study offers mixed-methods evidence for the relevance and potential impact of religiosity on coping with cancer risk among Latina and non-Latina women, which can inform public health interventions. For those who consider religiosity/spirituality a salient and defining influence in their lives, encouraging positive and active religious coping to frame risk perceptions and to cope with cancer risk could be a promising approach to increase motivation for cancer risk assessment.

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Chapter 1

Introduction

Advancing health equity is a top priority of public health efforts (American Public Health Association, 2018). The persistence of cancer health disparities has encouraged cancer control and prevention efforts to consider how the burden of cancer among vulnerable, underserved communities can be alleviated. Specifically, Latina women, relative to other women in the U.S., are more frequently diagnosed with advanced, more aggressive, less curable breast cancer, and are less likely to become breast cancer survivors (L. Chen & Li, 2015; Kish, Yu, Percy-Laurry, & Altekruise, 2014; Polacek, Ramos, & Ferrer, 2007).

Hereditary Breast and Ovarian Cancer (HBOC) Syndrome accounts for up to 10% of all breast cancer cases (Claus, Schildkraut, Thompson, & Risch, 1996). With a confirmed genetic mutation (*BRCA1/2*), the risk for breast cancer increases up to 85% and the risk for ovarian cancer increases up to 63% (King, Marks, Mandell, & Group, 2003). Therefore, cancer can be a very real threat to many women and their families, especially to vulnerable populations at increased risk and lacking access to cancer prevention resources. While cancer risk assessment for high-risk individuals and families is the standard of care (Daly, Pilarski, & Berry, 2018), underserved communities and ethnic minorities have encountered barriers in accessing and utilizing cancer genetic risk services (M. Hall & Olopade, 2005; Johnston Polacek, Ramos, & Ferrer, 2007; Olaya et al., 2009; Pagán, Su, Li, Armstrong, & Asch, 2009; Suther, 2009). Ethnic minorities encounter a multitude of barriers to cancer risk assessment services, primarily due to a lack of awareness of genetic counseling and/or genetic testing (Armstrong, Micco, Carney, Stopfer, & Putt, 2005; W. Chen et al., 2002; M. Hall & Olopade, 2005; Ramirez, Aparicio-Ting, de Majors, & Miller, 2006). Cancer risk assessment has been an indispensable tool for cancer control and prevention because it provides avenues for primary prevention, early detection, and risk management (Nelson et al., 2014). However, among Latino populations, utilization of BRCA genetic counseling or testing has remained low (W. Chen et al., 2002; M. J. Hall et al., 2009; Ricker et al., 2006).

With the rise of the use of genomics in cancer prevention, research attention has been directed at identifying the most influential psychological, individual-level factors that determine patterns of uptake of genetic services. The most influential psychosocial factors that have been associated with cancer risk assessment engagement have been subjective perceptions of one's risk for cancer and cancer-related worry (Hopwood, Shenton, Lalloo, Evans, & Howell, 2001; Lerman, Seay, Balshem, & Audrain, 1995). These emotional and cognitive processes have been shown to be key motivators promoting health behaviors and strongly related to intentions to use breast cancer preventative screening (see Cameron & Reeve, 2006 for review). Such individual perspectives and beliefs about one's own risk for cancer can impact whether or not an individual even considers cancer risk assessment (Hopwood, 2000; Hopwood, Howell, Lalloo, & Evans, 2003; Hopwood et al., 2001; Lerman, Daly, Masny, & Balshem, 1994). These personal perceptions, along with the associated emotional and cognitive processes, may be influenced by cultural values and socioeconomic factors. The individual context is important, because psychological processes involved in decision-making for cancer risk assessment might be dependent on one's coping resources and personal beliefs about control over one's health.

Religiosity has proven to have salubrious effects on physical and psychological well-being (Koenig, 2015; Miller & Thoresen, 2003; Salsman, Fitchett, Merluzzi, Sherman, & Park, 2015). Historically, Latinos have demonstrated high religious commitment and religion has claimed a central position within their culture and ethnic identity (Funk & Martinez, 2014). Among Latinos, religion or spirituality has been cited as one the main pathways to coping with illness, particularly with the experience of cancer (Campesino, Belyea, & Schwartz, 2009; Hunter-Hernández, Costas-Muñíz, & Gany, 2015; Jurkowski, Kurlanska, & Ramos, 2010). Further, faith is interconnected with family and community among Latinos (Campesino et al., 2009). In promoting the health and well-being of Latinos, spirituality should be considered because it is an important component in defining and understanding health (Mendelson, 2002). Spirituality might play a significant role in determining how individuals interpret and respond to the threat of cancer, as it may provide a framework for coping with the uncertainty and fear elicited by cancer (White, 2009). Therefore, there is a need to explore and better

understand how spirituality might be a relevant influence within the context of cancer risk assessment and cancer prevention, especially among Latino populations who have been shown to be highly religiously committed.

Genetic counseling is now being challenged to provide risk communication that is culturally relevant (Wang, 2001; Weil & Mittman, 1993). Practitioners are striving to provide quality genetic counseling that aligns with culturally-relevant, value-congruent risk communication. The significance of spirituality within the context of cancer risk assessment has received little attention (Quillin, McClish, Jones, Burruss, & Bodurtha, 2006; Reis, Baumiller, Scrivener, Yager, & Warren, 2007), but for ethnic minorities, it could play a central role in decisions about cancer risk assessment. It is vital to further explore what significance spirituality may have in shaping the social and the individual-level contexts which promote or hinder cancer risk assessment access and engagement.

In light of the burden of breast cancer among Latina women in the U.S., the disparity in access to cancer risk assessment, the prominence of spirituality among Latinos, and the paucity of research on spirituality and cancer risk assessment, this study explored the significance of spirituality/religiosity in how Latina women at high risk for hereditary breast cancer approach cancer risk assessment. The motivation for this research originated from three key opportunities. First, although cancer risk assessment for high-risk individuals and families is the standard of care, because Latinas have historically underutilized cancer prevention services, a better understanding of barriers to genetic testing for cancer susceptibility is important. Second, evidence shows that engagement in cancer risk assessment is highly influenced by two main psychological factors (cognitive and emotional processes) (Cameron & Diefenbach, 2001; Cameron & Reeve, 2006; Lerman et al., 1994; Lerman et al., 1995). It is not clear how these processes of perceived risk and cancer worry interact with other personal and cultural influences such as religion and spirituality. Third, because the relevance of spirituality within the context of cancer risk assessment is largely uncharted research territory, there is an opportunity to explore how spirituality might impact initial decision-making about cancer risk assessment and consequent engagement with cancer risk assessment services. Acknowledging that spirituality and religion have been a prominent

source of coping and resilience among Latinos, this study explored the significance of spirituality in how high-risk Latina women approach cancer risk assessment in hopes of helping to inform public health cancer prevention interventions.

This research represents the intersection of these opportunities and investigated the overall influence of spirituality/religiosity on intentions for genetic counseling. Also, this research examined the potential impact of spirituality/religiosity on perceptions of risk and cancer-related worry, and how these factors are related to intentions toward cancer risk assessment. Ultimately, this research may inform culturally relevant interventions to promote and facilitate access to genetic counseling and genetic testing for hereditary breast cancer among underserved Latino populations.

Current Study Aims & Hypotheses

This study is a preliminary exploration of the impact of religiosity/spirituality on initial intentions to receive cancer risk assessment among women at increased risk for hereditary cancer. This research is innovative because it can speak to the intersection of ethnicity, spirituality, psychological factors, and intentions for cancer risk assessment.

This research is guided by three general aims: (1) to examine the potential role of religious salience on intentions to seek cancer risk assessment, comparing Latinas to non-Latina women; (2) to identify the potential impact that religious salience may have on perceptions of risk and cancer-related worry and how this might influence intentions to get cancer risk assessment; and (3) to explore the various roles of religiosity/spirituality in facilitating or impeding decisions to seek cancer risk assessment. These aims raise certain research questions, each of which has led to specific hypotheses. The preliminary hypotheses build up to the main hypotheses, the investigation of which represents the novel contribution of this research.

Aim 1: Examine whether Latina and non-Latina high-risk women differ in how religious salience influences intentions to seek cancer risk assessment. Motivating this aim are a few critical issues and opportunities. Disparities in access to and uptake of cancer genetics services between Latinos and the general population are one of the main priorities of cancer prevention efforts. In order to improve access, it is necessary to better understand how key resiliency resources among Latinos matter for cancer prevention. Because Latinos, across various cultural groups, share a common high religious commitment, spirituality or religious values/beliefs might be a significant factor in forming attitudes and perceptions toward cancer risk assessment among high-risk Latina women in New Mexico. The impact of spirituality may be different for Latinas as compared to non-Latina women, and, if so, this would provide insight into how Latina women approach cancer risk assessment decisions.

Aim 1 Hypotheses:

- 1a.** Latina women will have higher levels of spirituality/religiosity as measured by religious salience, compared to non-Latina women (Ashing-Giwa et al., 2006; Campesino et al., 2009; Hunter-Hernández et al., 2015; Juarez et al., 2013; Jurkowski et al., 2010; Wildes, Miller, de Majors, & Ramirez, 2009).
- 1b.** Religious salience is expected to be negatively related to intentions to pursue cancer risk assessment (Botoseneanu et al., 2011; Churchill, 2009; Fanning & Clayton, 2009; Schwartz et al., 2000; White, 2009).

Main Hypothesis 1: The relationship between religious salience and intentions to get cancer risk assessment will be stronger for Latinas than for non-Latina women, such that religious salience will be more negatively related to intentions to get cancer risk assessment for Latina women than for other women.

Aim 2: Explore how religious salience impacts perceived risk and cancer worry for hereditary cancer and what is the consequent influence on intentions to seek cancer risk assessment. Motivating this aim are some crucial factors regarding psychological influences on positive cancer preventative behavior. Perceptions of risk and cancer-related worry and fear have emerged as the main cognitive and emotion-based predictors of interest in genetic counseling and uptake of cancer genetics services. These rationally oriented and emotionally laden processes determine an individual's response to a health threat and as such can motivate behavior to reduce cancer risk. These psychological motivators of behavior can be influenced by personal values and beliefs. Religious coping may play an important role in assessing one's risk and dealing with cancer worry, as spirituality can be a source of comfort or strength to cope with adversity. Religious coping or religious salience might influence how perceived risk and cancer worry impact intentions to seek cancer risk assessment or perceptions of cancer risk assessment.

Aim 2 Hypotheses:

- 2a.** Cancer worry (Cameron & Reeve, 2006; Durfy et al., 1999; Hopwood et al., 2001; Jaggi et al., 2015; Lerman et al., 1994; Lerman et al., 1995; Wang et al., 2007) and perceived risk (Cameron & Reeve, 2006; Haas et al., 2005; Hopwood et al., 2001; Katapodi, Lee, Facione, & Dodd, 2004; Kim et al., 2008; McCaul et al., 1996) will be positively related to intentions to get cancer risk assessment.
- 2b.** Religious salience will be negatively related to breast cancer worry and perceived risk for breast cancer (Quillin et al., 2006; Thune-Boyle, Stygall, Keshtgar, & Newman, 2006; White, 2009; Yanez et al., 2009).

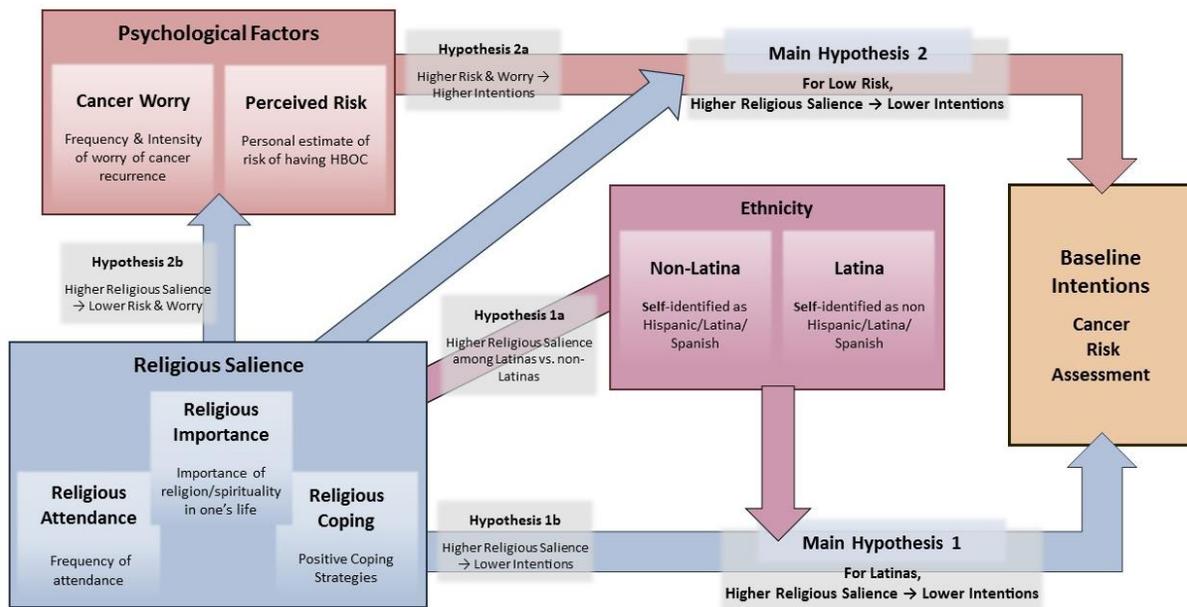
Main Hypothesis 2: Based on Schwartz (2000), an interaction between perceived risk and religious salience in determining intentions to get cancer risk assessment will be explored. Specifically, for high perceived risk, religious salience is expected to be unrelated to intentions, but for low perceived risk, religious salience is expected to be negatively related to intentions.

Aim 3: Describe how religiosity/spirituality might serve as a facilitator and/or a barrier to cancer risk assessment. The motivation for this aim is the desire to take a broad and general approach to exploring how religious salience might influence perspectives of cancer risk assessment, decisions regarding cancer risk assessment, and intentions to get or reject cancer risk assessment. How religious salience and/or coping might encourage or discourage cancer risk assessment engagement will be explored. The qualitative data from the focus group study will be used to gain foundational insights, which may guide interpretation and understanding of results from further quantitative analyses.

Conceptual Model

The relationships among the main predictors and outcome variable may be depicted in a diagram of the conceptual model underlying the current research. Figure 1 below portrays schematically the first two main hypotheses and their sub hypotheses.

Figure 1. The Role of Religious Salience in Intentions for Cancer Risk Assessment among High-Risk Women in New Mexico



Chapter 2

Method

This study was part of a larger study called the Genetic Risk Assessment for Cancer Education Empowerment (GRACE) study conducted at the University of New Mexico (UNM) Comprehensive Cancer Center. This larger study included focus groups and a randomized, three-arm pilot intervention trial. The focus-group study was completed in the winter of 2015-2016 and the intervention study was completed fall-spring 2016-2017. The current research study utilized the qualitative and quantitative data from the focus groups and the baseline quantitative assessment data from the pilot intervention of the GRACE study.

For the purposes of this paper, the term “Latina” will be used as an overarching term to refer to women who identify ethnically as Latina or Hispanic.

Larger Mixed Methods Study: The GRACE Study

The GRACE study involved key formative research that occurred in two phases. The initial phase of the GRACE study included three focus groups conducted with breast cancer survivors. One focus group was with non-Latina women, another with English-speaking Latina women, and the third with Spanish-speaking Latina women.

The second phase of the GRACE study utilized a different set of participants from the focus-group study and was a pilot intervention study which investigated a personalized intervention intended to motivate and equip high-risk women to get genetic testing. Participants of the intervention trial were randomized to one of three groups. The first group was the usual care (control) group. In the second group participants received mailed print educational materials (brochure). In the third group, participants received a mailed brochure as well as a personal telephone counseling and navigation session with a health coach. In the counseling session, participants explored reasons for getting/not getting cancer risk assessment, attempted to resolve decisional conflict, and developed their own action plans for seeking cancer risk assessment. Participants also received a tailored follow-up letter, including a summary of their

over-the-phone counseling session with their health coach. All participants completed a telephone survey at baseline (prior to intervention), and at one month and six months after receiving the intervention.

Current Study

The current research is a small subset of the two-part larger study. The present study employed a mixed-method design, as data relevant to this study came from both the focus group and pilot intervention studies. Qualitative data for this study came from focus group discussions and the quantitative data came from the pilot intervention study. Although there was some quantitative data collected from the focus groups, the primary hypotheses of this study were evaluated utilizing only the quantitative data from pilot intervention study. The current study employed a cross-sectional survey design, as data for this study were collected from one point in time (baseline) from the focus group and intervention studies. In the larger focus group study, aspects of religiosity/spirituality were assessed in the questionnaires administered before and after the focus group discussion. Also, in the focus group discussion, participants were asked about their perspectives on how religion or spirituality might influence their decisions to get cancer risk assessment. In the larger pilot intervention study, religious salience was assessed in the baseline survey. Although the larger study focused on assessing the feasibility of conducting the interventions and had several time points of assessment, this dissertation study only utilized data from the baseline survey and its focus is on how religiosity/spirituality impacts intentions to get cancer risk assessment. Thus, from the larger GRACE study, the current study utilized specific quantitative and qualitative data relevant to the aims and hypotheses of this dissertation.

Study Population

All participants from both the focus group and intervention portions of the GRACE study were also the study sample for the current study. As in the larger GRACE study, the study population was high-risk Latina and non-Latina women residing in New Mexico. GRACE study focus group participants were breast and ovarian cancer survivors at increased risk for hereditary breast and ovarian cancer who had not received genetic counseling or cancer risk assessment. Eligibility criteria for “increased risk” included an early diagnosis of breast cancer (under age 50), triple-negative breast cancer, or two or more

breast cancer diagnoses, and having no prior genetic counseling or testing. Women who participated in the focus groups were recruited with the collaboration of UNM Cancer Center's breast oncologists. Focus groups participants were also recruited by newspaper ads and through community-based organizations and programs that serve cancer patients and survivors. A total of thirteen women participated, six non-Hispanic women in the first focus group, three Hispanic women in the second focus group, and four Spanish-speaking, Hispanic women in the third focus group.

Pilot intervention study participants in the GRACE study were also high-risk Latina and non-Latina women residing in New Mexico. Participants were recruited utilizing the New Mexico Tumor Registry, which identified potentially eligible women. The New Mexico Tumor Registry is the state's cancer surveillance program which is conducted in accordance with standards set by the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program. All participants had a personal history of breast cancer and in order to be eligible for the study, they were screened to determine if they were indeed at increased risk. As in the focus group study, eligibility criteria for "increased risk" in the intervention study included: diagnosed with breast cancer under age 50 or with triple-negative breast cancer, or have had two or more breast cancer diagnoses. Exclusionary criteria included: having had genetic counseling or testing for HBOC, no telephone access, and not English-fluent. Therefore, women with a previous, suspected high-risk breast cancer diagnosis, who had not yet received genetic counseling or testing, were eligible to participate in this intervention trial.

Power analyses for study sample. Power analyses were conducted utilizing effect sizes found in previous research that looked at the relationship between religiosity and uptake of genetic counseling services (Schwartz et al., 2000) and the relationship between religiosity and ethnicity using data from General Social Survey (Vicuna, 2012). From Schwartz's finding of a weak to moderate relationship between religiosity and uptake of genetic testing for cancer ($r = 0.2$), it is estimated with a sample size of thirty-six that we will have 22% power to detect a significant relationship at an alpha level of .05. Similarly, for the small effect size found in the relationship between ethnicity (Latinas and non-Latina Whites) and religiosity in a national sample of adult women (Cohen's $d = 0.2557$), a total sample size of

thirty-six results in less than 15% power to detect such an effect. To achieve 80% power to detect this projected effect size, a sample size of two hundred and forty per group would be needed. Because the statistical power of the current study is so low, although significance tests will be reported, primary attention will be given to effect size measures and the direction of observed relationships between variables.

Measures

Sociodemographics & healthcare characteristics. Basic sociodemographic information was collected from each individual. This included age, ethnicity, educational attainment, income, marital status, and native-born or foreign-born status. Characteristics of participants' healthcare were assessed as well, such as health insurance coverage. Participants were asked about their experiences and interactions with health care providers concerning HBOC and cancer risk assessment. There was one item concerning awareness of genetic testing for HBOC, "Had you heard about HBOC genetic testing (e.g., BRCA1/2) prior to being contacted for this study?" Three items assessed previous clinical experiences with health care providers, specifically asking if a health care provider had ever: (1) "discussed your and/or your family's risk for HBOC?" (2) "recommended that you get cancer risk assessment for HBOC," and (3) "referred you to HBOC genetic testing (e.g., BRCA1/2) prior to being contacted for this study?" Responses were either "yes," "no," or "don't know." Also, participants' knowledge about genetic risk was assessed using the National Center for Human Genome Research Knowledge scale (Lerman et al., 1996, 1997), originally an 11-item, true/false scale that was recently revised to include five additional items relevant to breast cancer survivors (Scherr, Christie, & Vadaparampil, 2016). Scores on these 16 items were summed and an average score for HBOC knowledge was computed.

Religious preference. For focus group participants, current religious preference was assessed using one item, "What is your current religious preference?" Response options were: "Roman Catholic," "Protestant," "other Christian (non-specific)," "Mormon," "Jewish," "Buddhist," "none," or "Other, please explain." Religious preference was not assessed for participants of the intervention study.

Strength of affiliation. For focus group participants, the strength of self-reported religious affiliation was assessed using one item, “If you specified a religious preference, how strongly do you identify with that preference?” Response categories were “very strongly,” “strongly,” “not very strongly,” and “no religion.”

Influence of religion. For focus group participants, the influence their religion or spirituality might have on their decisions to get genetic counseling or testing was assessed. During the focus group discussion, participants were asked “How does religion or spirituality play a role in decisions to get genetic counseling?” After the focus group discussion, participants were also asked, “Would your religion/spirituality/faith influence your decision to get genetic testing?”; responses were either “yes” or “no” with the option of providing an explanation. Both quantitative and qualitative data were available for evaluating religiosity’s influence on decisions to seek cancer risk assessment.

Religious attendance. For focus groups participants, religious attendance was assessed using one item, “How often do you attend religious services?” Responses were on a nine-point scale: “never,” “less than once a year,” “once a year,” “several times a year,” “once a month,” “2-3 times a month,” “nearly every week,” “every week,” or “several times a week.” In the intervention study religious attendance was assessed using the same item but responses were on a six-point scale, from “more than once a week,” “once a week,” “once or twice a month,” “a few times a year,” “seldom,” or “never.” The revised response categories are used in the U.S. Religious Landscape Survey (Pew Research Center, 2014)

Religious commitment. The degree to which individuals identify with their religion or spirituality can be considered an indicator of religious commitment. For focus groups participants, the extent to which participants identify as religious or spiritual was measured by two items used in the General Social Survey (2014). The items were, “To what extent do you consider yourself a religious person?” and “To what extent do you consider yourself a spiritual person?” Responses were on a four-point scale from “very religious/spiritual,” “moderately religious/spiritual,” “slightly religious/spiritual,” to “not religious/spiritual at all.”

Religious importance. The importance of religion in the participant's life was measured in a few different ways. Focus groups participants were asked a question about the importance of their religiosity/spirituality with the following item, "When it comes to your religion/spirituality/faith, how important is this in your life?" Response options were on a 4-point scale from "very important," "important," "fairly important," to "not very important", with the option of providing an explanation. For intervention study participants, religious importance was assessed using one item from the U.S. Religious Landscape Survey (2014), "How important is religion in your life?" Response options were on a four-point scale from "very important," "somewhat important," "not too important," to "not at all important."

Religious coping. To assess whether religion or spirituality might play a role in how breast and ovarian cancer survivors face major negative life events, various positive religious coping strategies were assessed in the intervention study. Pargament and colleagues (2000) have described how the functions of religion are linked with various coping strategies enlisted. Comfort-oriented religious coping reflects the comfort that religion provides by connecting with a force that goes beyond the individual (Pargament et al., 2000). Meaning-oriented religious coping reflects the role of religion in the search for meaning behind devastating situations (Pargament et al., 2000). Control-oriented religious coping reflects the role that religion plays in the search for control. When one is threatened with a loss of control, religion might provide avenues to regain a sense of control (Pargament et al., 2000). These are all examples of positive religious coping, utilizing religion or spirituality to re-gain control, search for meaning, and seek comfort, which are all reflective of a secure relationship with the divine (Hebert, Zdaniuk, Schulz, & Scheier, 2009). In the intervention study, positive religious coping was assessed using two items from the Brief RCOPE (Pargament, Feuille, & Burdzy, 2011; Pargament et al., 2000). The two items selected from the Brief RCOPE were: "I've looked for a stronger connection with God" and "I've tried to see how God might be trying to strengthen me in this situation." Response options were on a four-point scale: "not at all," "somewhat," "quite a bit," or "a great deal." Two items from the Brief COPE (Carver, 1997) were also selected: "I've been trying to find comfort in my religion or spiritual beliefs" and "I've been praying

or meditating.” Response options were on a four-point scale: “I haven’t been doing this at all,” “I have been doing this a little bit,” “I have been doing this a medium amount,” and “I have been doing this a lot.”

Religious salience. Religious salience concerns the behavioral consequences of religious beliefs or the overall relevance of one’s religious or spiritual beliefs in one’s life. To operationalize religious salience, three dimensions of religiosity and spirituality were utilized to create an overall religious salience variable. From the intervention study, religious attendance, religion importance, and religious coping variables were combined to compose an overall religious salience variable. From the focus group study, religious attendance, religious commitment, and religious importance variables were combined to compose an overall religious salience variable.

Perceived cancer risk. Self-defined likelihood of having a genetic mutation that increases the risk of breast or ovarian cancer was assessed using the Risk Behavior Diagnosis Scale (Boonyasiriwat et al., 2014; Kinney et al., 2014; Witte, 1996). The original scale (Witte, 1996) was revised to fit within the context of the health threat being HBOC and the recommended response as cancer risk assessment. This scale has been used in previous studies that utilized health risk messages to promote risk management and cancer preventative behavior (Boonyasiriwat et al., 2014; Kinney, Boonyasiriwat, et al., 2014). This eighteen-item scale measures participants’ perceptions of risk for hereditary cancer, as well as their perceptions of the severity of hereditary cancer, efficacy of cancer risk assessment, and self-efficacy for being able to get cancer risk assessment. Participants were asked to rate their own risk for hereditary cancer and perceptions of risk for their family members. The item concerning the participant’s personal risk was “Compared with other women your age, what are your chances of having a gene mutation for hereditary breast and ovarian cancer?” and responses ranged from “much lower,” “lower,” “the same,” “higher,” to “much higher.” The item concerning the participant’s family’s risk was, “How likely is it that one of your close biological relatives has inherited a gene mutation for hereditary breast and ovarian cancer?” and responses ranged from “not at all likely,” “somewhat likely,” “moderately likely,” “likely,” and “definitely.” From the Risk Behavior Diagnosis Scale, the section on perceived risk included four items: “I am at risk for getting HBOC,” “It is possible that I will get HBOC,” “I am susceptible to getting

HBOC,” and “It is likely that I will get HBOC.” Responses were on a five-point Likert agreement scale: “strongly disagree,” “disagree,” “neither agree nor disagree,” “agree,” or “strongly agree.”

Cancer worry. Worry and fear regarding hereditary cancer were assessed using the McCaul Brief Worry Scale (Jensen, Bernat, Davis, & Yale, 2010). This is a three-item worry scale created to measure two important dimensions of worry: intensity and frequency. The first item measures frequency of worry: “During the past week, how often have you worried about getting breast cancer (again) sometime in your lifetime?” and responses are on a five-point scale, “never,” “rarely,” “sometimes,” “often,” or “all of the time.” The last two items measure intensity of worry: “How bothered are you by thinking about getting breast[ovarian] cancer (again)?” and “How worried are you about getting breast cancer (again)?” and responses are on a five-point scale, “not at all,” “somewhat,” “moderately,” “a great deal,” or “extremely.”

Intentions. A primary outcome for the current dissertation is intention to receive cancer risk assessment at the beginning of the study (baseline) prior to any intervention. Intentions to seek genetic counseling or testing have been widely studied when exploring why uptake of genetic counseling and testing is lower than expected among at-risk populations (Durfy et al., 1999; Graves, Peshkin, Luta, Tuong, & Schwartz, 2011; Kinney et al., 2001; Lerman et al., 1995; Ramirez et al., 2006; Ramirez et al., 2002; Sussner et al., 2010; Vadaparampil et al., 2011). Intentions have been cited as valid proxies for behavioral outcomes (Sniehotta, Scholz, & Schwarzer, 2005). As an indicator of future uptake of genetic counseling and/or testing, intentions to get cancer risk assessment were assessed using one item. For the intervention study only, at baseline, participants were asked, “How likely do you think it is that you will get [cancer risk assessment] for HBOC within the next 6 months?” Response options were on a five-point scale from “not at all likely,” “not likely,” “neither likely nor unlikely,” “likely,” to “extremely likely.”

Another relevant outcome is interest in cancer risk assessment services. Focus group participants were asked, “How interested are you in speaking with a cancer risk specialist...?”. Response options were on a five-point scale from “very uninterested,” “somewhat uninterested,” “neutral,” “somewhat interested,” and “very interested.” Intervention study participants were asked, “How interested are you in

getting [cancer risk assessment] for HBOC?” Response options were on a five-point scale from, “definitely not interested,” “probably not interested,” “neither interested, nor uninterested,” “probably interested,” and “definitely interested.”

For an overall measure of interest/intentions, the two variables of interest and intentions were summed to create the new variable called interest/intentions total (values ranging from 2 – 10), as the main outcome variable used for analyses.

Data Analyses

Analyses comparing means by *t* tests were used to test the hypotheses that Hispanic women would have greater religiosity and/or religious coping than non-Hispanic women. To assess relationships between the main predictor and outcome variables, correlational analyses using Pearson correlation coefficients were used to assess the strength and direction of relationships between religious salience and intentions to get cancer risk assessment, religious salience and perceived risk, and religious salience with cancer worry.

The first main hypothesis analyses assessed if the relationship between religious salience and intentions to get cancer risk assessment differed by ethnicity, that is, whether ethnicity and religious salience interacted such that the relationship between religious salience and intentions was more strongly negative for Latinas than for others. Thus the test of most interest was the test of heterogeneity of regression in analyses of covariance, which assessed whether the regression of intentions on religious salience was different for Latinas as opposed to others.

The second main hypothesis assessed whether religious salience interacted with cancer risk such that the relationship between religious salience and intentions was negative for lower perceived cancer risk/worry. As one aspect of assessing the second main hypothesis, a hierarchical regression analyses was used to test how psychological factors of risk and worry correlate with intentions to get cancer risk assessment. To test the predicted interaction of perceived risk and religious salience in determining intentions, perceived risk was dichotomized and the interaction tested via a test of heterogeneity of regression in analysis of covariance. These analyses were all regarded as exploratory; because of low

power with the projected sample size, significant results were not expected. In the following Results section, effect size measures are reported and varying signs of correlations across different subgroups are noted. Exploratory qualitative analyses were also done to extract common themes from the qualitative data gathered from the focus group study.

Chapter 3

Results

Quantitative Results

The findings utilizing the second part of the GRACE study (pilot intervention) will be reported first. The data obtained from the GRACE study Intervention originated from the baseline survey administered to study participants. Analyses conducted utilizing these data were solely quantitative.

Recruitment of GRACE study intervention participants. The NM Tumor Registry released 462 names of women potentially eligible for GRACE study personnel to contact and screen for eligibility. The NM Tumor Registry did preliminary screening of these women to identify those most likely to be eligible to participate. This included screening women for inclusion who were high-risk for HBOC (early or triple negative breast cancer diagnosis or more than one breast cancer diagnosis). Since there was an attempt to oversample Latina participants, it was necessary to have available an indication of each woman's ethnicity. The NM Tumor Registry utilized a well-established algorithm to identify women as "Hispanic" based on their last name. There were fourteen names that were eventually retracted, as some names should not have been released and/or the individual's ethnicity was unknown, resulting in a total of 448 women potentially eligible to participate. GRACE Study personnel contacted 286 women to screen for eligibility, but were not able to reach 162 women (unable to contact). Of the 286 women that were contacted, 109 were determined to be ineligible and 133 declined to participate prior to their eligibility having been determined. Overall, 44 women were determined eligible to participate, but eight of these women declined to participate. Thus, in the end, 36 eligible women participated and completed the baseline survey.

Most women ($n = 21$) met eligibility criteria for being high-risk for HBOC due to being diagnosed with breast cancer (BC) under 50 years of age and not meeting other criteria for high risk, with 13 of these women being non-Latina and 8 being Latina. Additionally, some women met eligibility by only having been diagnosed with triple negative breast cancer ($n = 2$; 1 non-Latina and 1 Latina) or by only having had more than one breast cancer diagnosis ($n = 3$; 1 non-Latina and 2 Latina). Five Latina

women were classified as high risk due to having two primary BC tumors diagnosed at the same time, and thus were judged to be similar to those diagnosed with BC two or more times. Further, five women met more than one of these eligibility criteria for being high risk for HBOC. One non-Latina woman reported having been diagnosed with triple negative breast cancer under age 50, three women (2 non-Latina and 1 Latina) reported having been diagnosed with breast cancer more than once under age 50, and one non-Latina women reported having been diagnosed with triple negative breast cancer and diagnosed more than once. The categories of reasons for high-risk for the eligible participants are depicted in Table 1, broken down by self-reported ethnicity.

Table 1. Categories of Reasons for High-Risk among Eligible GRACE Intervention Participants (n = 36)

	Diagnosed with Breast Cancer...						
	A <50 years old exclusively	B Triple Negative Breast Cancer exclusively	C 2+ times exclusively	A & B	A & C	B & C	Other
Non-Latina	13	1	1	1	2	1	0
Latina	8	1	2	0	1	0	5
Total	21	2	3	1	3	1	5

Note. The “Other” reasons for being classified as high risk refers to participants who had 2 primary BC tumors diagnosed at the same time and who thus were judged to be similarly high risk to those diagnosed 2 or more times.

In summary, about 20.3% of all those determined to be eligible completed the baseline phone survey (cooperation rate) and 10.6% of all those eligible and potentially eligible (including women that could not be contacted) completed the baseline survey (response rate).

Characteristics of study sample: GRACE study intervention. Table 2 presents details on the characteristics of the study sample, overall and by ethnicity. In total, thirty-six women participated in the GRACE Pilot Intervention, of which 47% (n = 17) were Latina and 53% (n = 19) were non-Latina. Most

of these women were born in the U.S. (86%), but there were a few women not born in the U.S. (14%) and ethnicity did not make much of a difference in place of birth (15.8% of non-Latinas vs. 11.8% of Latinas were foreign-born).

Socioeconomically, nearly half of participants reported a yearly household income of less than \$50,000 (42%), but 58.8% of Latinas and 26.4% of non-Latinas reported income less than \$50,000. The majority of women (86%) had at least some college education and ethnicity did not make much of a difference (73.7% of non-Latinas vs. 70.6% of Latinas reported some college/college degree). Most non-Latina women (73.7%) were married and most Latina women (58.8%) were not married.

Regarding health insurance coverage, nearly all participants reported having some level of health insurance coverage, with only one Latina participant reporting not having any health insurance at the time. Most women had health insurance coverage through their employer (63%), with a small minority having directly purchased health insurance (8%). A minority (17%) had only Medicaid or Medicare coverage, and a smaller proportion (8%) had state-covered health care coverage or one that is locally provided at University of New Mexico Hospital. Finally, about 17% of participants had a combination of Medicaid/Medicare with other health insurance coverage, with Latina women (24%) more likely to have this type of coverage than non-Latina women (11%). Even though these women were identified to be at increased risk for hereditary breast cancer (HBOC), it was evident that knowledge about HBOC/genetic testing and discussions about HBOC with a provider were not as high as would be expected. Overall, women had an average HBOC knowledge score of 10.90 ($SD = 2.28$, 5 minimum score - 15 maximum score), and non-Latina women ($M = 11.10$, $SD = 1.88$) scored non-significantly higher than Latina women ($M = 10.64$, $SD = 2.79$). While most women had heard about HBOC genetic testing (69%), there was a notable proportion (31%) that had not heard about it. Further, there was an ethnic difference as Latina women (41%) were more likely to not have heard about HBOC genetic testing than non-Latina women (21%). The vast majority of these high-risk women had not: discussed hereditary cancer risk with a provider (78%), been recommended cancer risk assessment (83%), or been referred to genetic testing (89%). Further, Latina women (82%) were more likely to not have had this important discussion with a

provider than non-Latina women (74%) and Latina women (94%) were more likely to not have been referred to genetic testing than non-Latina women (84%).

Table 2. Demographic & Health Care Characteristics of GRACE Study Intervention Participants by Ethnicity

Demographic Characteristics	Overall N = 36		Non-Latina N = 19		Latina N = 17	
	Mean	SD	Mean	SD	Mean	SD
Age	60.33	10.71	58.10	9.14	62.82	12.03
	N	%	N	%	N	%
Nationality						
Foreign-born	5	13.9%	3	15.8%	2	11.8%
U.S. born	31	86.1%	16	84.2%	15	88.2%
Yearly Income						
< \$30,000	11	30.6%	4	21.1%	7	41.2%
\$30,000 - \$49,999	4	11.1%	1	5.3%	3	17.6%
\$50,000 - \$69,999	3	8.3%	1	5.3%	2	11.8%
\$70,000 +	14	38.9%	11	57.9%	3	17.6%
Did not respond	4	11.1%	2	10.5%	2	11.8%
Educational Attainment						
High School or Less	5	14%	2	10.5%	3	17.6%
Some College or College degree	26	72%	14	73.7%	12	70.6%
Post graduate degree	5	14%	3	15.8%	2	11.8%
Marital Status						
Married or Unmarried couple	21	58.3%	14	73.7%	7	41.2%
Single/Divorced/Widowed/Never been married	15	41.7%	5	26.3%	10	58.8%

Table 2 (continued). Demographic & Health Care Characteristics of GRACE Study Intervention Participants by Ethnicity

Health Care Characteristics	Overall N = 36		Non-Latina N = 19		Latina N = 17	
	N	%	N	%	N	%
Health Care Coverage						
Employer provided	23	63.3%	13	68.4%	10	58.8%
Purchased	3	8.3%	1	5.3%	2	11.8%
State-covered or UNM provided	3	8.3%	2	10.5%	1	5.9%
Medicaid/Medicare + Other combination	7	19.4%	3	10.5%	4	23.5%
Only Medicaid/Medicare	6	16.7%	3	15.8%	3	17.6%
Other medical coverage	3	8.3%	2	10.5%	1	5.9%
None	1	2.8%	0	0.0%	1	5.9%
Had heard about HBOC genetic testing						
Yes	25	69.4%	15	78.9%	10	58.8%
No	11	30.6%	4	21.1%	7	41.2%
Discussion about risk for HBOC with Provider						
Yes	8	22.2%	5	26.3%	3	17.6%
No	28	77.8%	14	73.7%	14	82.4%
Recommended CGRA by Provider						
Yes	6	16.7%	3	15.8%	3	17.6%
No	30	83.3%	16	84.2%	14	82.4%
Referred to get HBOC genetic testing						
Yes	4	11.1%	3	15.8%	1	5.9%
No	32	88.9%	16	84.2%	16	94.1%
HBOC Genetic Literacy						
	Mean	SD	Mean	SD	Mean	SD
HBOC Knowledge	10.90	2.28	11.11	1.88	10.64	2.79

Regarding ethnic differences in the sociodemographic characteristics, there were some notable differences. The average age of Latina women ($M = 63$ years old) was older than that of non-Latina women ($M = 60$ years old), but this difference did not approach statistical significance, $t(34) = 1.33, p = .191$. Latina and non-Latina women did differ significantly in their reported yearly household income, as non-Latina women were significantly more likely to report a yearly income of \$70,000+ compared to

Latina women ($\chi^2 = 6.47, p = .011$). Non-Latina women were also significantly less likely to be single (includes divorced, widowed and never married) compared to Latina women ($\chi^2 = 3.90, p = .048$). Latina and non-Latina women did not significantly differ in type of health care coverage.

Hypothesis 1 Results

As part of the first main hypothesis, Latina women were hypothesized to hold higher levels of religiosity/spirituality than non-Latina women. Religious salience was compared between Latina and non-Latina women (see Table 3).

Table 3. Comparison of Means: Religious Salience by Ethnicity

	Religious Attendance					Importance of Religion				
	Mean (SD)	Equality of Variance		Equality of Means		Mean (SD)	Equality of Variance		Equality of Means	
		<i>F</i>	<i>P</i>	<i>t</i> (df)	<i>p</i>		<i>F</i>	<i>p</i>	<i>t</i> (df)	<i>p</i>
Latina	5.06 (1.03)	5.39	0.026	5.92 (32.28)	<0.001	4 (0.00)	63.42	<0.001	3.87 (18)	0.001
non-Latina	2.58 (1.47)					2.89 (1.24)				

	Religious Coping					Overall Religious Salience				
	Mean (SD)	Equality of Variance		Equality of Means		Mean (SD)	Equality of Variance		Equality of Means	
		<i>F</i>	<i>P</i>	<i>t</i> (df)	<i>p</i>		<i>F</i>	<i>p</i>	<i>t</i> (df)	<i>p</i>
Latina	14.83 (1.19)	11.80	0.002	4.90 (21.32)	<0.001	23.88 (1.93)	15.05	<0.001	5.95 (22.33)	<0.001
non-Latina	10 (4.10)					15.47 (5.82)				

Overall, Latina women were significantly more religious/spiritual than non-Latina women, as they consistently rated higher in religious coping, religious attendance, and in the importance of religion. Latina women had higher mean scores across all religious coping items, and were likely to attend religious services at least once a week if not more. Every Latina woman rated her religious faith as very important. Thus, religious salience was more prominent among Latinas as compared to non-Latinas. See Figures 2-4 to observe how participants responded to the main religious variables by ethnicity.

Figure 2. Religious Coping Means by Ethnicity

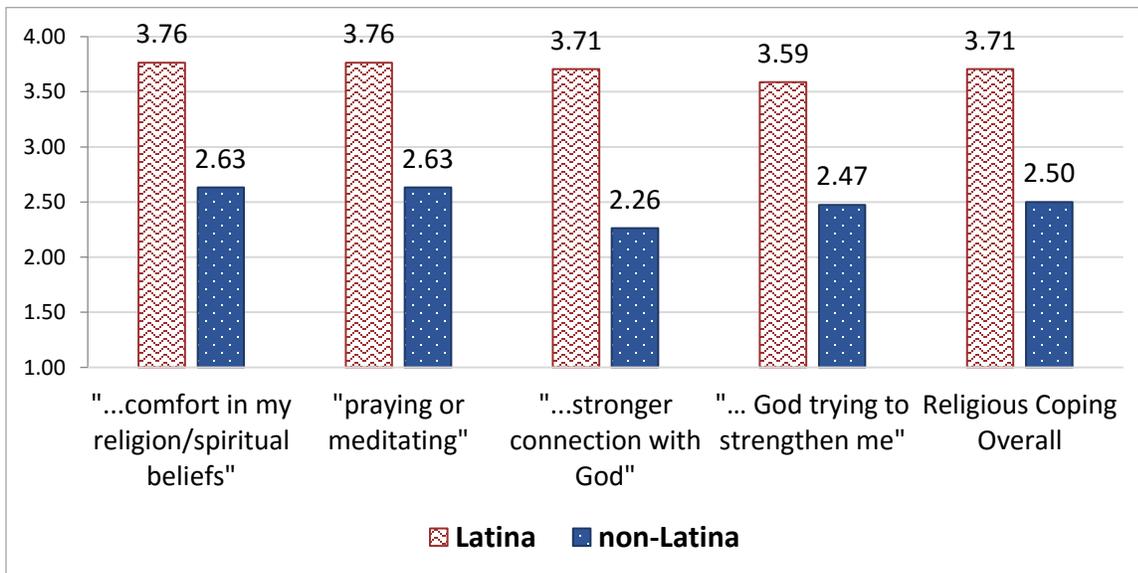


Figure 3. Religious Attendance by Ethnicity

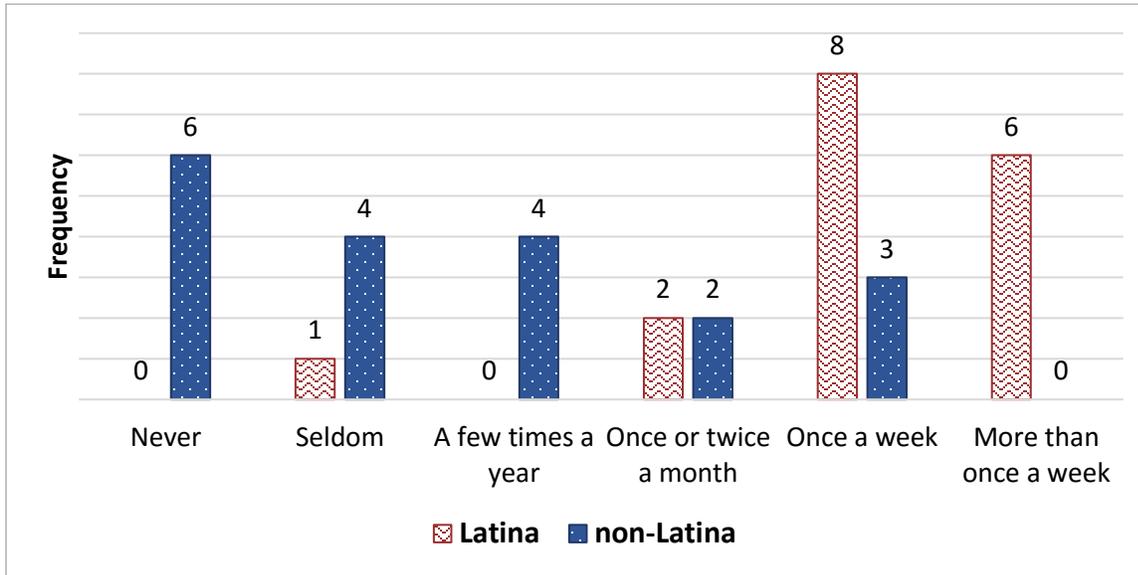
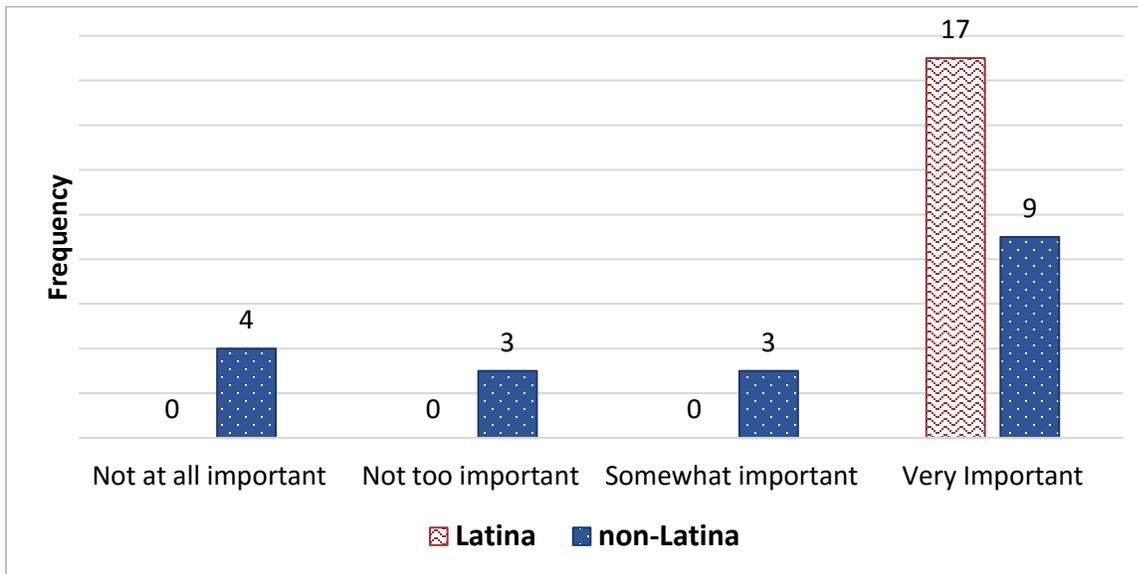


Figure 4. Importance of Religion by Ethnicity



Latina women ($M = 14.83$, $SD = 1.19$) engaged in religious coping to a significantly higher degree than non-Latina women ($M = 10.00$, $SD = 4.10$), $t(21.32) = 4.90$, $p = .002$. Latina women ($M = 5.06$, $SD = 1.02$) also attended religious services significantly more often than non-Latina women ($M = 2.58$, $SD = 1.47$), $t(32.28) = 5.92$, $p < .001$. All Latina women in this sample claimed that religion or

spirituality was very important in their lives. Therefore Latina women ($M = 4, SD = 0$) cited the importance of religion/spirituality in their lives as significantly greater compared to non-Latina women ($M = 2.89, SD = 1.24$), $t(18) = 3.87, p < .001$. Finally, using the sum of the religiosity items as an indication of overall religious salience, religion/spirituality was significantly more salient for Latinas ($M = 23.88, SD = 1.93$) than for non-Latina women ($M = 15.47, SD = 5.81$), $t(22.33) = 5.95, p < .001$. For all four religiosity variables, the test for equality of variance was significant; therefore, tests for equality of means adjusting for heterogeneity of variance were used. Latina women reported much higher levels of religious salience, across all religiosity variables, with little variability.

Regarding the size of these effects, the differences in religious salience across all religiosity variables, were consistently very large effects. The ethnic difference in religious coping ($d = 1.5998$), religious attendance ($d = 1.9591$), religious importance ($d = 1.2629$), and religious salience ($d = 1.9421$) all represented differences greater than one standard deviation (see Table 4).

Table 4. Effect Sizes for Ethnic Differences in Religious Salience

	<i>d</i>	Effect Size
Religious Attendance	1.9591	Large
Religious Importance	1.2629	Large
Religious Coping	1.5998	Large
Religious Salience	1.9421	Large

As another component of the first main hypothesis, religious salience was hypothesized to be negatively related to intentions to seek out cancer risk assessment. Overall, while there is a trend toward a slight negative association between religiosity/spirituality and intentions to seek out cancer risk assessment services, there were no significant associations (see Table 5). The correlation between religious salience and interest/intentions to seek out cancer risk assessment was $r = -.086, p = .618$. The specific aspects of religiosity such as religious coping, religious attendance, and importance of religion

showed similar non-significant relationships with intentions to seek out cancer risk assessment. While the correlations of intentions for or interest in cancer risk assessment with the different aspects of religiosity were generally negative (i.e. 10 of 12 correlations in Table 5 were negative), ultimately, these relations were non-significant. The direction of the association between religiosity and intentions for cancer risk assessment was accurately hypothesized, but the strength of these associations was weak.

Table 5. Correlations between Religiosity & Intentions for Cancer Risk Assessment

	Interest	Intentions	Interest/intentions total
Religious Salience	$r = -.117$ $p = .497$	$r = -.039$ $p = .823$	$r = -.086$ $p = .618$
Religious Attendance	$r = -.043$ $p = .803$	$r = -.067$ $p = .696$	$r = -.063$ $p = .713$
Religious Importance	$r = -.024$ $p = .889$	$r = .038$ $p = .826$	$r = .010$ $p = .955$
Religious Coping	$r = -.157$ $p = .361$	$r = -.040$ $p = .817$	$r = -.108$ $p = .531$

The first main hypothesis was based on two sub-hypotheses: 1) levels of religious salience would be higher among Latina women as compared to non-Latina women and 2) religious salience would be negatively related to intentions for cancer risk assessment. While the first sub-hypothesis was supported, the second sub-hypothesis did not receive statistically significant support.

Before presenting further analyses relevant to this hypothesis, an unexpected finding will be briefly noted. See Figure 5 and Figure 6 to compare Latina and non-Latina women in terms of interest in and intentions for cancer risk assessment. Modal frequencies showed that non-Latina women were most likely to say that they were “definitely interested” in cancer risk assessment and that Latina women were most likely to report that they were “not likely” to seek cancer risk assessment within the next six months.

Figure 5. Interest in Cancer Risk Assessment for Hereditary Breast Cancer

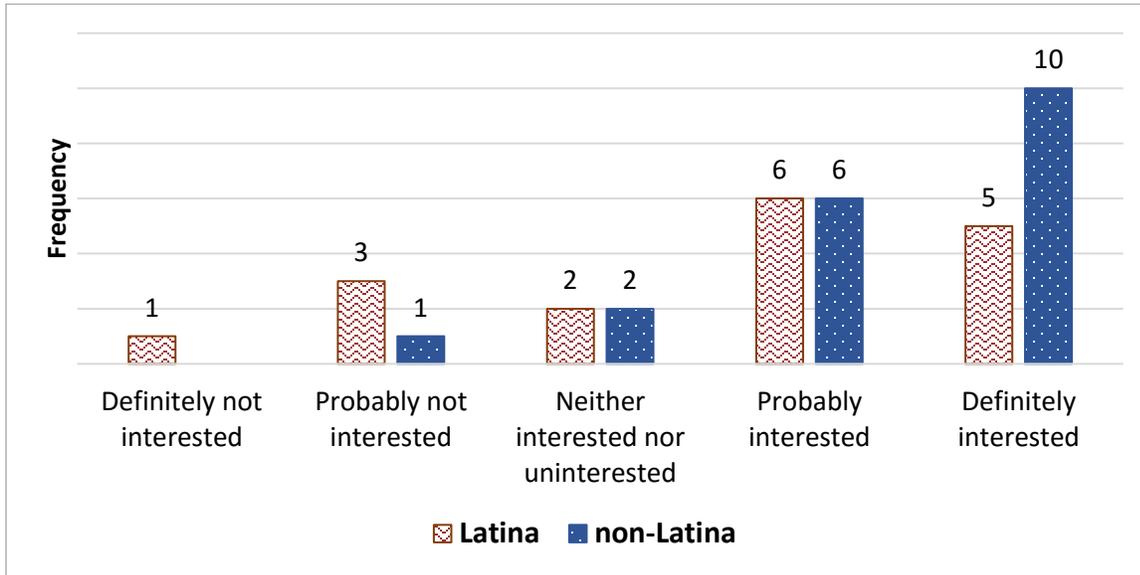
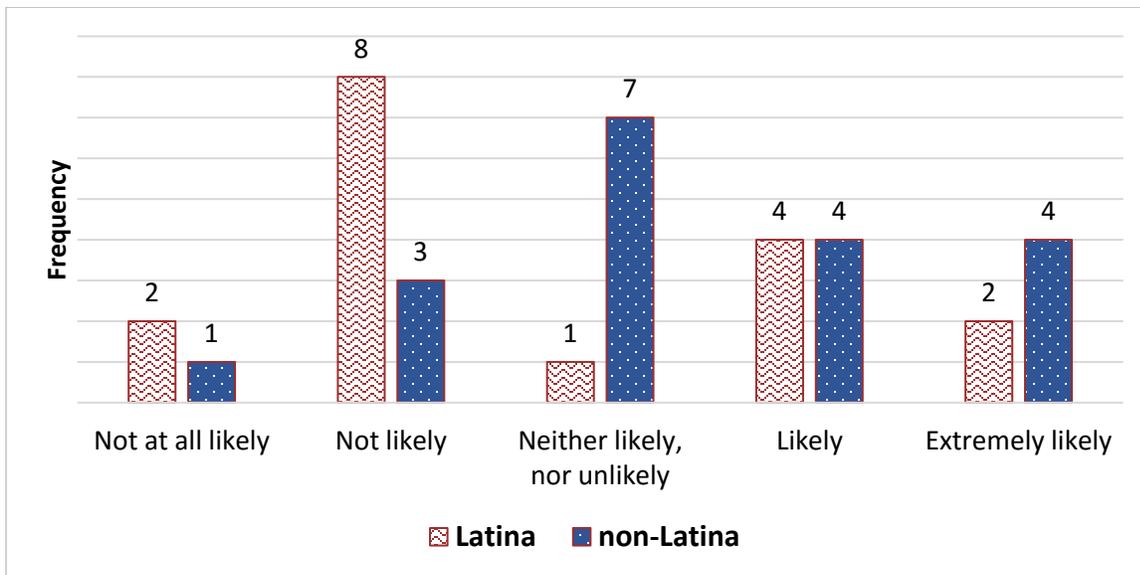


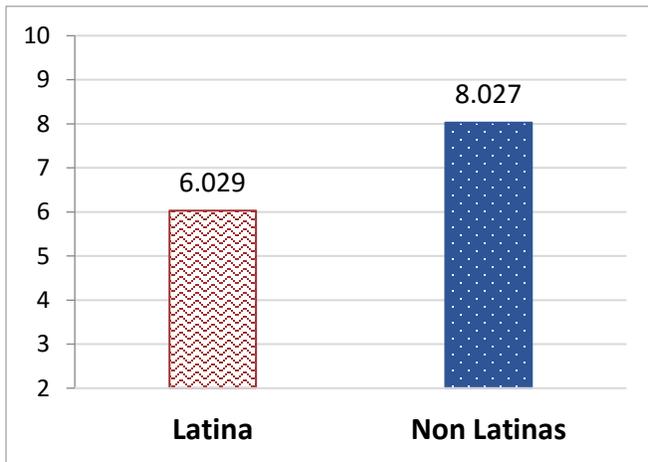
Figure 6. Intentions for Cancer Risk Assessment for Hereditary Breast Cancer



Ethnic differences in intentions were explored and an unexpected significant finding was that there was some evidence that Latina women and non-Latina women had significantly different levels of intentions for cancer risk assessment. When the single items asking about interest in and intention

regarding cancer risk assessment were summed, a *t* test indicated a trend for the mean total for non-Latinas ($M = 7.78$) to be higher than that for Latinas ($M = 6.41$), $t(34) = 1.89$, $p = .067$. When religious salience was included as a co-variate, non-Latina women had significantly higher intentions, $F(1,36) = 4.55$, $p = .040$. That is, the adjusted mean for intentions for cancer risk assessment for non-Latina women ($M = 8.03$, $SE = 0.555$) was significantly higher than that for Latina women ($M = 6.03$, $SE = 0.597$). Therefore, controlling for religious salience, the ethnic difference in intentions for cancer risk assessment is statistically significant as non-Latina women report stronger intentions for cancer risk assessment. See Figure 7 to compare intentions for cancer risk assessment (adjusted means) controlling for religious salience across ethnicity.

Figure 7. Adjusted Means of Latina and non-Latina Groups for Interest/Intentions Total in Cancer Risk Assessment Controlling for Religious Salience



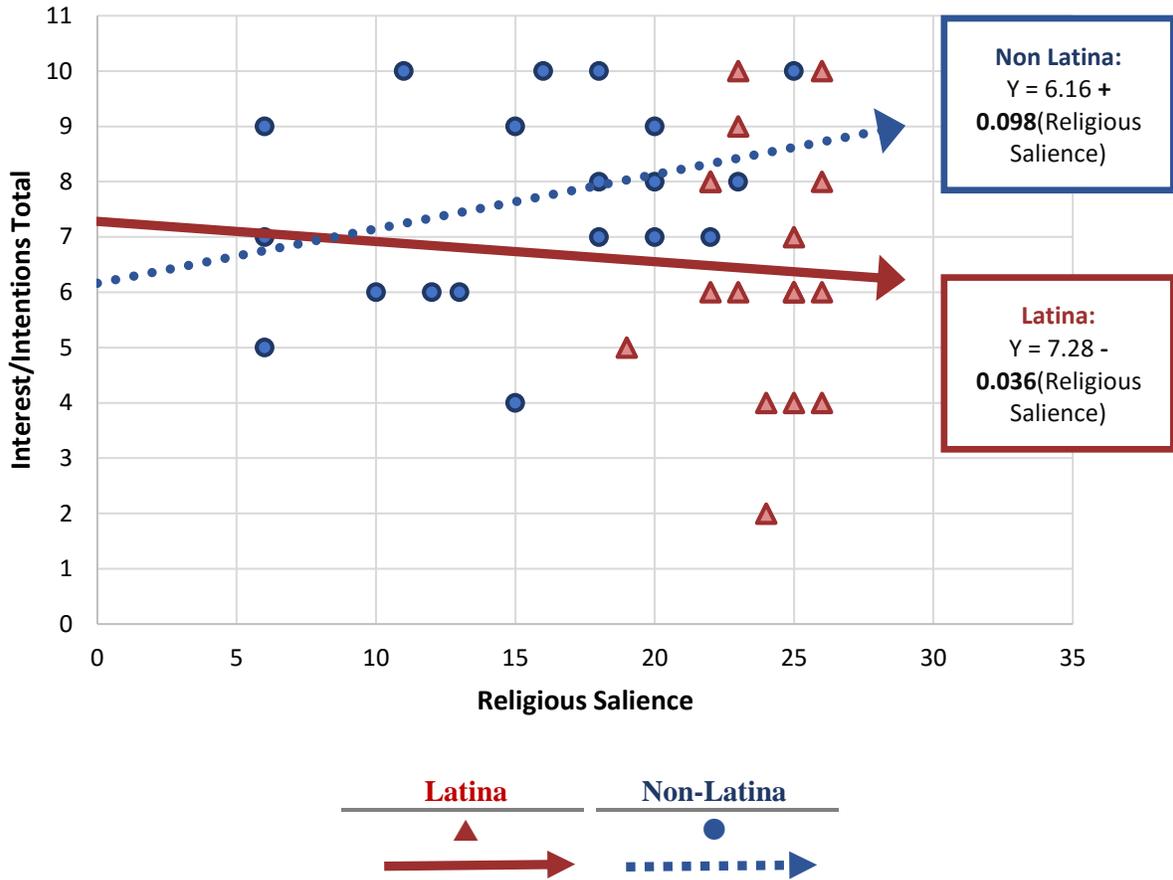
Based on previous literature and research that religiosity has been salient among Latinas and that religiosity has been negatively associated with uptake of cancer risk assessment, it was hypothesized that the influence of religiosity on intentions for seeking cancer risk assessment would be stronger for Latina women compared to non-Latina women. In particular, it was predicted that religious salience would be even more negatively related to intentions for cancer risk assessment for Latina women than for non-Latina women. While this hypothesis did not receive statistically significant support, there was evidence

to suggest that religious salience does impact Latina women's intentions for cancer risk assessment in a qualitatively different manner than it does non-Latina women's intentions.

An analysis of heterogeneity of regression in an analysis of covariance was conducted to assess if the relationship between religious salience and intentions to get cancer risk assessment differed by ethnicity. In general, in a traditional analysis of covariance, the relationship between religious salience and intentions for cancer risk assessment was positive and non-significant ($b = 0.086, p = .275$). Further, the relationship between religious salience and intentions for cancer risk assessment did not significantly differ between Latina and non-Latina women, as the test of heterogeneity of religious salience on intentions was not significant, $F(1,36) = 0.239, p = .628$.

Although non-significant, the relationship between religious salience and intentions to seek cancer risk assessment for Latina women was negative ($b = -0.036, p = .905$), indicating that the greater the religious salience rating, the lower the intentions for cancer risk assessment. For non-Latina women, the relationship between religious salience and intentions to seek cancer risk assessment is also non-significant, however, it is in the opposite direction ($b = 0.098, p = .184$). The scatterplot and regression lines in Figure 8 show the relationships between religious salience and total intentions for cancer risk assessment by ethnicity. The overall relationship between religious salience and intentions is much more similar to that for non-Latina women, because they had far more variability in religious salience than did Latinas, as seen in Figure 8. To characterize the size of the effect, the difference in standardized regression coefficients was examined. For non-Latinas, the standardized regression coefficient, which is the correlation between religious salience and intentions, was .318, whereas that for Latinas was -.031. The difference between the Fisher r-to-z transformations of these correlations was $q = .360$, which exceeds Cohen's cutoff of .3 for a medium size effect (Cohen, 1992).

Figure 8. Religious Salience & Interest/Intentions Total by Ethnicity



Thus, although non-significant, there is preliminary evidence to suggest that the relationship between religious salience and intention for cancer risk assessment may be different for Latina women (a more negative association) as compared to non-Latina women (more positive association). Despite non-significant results, taking a closer looker at the apparent trends, there is some support for the first main hypothesis that the influence of religious salience on intentions to seek cancer risk assessment may be qualitatively different between Latina and non-Latina women. Religious salience was negatively associated with intentions for cancer risk assessment only for Latina women and positively associated with intentions only for non-Latina women.

Hypothesis 2 Results

As part of the second main hypothesis, the psychological variables of cancer worry and perceived risk for cancer were hypothesized to be positively related to intentions for cancer risk assessment (see Table 6). Overall, the relationships between these variables were non-significant. Correlation analyses show that the relationship between cancer worry and interest/intentions total for cancer risk assessment was positive but non-significant ($r = .190, p = .226$) and the relationship between perceived risk for cancer and interest/intentions total was also positive but non-significant ($r = .230, p = .177$). In terms of the two items of intentions and interest, the psychological variables of cancer worry and perceived risk are more strongly related to intentions to get cancer risk assessment than mere interest in getting cancer risk assessment (see Table 6).

Table 6. Correlations: Interest/Intentions in Cancer Risk Assessment & Psychological Variables by Ethnicity

a. Overall

	Perceived Risk	Intentions	Interest	Interest/Intentions Total
Cancer Worry	$r = .503$ $p = .002$	$r = .270$ $p = .111$	$r = .053$ $p = .757$	$r = .190$ $p = .266$
Perceived Risk	----	$r = .215$ $p = .208$	$r = .189$ $p = .269$	$r = .230$ $p = .177$

b. Non-Latinas

	Perceived Risk	Intentions	Interest	Interest/Intentions Total
Cancer Worry	$r = .597$ $p = .007$	$r = .482^*$ $p = .036$	$r = .318$ $p = .185$	$r = .469^*$ $p = .043$
Perceived Risk	----	$r = .398$ $p = .091$	$r = .040$ $p = .872$	$r = .278$ $p = .250$

Table 6 (continued). Correlations: Interest/Intentions in Cancer Risk Assessment & Psychological Variables by Ethnicity

c. Latinas

	Perceived Risk	Intentions	Interest	Interest/Intentions Total
Cancer Worry	$r = .420$ $p = .093$	$r = -.028$ $p = .915$	$r = -.272$ $p = .291$	$r = -.171$ $p = .512$
Perceived Risk	----	$r = .049$ $p = .851$	$r = .242$ $p = .349$	$r = .166$ $p = .523$

Note. An asterisk indicates a correlation between a psychological variable and a variable indicating interest or intentions that is significant at $\alpha = .05$.

If these relationships are analyzed by ethnicity, there are some unique patterns that come to light. For non-Latina women, the relationships between interest/intentions total to seek out cancer risk assessment and cancer worry and risk were strong and positive. For non-Latina women, there is a significant, strong, positive relationship between cancer worry and interest/intentions total ($r = .469$, $p = .043$). For non-Latinas, there is also a weaker, positive relationship between perceived risk for breast cancer and interest/intentions total, but non-significant ($r = .278$, $p = .250$). For Latinas, it is a different story. Among Latinas, the relationship between cancer worry and interest/intentions total was negative, although weak and non-significant ($r = -.171$, $p = .512$). Among Latinas, the relationship between perceived risk for cancer and intentions is positive, but ultimately a weak association and non-significant ($r = .166$, $p = .523$).

The unique patterns evident are that for non-Latinas, cancer worry is a significant factor in their intentions for cancer risk assessment, acting as a positive influence; the more cancer worry they experienced, the higher non-Latina women's intentions are to seek out cancer risk assessment. Also for non-Latina women, these psychological factors were more strongly related to intentions to seek cancer risk assessment and weakly related to interest in cancer risk assessment. For Latinas, worry was negatively related to intentions, acting as a negative influence on intentions; the more cancer worry Latinas experience, the less their intentions were for cancer risk assessment. Also, for Latinas, these

psychological factors were more strongly related to interest in cancer risk assessment than they were to intentions to get cancer risk assessment.

Overall, the psychological variables of cancer worry and risk are significantly and positively correlated with each other ($r = .503, p = .002$), but the strength of the association between these two variables varied between Latina and non-Latina women. For non-Latina women, cancer worry and perceived risk were highly correlated, revealing a strong, positive association ($r = .597, p = .007$). For Latina women, the association between cancer worry and perceived risk was not as strong and non-significant ($r = .420, p = .093$).

In sum, the first part of this second hypothesis was partially supported. Overall, there are positive, although weak, associations between the psychological variables of cancer worry and perceived risk and intentions for cancer risk assessment. The more cancer worry and perceived cancer risk a woman experiences, the more likely she is to have greater intentions for cancer risk assessment. However, analyzing the correlation analyses by ethnicity reveals a more nuanced picture. For Latina women, there is a negative association between cancer worry and interest, although weak and non-significant. Also for Latina women, perceived risk was positively and weakly associated with interest for cancer risk assessment. For non-Latina women, there was a significantly positive and moderately strong association between cancer worry and intentions. Also for non-Latina women, perceived risk and intentions are positively and moderately associated (yet non-significant). Psychological variables of cancer worry and perceived risk seem to be weakly associated with intentions for cancer risk assessment, but given the ethnicity differences, the distinction between interest in and intentions for cancer risk assessment should be considered in the future.

As another component of the second main hypothesis, religious salience was hypothesized to be negatively related to the psychological variables of breast cancer worry and perceived risk for breast cancer. Overall, religious salience is not significantly associated with cancer worry and perceived risk, however, with the correlations being weak and negative (see Table 7). Correlation analyses show that the relationship between religious salience and cancer worry was negative but non-significant ($r =$

-.070, $p = .684$) and the relationship between religious salience and perceived risk was also negative but non-significant ($r = -.069, p = .691$). Although associations were non-significant, this hypothesis was weakly supported in that the direction of the associations was correctly predicted.

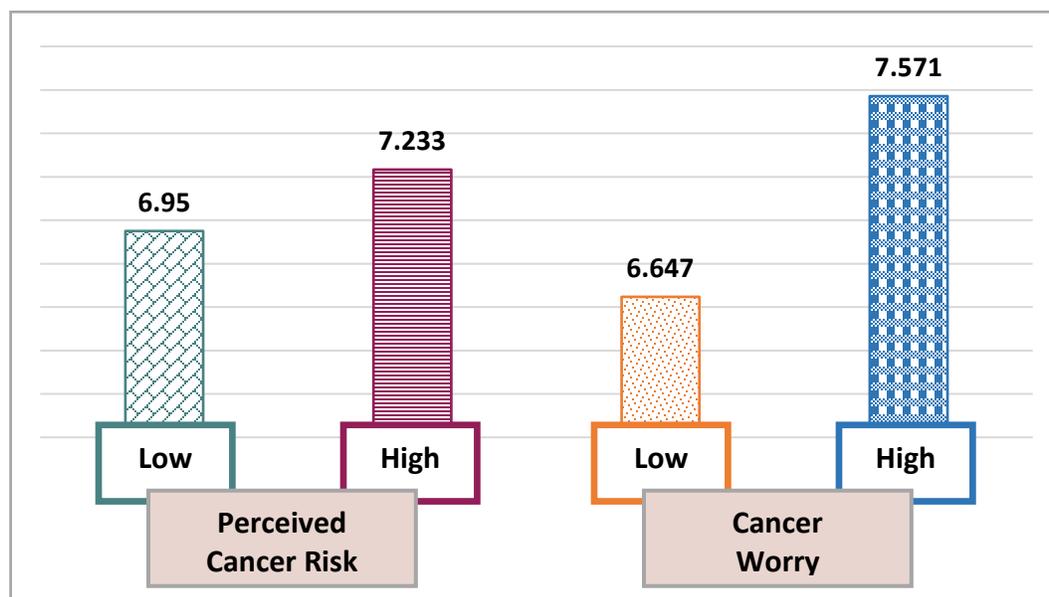
Table 7. Correlations: Religious Salience & Psychological Variables by Ethnicity

	Non-Latina	Latina	Overall
	Religious Salience	Religious Salience	Religious Salience
Interest/Intentions Total	$r = .318$ $p = .184$	$r = -.031$ $p = .905$	$r = -.086$ $p = .618$
Cancer Worry	$r = .059$ $p = .812$	$r = .241$ $p = .351$	$r = -.070$ $p = .684$
Perceived Risk	$r = -.037$ $p = .881$	$r = .097$ $p = .710$	$r = -.069$ $p = .691$

Since these associations are not significant and rather weak, it is difficult to interpret findings from these correlations, but if these relationships are analyzed separately by ethnicity, there are some unique patterns worth a mention. For non-Latina women, the relationships between religious salience and cancer worry, and between religious salience and perceived risk were practically non-existent, but one was positive and one was negative. For non-Latina women, the greater their religious salience scores, the greater their cancer worry ($r = .059, p = .812$) and the lower their perceived risk for breast cancer ($r = -.037, p = .881$) was. For Latina women, there were no significant associations, but both were positive. That is, for Latina women, the greater the religious salience, the greater their worry about breast cancer ($r = .241, p = .351$) and perceived risk for breast cancer ($r = .097, p = .710$) were. Also, for Latina women, although non-significant, the association between cancer worry and intentions was modestly strong. Further, cancer worry seemed to be more strongly related to intentions for Latina women than it was for non-Latina women.

In a multiple regression analyses using cancer worry and perceived risk simultaneously as predictors of intentions, the psychological variables of cancer worry and perceived risk for cancer did not significantly predict intentions for cancer risk assessment. Both perceived risk for cancer and cancer related worry did positively predict intentions, as increase in worry and perceived risk were associated with an increase in intentions for cancer risk assessment. However, the regression slopes were non-significant for both cancer worry ($b = 0.100, p = .380$) and perceived risk for cancer ($b = 0.205, p = .607$). Controlling for religious salience, the adjusted means for intentions for cancer risk assessment are shown in Figure 9. Overall, high cancer worry and perceived risk cancer are associated with higher intentions for cancer risk assessment, but these differences were not significant.

Figure 9. Adjusted Means for Groups Low or High on Psychological Factors on Interest/Intentions Total in Cancer Risk Assessment Controlling for Religious Salience



The second main hypothesis was based on two sub-hypotheses: 1) breast cancer risk and worry would be positively related to intentions for cancer risk assessment and 2) religiosity would be negatively related to cancer worry and risk. Neither of these hypotheses was supported as there were no significant associations among the variables of interest, but some aspects of these hypotheses were supported in part. The direction of the correlations was correctly ascertained for the most part, with some exceptions.

Ethnicity was an important factor for these associations, as the overall picture of these associations was very different from the associations that came to light when the analyses were done separately by ethnicity.

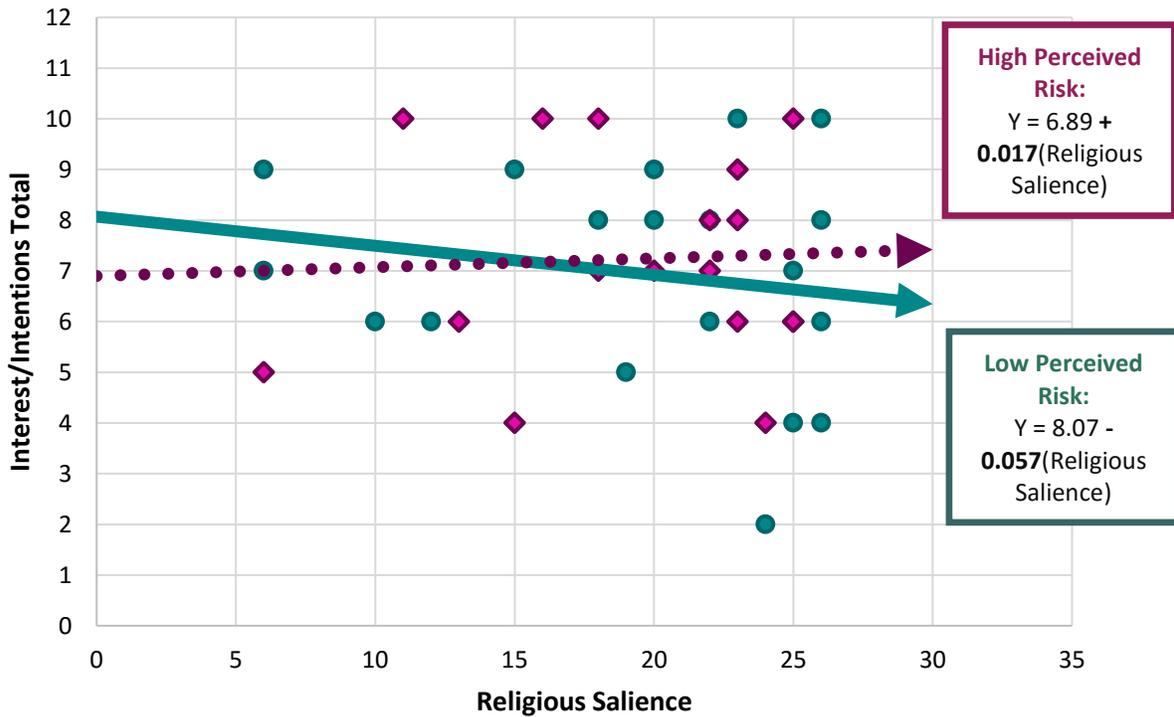
Based on Schwartz and colleagues (2000), an interaction between perceived risk and religious salience in determining intentions to get cancer risk assessment was predicted. Specifically, if perceived risk were categorized into low versus high, religious salience was expected to be negatively related to intentions for those reporting low perceived risk for breast cancer but not for those reporting high perceived risk. An analysis of heterogeneity of regression in analysis of covariance was conducted to assess if the relationship between religious salience and intentions to get cancer risk assessment is different at each level of perceived cancer risk (low versus high). In general, in a traditional analysis of covariance, religious salience was not significantly predictive of Intentions to get cancer risk assessment ($b = -0.029, p = .627$). Further, the relationship between religious salience and intentions for cancer risk assessment did not significantly differ between those reporting high perceived cancer risk and those reporting low perceived cancer risk, testing for the heterogeneity of regression of religious salience on intentions was not significant, $F(1, 36) = 0.369, p = .548$.

However, it is important to point out that at different levels of cancer risk, there seems to be a change in the direction of the relationship between religious salience and intentions. Although non-significant, the relationship between religious salience and intentions to seek cancer risk assessment for women reporting high cancer risk was slightly positive ($b = 0.017, p = .857$) but non-significant. This may indicate for women who consider themselves at high risk for breast cancer, religious salience may have little to do with their intentions for cancer risk assessment or may be re-enforcing in that the more salient their religiosity is, the greater their intentions for cancer risk assessment. For women reporting low perceived cancer risk, the relationship between religious salience and intentions to seek cancer risk assessment was somewhat more negative ($b = -0.057, p = .468$). Again, although non-significant, for those who do not consider themselves to be at high risk for breast cancer, the more salient their religiosity, the lower their intentions for cancer risk assessment. For women in this study, when risk for

cancer does not seem to be a concern, religious salience may impact their intentions for cancer risk assessment slightly more, but in a negative manner. Figure 10 portrays this fact that the relationship between religious salience and intentions for cancer risk assessment varies across perceived cancer risk categories in a similar fashion to that reported by Schwartz and colleagues (2000).

To characterize the size of this effect, the standardized coefficients for the regression of intentions on religiosity were compared for the two groups. The standardized coefficient was .047 for those in the high perceived risk category, whereas it was -.177 for those in the low perceived risk category. The difference in the Fisher *r*-to-*z* transformations of these correlations was $q = .226$, which is between Cohen's benchmarks for a small ($q = .1$) and a medium ($q = .3$) effect (Cohen, 1992).

Figure 10. Religious Salience & Interest/Intentions Total by Level of Perceived Risk



In sum, the second main hypothesis was not supported, but there were noteworthy trends that came to light. For women at high perceived risk, religious salience is essentially unrelated to intentions to seek cancer risk assessment for hereditary breast cancer risk. However, when the risk of breast cancer is not perceived to be as threatening, religiosity is negatively related to intentions to seek cancer risk assessment. Although the reason for this relationship is not clear and may differ across ethnic groups, one possibility is that religious coping may be a positive reinforcing factor that helps some women deal with their risk making them less motivated to pursue additional risk assessment.

Qualitative Results

The findings utilizing the first part of the GRACE study which were the focus groups are reported in this section. The data were obtained from focus groups' discussions and a brief questionnaire administered to focus group participants. Analyses conducted utilizing this data were primarily qualitative, but some descriptive quantitative results are also reported.

Recruitment of GRACE study focus group participants. In total, 49 women were identified as potentially eligible to participate in the GRACE focus group study. Approximately 55% ($n = 27$) of these women were referred to GRACE study personnel by UNM Comprehensive Cancer Center's breast oncologists. Approximately 45% ($n = 22$) of these women were identified through other sources: an advertisement in the local newspaper ($n = 17$) or through local organizations such as cancer support groups and local community agencies ($n = 5$). Women who were first identified by the Cancer Center oncologists were contacted by GRACE study personnel to determine their eligibility. All other women directly contacted GRACE study staff and their eligibility was then determined. Of all women identified, 7 women declined to participate, 9 women were not eligible, 1 woman called after the focus groups had been conducted, and 23 women (12 non-Latina and 11 Latina) were eligible to participate. Most women were eligible due to having been diagnosed with breast cancer under the age of 50 ($n = 18$), but some women met eligibility by having been diagnosed with triple negative breast cancer ($n = 3$) or having had more than one breast cancer diagnoses ($n = 3$). For the non-Latina focus group, 10 women agreed to attend, but only 6 participated. For the English-speaking Latina focus group, 4 women agreed to attend, but only 3 participated. For the Spanish-speaking focus group, 7 women agreed to attend, but only 4 participated. In summary, about 56.5% of all those eligible participated in a focus group (cooperation rate) and 39.4% of all those eligible and potentially eligible (including women we were unable to contact) participated in a focus group (response rate).

As part of the GRACE study, thirteen women who were breast and ovarian cancer survivors participated in three focus groups. These women were considered at increased risk for hereditary breast cancer, but had not received genetic counseling or genetic testing. Two focus groups were held in English and one was held in Spanish. The purpose of the focus groups in the GRACE study was to receive feedback from these women on educational materials that had been created for an upcoming pilot intervention study. The discussions in the focus groups were guided by a set of topics, one of which was participants' opinions about the influence of spirituality on their decisions to seek genetic testing for hereditary breast cancer.

In presenting the qualitative analyses, first each focus group will be described and a general summary of what was discussed will be given, then themes of the discussion and quotes will be presented, and finally, a comparison and contrast across focus groups will be made.

Characteristics of focus group participants. Overall, the focus group participants represented a rather diverse set of women. Since each focus group was intended to gain feedback from women in a particular demographic category (non-Latina women, English-speaking Latina women, and Spanish-speaking Latina women), each of the focus groups had certain unique characteristics (see Table 8). The non-Latina focus group participants were more similar to the English-speaking Latina focus group participants, in that the levels of education and income in these two groups were similar. Both non-Latina women and English-speaking Latina women had at least some college education and earned over \$30,000 in a year. This is in contrast to Spanish-speaking Latina women, who were more likely to have less than a high school education and to report a household yearly income of less than \$30,000. Most women across all three focus groups claimed to have a primary care provider, indicating usual access to health care. Although all these women are at increased risk for hereditary breast cancer and were eligible for cancer risk assessment, there were some women that had not discussed hereditary cancer risk and cancer risk assessment (including genetic testing) with a health care provider. Among the non-Latina focus group participants, half (3 women) had not had such discussions, but among the Latina focus group participants,

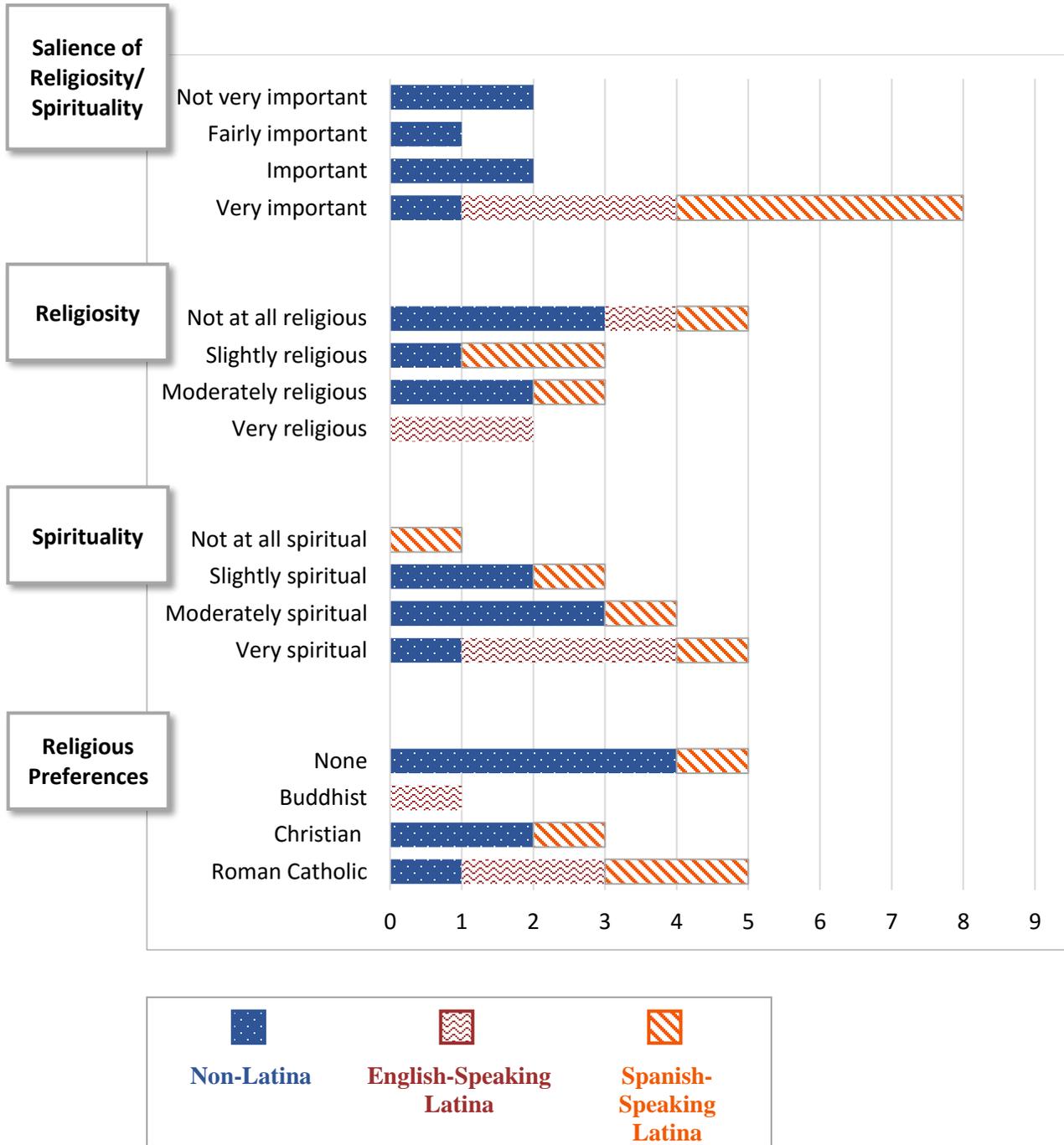
slightly more than half of the women reported having discussed hereditary cancer risk and risk assessment with their doctors.

Table 8. Demographic Characteristics of GRACE Study Focus Group Participants

	Focus Group 1 Non-Latina n = 6	Focus Group 2 English - Latina n = 3	Focus Group 3 Spanish - Latina n = 4
Ethnicity			
Latina	0	3	4
Non-Latina	6	0	0
Nationality			
Foreign-born	1	1	4
U.S. born	5	2	0
Yearly Income			
< \$14,999	1	0	1
\$15,000 - \$29,999	2	1	2
\$30,000+	3	2	0
Did not respond	0	0	1
Educational Attainment			
High School or Less	0	0	3
Vocational Certificate	0	0	1
Some College & College degrees+	5	3	0
Did not respond	1	0	0
Have a Primary Health Care Provider			
Yes	5	1	4
No	1	2	0
Discussion about HBOC with Provider			
Yes	3	1	3
No	3	2	1
Discussion about CRA with Provider			
Yes	3	2	2
No	3	1	2
Genetic Testing Discussion with Provider			
Yes	3	2	3
No	3	1	1

Religiosity of focus group participants. Focus group participants were asked about their religiosity (including preference, salience, and spirituality) prior to starting the focus group discussion. Overall, there was some diversity in religiosity across focus groups and within focus groups. See Figure 11 for more details on the religiosity of focus group participants. Most women identified as Catholic, the majority of which were Latina women ($n = 4$), or claimed to have no religious preference, the majority of which were non-Latina women ($n = 4$). Only three women identified as Christian and two of those women were non-Latina women, and one Latina woman identified as Buddhist. In terms of spirituality, the majority of women consider themselves to be “very” ($n = 5$) or “moderately” ($n = 4$) spiritual and of these women, five were Latina. Interestingly, the majority of women identifying as “very spiritual” were Latina and the majority of women identifying as “moderately spiritual” were non-Latina. In terms of religiosity, the majority of women considered themselves to be “slightly” ($n = 3$) or “not at all” ($n = 5$) religious, and of these women half ($n = 4$) were Latina. Further, among women rating themselves as “very” ($n = 2$) or “moderately” ($n = 3$) religious, slightly more than half ($n = 3$) were Latina women. Finally, when asked about how important their religion/spirituality/faith is in their lives, most women reported their spirituality/religion/faith to be “very important” ($n = 8$) and the great majority of those women ($n = 7$) were Latina. Interestingly, even though not all Latina women identified as highly (“very”) religious or spiritual, all did report their religion/spirituality/faith to be important to them, whereas non-Latina women were more likely to report that their personal religion/spirituality/faith was not that important to them.

Figure 11. Number of Women in GRACE Study Focus Groups Endorsing Alternatives to Religiosity Variables



Qualitative analytic approach. Focus group discussions were audio recorded and transcribed, and transcriptions were then analyzed using a customized coding system. A basic and simple thematic approach was taken to extract themes from the content of the discussions. The relevant portions of the discussion were analyzed and coded, including specifically the portion of the focus group discussion that asked participants how religion or spirituality would impact decisions to get cancer risk assessment. In addition, if the topic of religiosity/spirituality did come up during other portions of the focus group session, those discussions were also analyzed.

In order to more systematically analyze the content of these discussions, coding topics and sub-topics were identified. Initial codes were created through a process of reading transcripts and identifying areas of commonality. For example, in responding to the question of how a religious/spiritual framework might influence decisions for/against cancer risk assessment, participants tended to share their own personal views on religion, which prompted the first family of codes which were designated “general approach to religion.” Within this general code family were three sub-codes: (1) cultural influence on religion, (2) religion as a coping resource, and (3) spirituality (beyond organized religion). It was thought important to capture what participants expressed as the explicit role that having a religious framework might have on their own personal (or hypothetically, others’) decisions to get genetic testing/counseling; therefore this was the second family of codes, which were designated “religion’s impact on cancer risk assessment decisions.” Sub-codes within this family were: (1) relationship between religion and health, (2) religion encourages cancer risk assessment, (3) religion discourages seeking cancer risk assessment, and (4) religion within the clinical setting. Finally, there was some discussion (across all focus groups) on what potential role religion or spirituality might take in encouraging at-risk individuals and families to get genetic counseling. Specifically, participants talked about whether to consider religion when designing risk communication materials for an intervention, which prompted the final family of codes: “role of religion in cancer risk communication materials.” The sub-codes within this family were: (1) acknowledging cultural influences on approaches to health and (2) sensitivity to personal

religious/spiritual beliefs. Utilizing this system of coding, themes were easily compared across the three focus groups.

Non-Latina focus group. One focus group included six women identifying as non-Latina. In this focus group, there was some diversity in their approach to religion or spirituality. In general, women in this focus group felt strongly about the separation of religion and health, however, there was one woman who regarded spirituality as relevant and significant in the realm of health.

During the focus group discussion, when participants were asked about their thoughts on how spirituality or religion might influence their decisions to get cancer risk assessment and genetic testing, there were some mixed responses. Religion or spirituality was initially regarded as an important aspect in the coping process, coping with the experience of cancer. Additionally, there was some acknowledgement of the cultural facet of religion, especially taking note of how traditional New Mexican culture incorporates Catholic values and norms. Although there was some acknowledgment of this, it was mentioned rather impersonally as if it were important for others, but not for them personally. Therefore, religion was regarded as a culturally salient value or simply an important aspect of culture.

- One woman made a quick note about New Mexican culture and religion, saying “I think in New Mexico it is safe to say, although we’re heavily Catholic, we’re probably more spiritual...”

When considering how religion or spirituality fits into their decisions and approach to health in general, most women remarked that religion or spirituality had no direct influence on their decisions about cancer risk assessment. This is because religion and health were seen as mutually exclusive entities. In fact, when the focus group discussion turned to the topic of religion and decisions to seek cancer risk assessment, the women seemed to be taken aback. For some ladies, it was not just that religion was completely independent from health, but that these two may be in opposition to one another. One focus group participant went as far as saying that even considering religion in their clinical care was somewhat concerning because according to her, it did not have a place in the clinical setting. Religion seemed to be

irrelevant for decisions about one's health, because according to these women, sharing one's religious preference with medical providers would not necessarily influence decisions about care.

- One woman shared her thoughts on how religious faith and health are separate from one another and there other more relevant factors that influence decisions to get genetic testing. She suggests religion "... may or may not play into [decisions about genetic testing]... Someone can be the same faith [as myself] and they may look at it entirely in different ways. But it may also be influenced by other factors."
- Another woman commented that raising the topic of religion might be offensive to some people, "I don't know that you would ask or you should ask [about religion]. I am not sure that you should. I'm not sure if you might even offend some people if you ask them about their religion."

Finally, there was one woman who expressed a different opinion. In contrast to the other ladies who felt that religion had no place or was irrelevant in discussions or decisions about health, one woman talked about how spirituality was a significant part of her life and for her, her spirituality was a positive influence in getting genetic testing. According to this woman, her spirituality reinforced her decision to get genetic testing because she felt it was her responsibility to others, that her genetic testing might be of benefit to others.

- She commented, "I see it as a positive. If you are very spiritual, perhaps you see yourself as a part of the tapestry of the entire universe and you have a responsibility."

English-speaking Latina focus group. Another focus group included three women identifying as Hispanic and English-speaking. In this focus group, women discussed the importance of acknowledging the cultural influence of religion on decisions about health and discussed potential methods for utilizing religion as a way to reach underserved populations to inform them about cancer risk and cancer risk assessment services.

When the focus groups discussion covered the topic of religion or spirituality, women were quite expressive about their opinions. When focus groups participants were asked about their thoughts on how spirituality or religion might relate to decisions to get genetic testing, one woman considered the relevance of culture. She shared about her personal experience, her culture and family, saying that she believed that religion is culturally rooted and foundational. She reported that for her family, religion is inseparable from culture and tends to provide a certain worldview. She explained that this worldview and such traditional values might present the intersection of genetics and medicine (genetic testing) in a negative light.

- She shared, “I come from a very religious, Catholic, Hispanic background. Being from New Mexico, that’s probably not that uncommon. Especially we’re talking about New Mexico. These communities are very, we are, very religious and not just spiritual, but very religious.”
- She expressed the influence of religion on views about genetics (testing), “I do know that my mother, who is extremely old-fashioned and Catholic, and a Hispanic woman, if it was in her beliefs that this isn’t something you mess with... I mean, unfortunately I’m going to say it, some of the beliefs are so enrooted and old-fashioned that they could hinder growth, development, and health of the next generations because it is so embedded.”

Another woman had a different perspective on spirituality and how religion or spirituality fits in within the context of decisions to get genetic testing. For her, spirituality was an integral aspect of life and for coping with cancer. According to this woman, while she acknowledged there are varied belief systems, spirituality encompassed more than organized religion. For this woman, her spirituality was able to provide her with the answers and strength she needed to endure through the experience of cancer. She also shared her disappointment with how a person’s emotional well-being and mental health are often ignored when one is diagnosed with cancer. This is why she thought providing holistic support, which considers emotional well-being, to cancer patients is so important and she believed spirituality could address this.

- She began her thoughts about religion and spirituality by saying, “I think most people have a spiritual belief system. I’m just sure of that. I do believe probably 90% of the people have some type of spiritual belief system whether it’s organized religion, or a belief in another person, the strength of another person, or a strength within yourself.”
- She shared a little on her spiritual journey, “Where do you get answers? Sometimes it’s in a formal, religious setting. But I think something inside happens, because it happened to me. And you do become extremely spiritual... You start thinking and discussing things on a higher level.”
- She talked about needing emotional support, “I’ve noticed throughout the entire cancer process, no one ever talks about the emotional side. The whole cancer process has failed to me. I keep thinking of the word ‘holistic,’ where you look at the whole person ‘cause we’re not just a patient. We are more than that. And it’s ignored.”

In this focus group, women discussed how religious beliefs and spirituality might be utilized or harnessed to address emotional issues and mental health issues through the cancer experience. There was also some discussion on how to consider diverse religious views and how they can be integrated into efforts to better reach diverse populations at increased risk for hereditary breast cancer.

- The woman who felt strongly about targeting mental and emotional well-being and support for cancer patients offered her thoughts on the potential for religion or spirituality to address issues of emotional and mental health. saying, “I think that religion is very important because no matter what kind of religion you have, you need [emotional] support. I think that religion is very important to put there, no matter what religion you are.”

As this focus group discussed how to more effectively inform others at risk for hereditary cancer (that is, discussed the educational materials), all women were in agreement that it is critical to have information on the religious values and preferences of the person before religion can be utilized in educational materials on hereditary cancer risk. This is to avoid the situation of addressing the wrong audience with an irrelevant message. It was clear that for communities that have strong religious

influences in their culture, it would be essential to validate this and acknowledge its importance. Although women did not mention specifically how it can be done, there was a strong sentiment that religious values and spirituality can be utilized to strengthen efforts to reach diverse populations to inform them about hereditary cancer risk. Further, because religion can have deep cultural roots, one woman commented that including some validation of religion in educational materials would not be off-putting even among those who are not as religious.

- One woman stressed that it was important to know the religious preferences of the person prior to discussing religion in educational materials, “I do believe it’s relevant when you know that about a person and where they’re coming from. Because it could be a turn-off to somebody that has no spiritual beliefs.”
- Another woman shared her opinions on validating the religious background of a cultural group, “Especially if you are targeting some of the small communities in New Mexico. That, I think that [religion] has to be taken into consideration.”
- She also shared some personal examples of how considering religious background can be positive, “I know my mom. I guarantee it [message on cancer risk] would affect her more if you had an understanding of where she’s coming from. If you could... validate that she’s coming from a God-based system and a faith and a belief – she’s going to trust you more. I mean if you say God anywhere in her presence, she’ll go, ‘oh, that must be okay.’ And we’re talking about that, this is New Mexico. That is your target.”
- Finally, she also suggested that the validation of one’s cultural and religious background would not be not, “Even if you go to one of these communities and you touch on religion and they don’t believe, they’re not gonna be offended because everybody else in their family believes. I can guarantee they would never be offended by anything religious presented because that’s how they were raised.”

Spanish-speaking Latina focus group. Another focus group included four women identifying as Hispanic and monolingual Spanish-speakers. In this focus group, the women appeared to be more religious and seemed to hold their religion or faith in high esteem.

In general, women in this group regarded their religion and spirituality as very important and it was clear that it was a very prominent aspect of their lives. Religion or references to God were quite common in their general comments and discussion. This was indicative of their religion being a source of strength for these women. Their religious beliefs and spirituality helped these women confront life challenges in general and in particular as they coped with the experience of cancer. An addition, it was evident how these women's religious faith helped them have a positive outlook on their cancer treatment. There was some indication of a belief in one's fate being in God's hands and that approach was comforting for these women.

- One woman stated, "I think we all have faith in God... And because of religion we can confront anything."
- One woman shared her personal experiences, "I have our faith in God, in Jesus Christ, in the universe, in whatever we have faith in, I think that's going to make us stronger to confront, like me in my case, that helped me a lot. My spirituality, to confront and carry out my treatment and everything I had to go through."
- Another woman commented on how she approached her cancer treatment, "This doctor is going to perform the surgery, but the good one is God. No one can beat that Doctor (God). If he wants, I will make it out of here. If he doesn't want, who knows where I'll go, but I'm in His hands. I put myself in the Lord's hands and here I am."

In direct response to when prompted about how their religious faith or spirituality impacts their decisions to get cancer risk assessment, participants shared their views on their religious beliefs and approach to health. For some, religion and health were thought of as mutually exclusive, independent of each other and did not intersect. However, the sentiment was not that religion was in opposition to health.

Although religion and health were in separate realms, religion was still important and personally significant. For the women in this focus group, religion was considered just as important as health, but one might not impact the other.

- One woman stated that “religion or our beliefs are on a plane and our health, which should also be important to us, is on another plane. I don’t see the relation that one thing affects the other.”
- Other women responded to this first comment by explaining how for them, religion is not a barrier to seeking care or cancer risk assessment, because their religion or faith actually encourages them to take initiative and positive action for their health. She shared that, “I believe that it [religion] should, God said, ‘help yourself because I’m going to help you.’ So let’s help ourselves as well. To seek out, to understand, to inform ourselves. Right.”

In summary, there were quite different views on the influence religion has on decisions to get cancer risk assessment and genetic testing. For non-Hispanic women, religion was considered as a coping resource and a cultural connection with religion was acknowledged. What was most salient among the non-Hispanic women in this focus group was the belief that religion had no direct influence on decisions about health, as they were independent of each other and one had no impact on the other. Even further, religion was considered to not have a place in the clinical setting, because it had no bearing on decision-making concerning clinical care. For English-speaking Hispanic women, the cultural aspect of religion was prominent and spirituality and religion appeared to have a direct influence on decisions about health. Coming from a religious, Catholic background, one woman expressed, at length, how religious beliefs and values might be at odds with certain medical practices such as genetic testing. But she also expressed the potential of validating and acknowledging the worldviews of cultural groups, to better reach diverse communities and tailor relevant educational materials on hereditary cancer risk to specific communities. Spirituality was also viewed within a holistic framework for another Hispanic woman, as integral for emotional and mental well-being. For Spanish-speaking Hispanic women, religion was considered to be a very central and important aspect of their coping with their cancer experience. There was some

endorsement of fatalistic approaches in their religious beliefs (“in God’s hands”), but there were also some women who expressed their religious beliefs fostered an active approach to health. Spanish-speaking Hispanic women noted that their religious values and beliefs encouraged them to be healthy and considered their religion to have a generally positive influence in their decisions concerning health and dealing with cancer risk.

The non-Hispanic group was the only group to hold the view that religion does not belong in the realm of health, whereas the other groups (English and Spanish-speaking Latina groups) expressed some connection between religion and health. The non-Hispanic group and the Spanish-speaking Hispanic group both commented on the cultural aspect of religion and that it should be recognized and acknowledged. The English-speaking Hispanic women were the only ones to consider how acknowledging a person’s religious views and values could be beneficial, especially if trying to inform diverse communities about hereditary cancer risk. In this group of women, the idea of holistic health and spirituality (broader than religion) was brought up. The Spanish-speaking group of women seemed to be the most religious compared to the other groups of women. Some Hispanic women felt that religion and health were independent of each other, like the non-Hispanic women, but not to the degree that religion was in opposition to medicine or medical science. Finally, the Hispanic women were the only ones to claim that their religious views and values could encourage and promote health and cancer risk prevention.

Chapter 4

Discussion

This study was a preliminary exploration of the impact of religiosity/spirituality on initial intentions to receive cancer risk assessment among women at increased risk for hereditary cancer. The study's findings can provide some direction for future research exploring the relationships between ethnicity, religiosity/spirituality, psychological influences, and engagement in cancer risk assessment. This study does provide preliminary evidence about the impact of religiosity/spirituality on engagement in cancer risk assessment among Latina women, as religious salience did influence intentions for cancer risk assessment in meaningful ways.

As previously noted, this dissertation study was part of a larger study aimed at facilitating cancer risk assessment engagement among high-risk families. The Genetic Risk Assessment and Cancer Education (GRACE) study took place at the University of New Mexico Comprehensive Cancer Center in 2015 – 2016 and was led by Dr. Anita Kinney. The GRACE study was implemented in two phases: (1) focus groups and (2) intervention pilot study. In phase one, a portion of the focus group discussion included a question on the impact of religiosity or spirituality on decisions to get cancer risk assessment. In phase two, a portion of the baseline survey included a six-item subscale on religious salience.

While cancer risk assessment for high-risk families is the standard of care, those at the greatest risk and disadvantage may not have access to cancer risk assessment services (M. Hall & Olopade, 2005; Johnston Polacek et al., 2007; Olaya et al., 2009; Pagán et al., 2009; Suther, 2009). This motivates efforts to facilitate access of underserved and ethnic/racial minority communities to cancer risk assessment in innovative and more relevant ways. Latinos have demonstrated high religious commitment (Funk & Martinez, 2014), and religion/spirituality has been cited as a primary pathway for coping with the experience of cancer (Campesino et al., 2009; Hunter-Hernández et al., 2015; Jurkowski et al., 2010). Especially for Latinos, spirituality may indeed play a significant role in how individuals approach, interpret, and respond to the threat of cancer and may influence consequent action toward cancer screening and risk management behavior. A framework for cancer screening behavior and uptake of

genetic testing for hereditary cancer risk considers the emotional and cognitive processes, which have proven to be highly predictive. Now more than ever, the challenge is to provide culturally-relevant cancer care (Ota Wang, 2001; Weil & Mittman, 1993), which may include addressing the role of religion and/or spirituality. The significance of spirituality within the context of cancer risk assessment has received little attention (Quillin et al., 2006; Reis et al., 2007), but for ethnic minorities, it could play a central role in decisions about cancer risk assessment. It is essential to further explore what significance religiosity/spirituality may have in facilitating or hindering cancer risk assessment engagement. In light of this, the current study examined the impact of religious salience on how women at increased risk for hereditary breast cancer approach and make decisions about cancer risk assessment. Further, the goal of this study was to explore how this impact might vary by ethnicity (Latina versus non-Latina women). Also, findings from this research may help inform culturally-relevant, public health interventions to promote and facilitate access to cancer risk assessment and genetic testing among underserved Latino populations.

The primary contribution of this study is offering mixed-methods evidence for the relevance and potential impact of religious salience on coping and responding to cancer risk among Latina and non-Latina women. The findings from this study showed Latina women to have significantly greater religious salience than non-Hispanic women. This was significantly related to intentions to get cancer risk assessment, as Latina women had significantly lower intentions (adjusted mean score) controlling for religious salience. For Latina women, religious salience was also negatively associated with intentions for cancer risk assessment, while for non-Latina women, it was positively associated and, although this contrast was non-significant, the size of the effect met Cohen's cutoff for a medium effect size. For women considering themselves at low risk for hereditary breast cancer, religious salience was negatively associated with intentions for cancer risk assessment, however, it was positively associated for women considering themselves at high risk. This contrast was also non-significant, but the size of the effect exceeded Cohen's benchmark for a small effect. Still, it is worthwhile to consider the implications of this trend of religious salience being negatively associated with intentions for cancer risk assessment both

among Latina women and women perceived to be at low-risk for cancer. Because there is limited evidence to inform how best to address issues of religiosity/spirituality within the context of cancer risk assessment, this study can offer some preliminary, but much needed insight. This study highlights the fact that public health efforts to facilitate cancer risk assessment for hereditary breast cancer might benefit by acknowledging the impact of religiosity/spirituality, especially among Latinos.

Discussion of Main Findings

Latina women and religious salience. One of the main findings from this study was that Latina women held a stronger sense of religiosity compared to non-Latina women. For Latina women, religion was a personally salient aspect of their lives and to an even greater degree than it was for non-Latina women. As indicated by religious attendance, religious coping, the rated importance of religion, and personal accounts, Latina women in this study proved to be highly religious and engaged in religious coping to a significantly greater extent when compared to non-Latina women. The finding that Latina women rated significantly higher in overall religious salience supports the first hypothesis. This is not a novel finding as previous research has shown that religion in general holds a focal and influential position among Latino cultures. More specifically, religion and spirituality serve as main coping resources for Latinos through the cancer experience. In alignment with this literature, this study also provides evidence for the relevance, importance, and centrality of religion among Latina women. Therefore, women who identify as Latina with a previous history of breast cancer reported higher religious salience, which could be due to a couple of major influences. Latina women are already more likely to be religious, based on cultural values and norms. Also, having lived through breast cancer may have strengthened this existing religiosity/spirituality. Therefore, it is not surprising that these women claim to hold a strong and salient religious or spiritual faith. The literature demonstrates that for Hispanic and Latina cancer survivors, their religious and/or spiritual faith has been a main resource for coping with a cancer diagnosis and for resiliency (Hunter-Hernández et al., 2015; Meraviglia, 2006). Research shows that religious/spiritual faith is linked to psychological well-being and adjustment in two ways: (1) religious coping can be effective and predictive of successful psychological adjustment (Levine et al., 2007); and (2) but engaging in

religious coping only after receiving a cancer diagnosis or struggling with one's religious beliefs (i.e. "God has abandoned me") can lead to diminished well-being (Schreiber & Brockopp, 2012). This can also have relevance within the context of positive and negative religious coping. Positive religious coping prior to and after a cancer diagnosis can enhance psychological well-being, but negative religious coping, especially after a cancer diagnosis, can diminish well-being.

In the current study, Latina women not only demonstrated high religious salience but did so consistently. It is important to consider the cultural context and its influence on the level of religious salience among Latinas. New Mexico is unique in its ethnic and cultural diversity. As a minority-majority state, about 46% of New Mexicans identify as Hispanic ("Health Indicator Report of New Mexico Population - Race/Ethnicity," 2014). Since this sample of women was identified using the New Mexico Tumor Registry, these women are likely to call New Mexico home and it is important to note the regional, cultural aspect of religion. The Roman Catholic faith is deeply rooted in New Mexican Hispanic culture; therefore, religion will most likely play a major role in framing and responding to cancer risk. According to the U.S. Religious Landscape Study conducted in 2014, about 71% of Americans adults identify as Christian, of which, 21% identify as Catholic. In New Mexico specifically, 75% of adults identify as Christian, of which, 35% identify as Catholic (Pew Research Center, 2014). Further, in the most recent report from the Pew Research Center Survey in 2013 on religion among Hispanics in the U.S., 55% of Hispanics identify as Catholic and 25% as Protestant (Funk & Martinez, 2014). Compared to the nation as a whole, a greater proportion of Christians claim the Catholic tradition in New Mexico. Religion has been prominent in the history of New Mexico, and it is evident in the names of many landmarks/cities/geographic sites (i.e., Santa Fe translates to "holy faith," Las Cruces to "the crosses," and Belen to "Bethlehem"). As part of Hispanic culture in New Mexico, religious traditions and values instilled across many generations are evident today, although in a modern form. As was mentioned in the focus group discussion, it is important to be cognizant of the unique prominence and influence of the Catholic Church among Hispanic populations in New Mexico, especially with its links to specific values, attitudes, and behaviors regarding health. It is important to consider how cultural values influence

religiosity and spirituality and what implications this may have for acknowledging the relevance of spirituality. By way of comparison, a study attempting to develop a religiosity/spirituality questionnaire that was culturally relevant for Latinas in Puerto Rico found that specific cultural values served as the context for spiritual perspectives (Campesino & Schwartz, 2006). Similar to this, Latinos or Hispanics in New Mexico might also subscribe to specific cultural values that provide the basis for their religion or religious perspectives.

It is important to acknowledge the link between Latino cultural values and religious systems. There is evidence for the association between health and mental health outcomes and culturally-based gender roles and dynamics among Latino populations (Nuñez et al., 2016; Parangimalil, 2001; Piña-Watson, Castillo, Ojeda, & Rodriguez, 2013; Sanchez, Vandewater, & Hamilton, 2017). Two Latino gender dimensions that parallel one another are *machismo* and *marianismo* (Castillo, Perez, Castillo, & Ghosheh, 2010; DeSouza, Baldwin, Koller, & Narvaz, 2004; Villegas, Lemanski, & Valdéz, 2010). *Machismo* represents the “ideal male” as dominant, aggressive, and authoritative (Durik et al., 2006) as well as being a strong, courageous protector (Valencia-Garcia, Starks, Strick, & Simoni, 2008). *Marianismo* represents the “Ideal female” as a dutiful and nurturing wife and mother who is also submissive and passive (Kulis, Marsiglia, & Hurdle, 2003; Stevens, 1973). *Marianismo* is argued to be a product of the strong influence of the Catholic Church in Latino culture. According to *marianismo*, the gender role expectation for women of being pure, humble, and virtuous aligns with the Virgin Mary (Our Lady of Guadalupe, Mexican Catholic church) (Castillo et al., 2010; Sequira 2009). Other cultural values such as *familismo* are influential in how these cultural gender dynamics are reinforced and play out. The cultural value of *familismo* represents a strong identification with and attachment to the nuclear and extended family (Castillo & Cano, 2007). Both men and women are expected to uphold and subscribe to the value of *familismo*, however the family relies on the woman for nurturance and she must give of herself to her family in order to be a good mother and wife.

While these culturally-based gender roles and dynamics are transforming and evolving, reconciling traditional with modern-day perspectives (Bonilla-Rodriguez, 2016), *marianismo* and

machismo are still relevant and influential in Latino cultures and norms. *Marianismo* and *machismo* are not only prominent cultural values, but they are accompanied with the belief that these gender roles should be maintained across generations, and it is especially strict on women. Thus, this encourages the general belief of male dominance over women (Nuñez et al., 2016), which potentially has negative consequences for women's health. In regards to breast cancer screening practices, Latina women tend to delay or neglect breast cancer screening even in the presence of breast cancer symptoms (Ramirez, Suarez, Laufman, Barroso, & Chalela, 2000; Tejada, Gallardo, Ferrans, & Rauscher, 2017). Latina women who subscribe to more traditional gender norms may find it challenging to accept health messages that encourages and promotes a women's health as priority. Traditionally, if a Latina woman's duty is to place her family first, even above her own well-being, it would be difficult to juggle caring for others and caring for one's health. These Latina women may also feel restricted in their sense of agency to take an active role in their health decisions, as submissiveness and passivity are traits that are valued among Latina women, but do not promote being proactive about breast cancer screening. Similar to breast cancer screening, a Latin woman's approach to or neglect of cancer risk assessment can be also be influenced by these gender norms.

In contrast to this, in the 2013 National Survey of Latinos and Religion, the majority of Latinos, regardless of religious affiliation, rejected the traditional view of gender roles within marriage (Funk & Martinez, 2014). Most Latinos (79%) agreed with a more egalitarian approach to marriage in which both the husband and wife hold jobs and care for the children, but still some Latinos (18%) agreed with a traditional model of marriage in which the husband is the primary financial provider and the wife is the primary caregiver for the home (Funk & Martinez, 2014). Further, the majority of Latinos (63%) rejected the notion that the husband should have the final say in family matters (Funk & Martinez, 2014). Interestingly, there is some contrast between Protestant and Catholic Latinos, with 68% of Protestant Latinos and 82% of Catholic Latinos taking a more egalitarian approach to gender norms. While the cultural values of *marianismo* and *machismo* may have been reinforced by the Catholic religion, there appears to be a shift occurring in that religion is no longer as strongly influential in perpetuating

traditional approaches to gender norms and ideologies. In summary, the prominence of culturally-based gender roles and norms in Latino cultures, which stem from religious roots, do have consequences for breast cancer screening practices. However, it is important to consider the changing dynamics of gender norms and religious landscape among Latino populations.

Religious salience and intentions for cancer risk assessment among Latinas. As the first main hypothesis, a negative correlation between religious salience and intentions for cancer risk assessment was expected, more so for Latina women than for non-Latinas. The fact that the relationship between religious salience and intentions was negative for Latinas, but positive for non-Latinas, partially supported this hypothesis. The most intriguing finding is that the direction of relationship between religious salience and intentions for Latinas is the opposite of that for non-Latinas. Even though this contrast between Latinas and non-Latinas was not statistically significant, it is noteworthy, in part because the difference in correlations suggested a medium size effect. In this study, religious salience seemed to have a negative influence on intentions to get cancer risk assessment, but only for Latina women. Contemplating this finding more in depth, it is important to note that Latina women were much more religiously committed than the non-Latina women and demonstrated more religious coping overall. Yet, there was not much variability in the religious salience among Latina women, because Latina women in the study were so likely to report high religious salience (ceiling effect) compared to non-Latina women who varied more in their religiosity.

As was expressed by one of the women in the focus groups, religious views on genetics in medicine may not always be positive, and these deeply-held, negative attitudes towards genetics and medicine can have consequences for behavior. The literature shows negative attitudes toward genetic testing are the mechanism through which higher religious involvement decreases intentions to get genetic testing for cancer risk (Botoseneanu et al., 2011). It is likely that Latina women in this sample also hold negative attitudes toward genetic testing and/or the intersection between medicine and genomics, which might explain why Latinas are more hesitant or reluctant about cancer risk assessment.

Further, focusing specifically on religious coping as a primary means of coping with cancer, research shows that while negative religious coping is far less prevalent than positive religious coping, religious coping can have negative consequences. In the Religious/Spiritual Coping Scale (RCOPE) (Pargament et al., 2000), the various methods of religious coping can be dichotomized into positive and negative religious coping. Positive religious coping, characterized by benevolent religious appraisals, religious forgiveness, etc., may reflect a secure relationship with God/the divine. On the other hand, negative religious coping, characterized by reappraisals of God's powers, feeling abandoned or punished by God, etc., may reflect a tenuous relationship with God (Herbert, 2009). Among women with breast cancer, negative religious coping has been predictive of worse overall mental health and lower life satisfaction, and further, changes in negative religious coping (e.g. expressing anger towards God) predicted worsening mental health and well-being over time (Herbert et al., 2009).

Along with other ethnic minorities, Latinas are more likely to engage in religious coping (Alferi, Culver, Carver, Arena, & Antoni, 1999; Allen et al., 2014; Wildes, Miller, de Majors, & Ramirez, 2009a). While it has been documented that Latinas frequently engage in religious coping, there is not sufficient research to conclude which methods of religious coping are most common among Latinas and what demographic or cultural factors influence how Latinas engage in religious coping. In response to moments of struggle, utilizing one's religious and/or spiritual faith can either enhance feelings of distress/anxiety (negative religious coping) or one's faith can serve as a source of strength/resilience (positive religious coping) depending on which strategies are enlisted. Negative religious coping can impede engaging in cancer risk assessment as fear or anxiety can keep people from seeing the benefits of cancer risk assessment and, therefore, decrease interest and intentions for cancer risk assessment. However, religious coping in response to stress and struggle, which involves some aspects of negative religious coping strategies, can also be indicative of a process that may eventually result in positive outcomes, such as a more secure and stronger faith or greater clarity, perspective, and resilience. Further, engaging in negative religious coping does not restrict a person from also engaging in positive religious coping strategies, and chosen strategies constantly change. Therefore, intricate, complex religious coping

trajectories involve both negative and positive strategies of religious coping, which is a realistic approach to utilizing one's faith to cope with cancer for religious/spiritual individuals. In this study, it is not clear whether Latinas were more likely to engage in negative religious coping, as that was not assessed, but it may be the case that because Latinas consistently endorsed much higher religious salience, they also utilize negative as well as positive strategies of religious coping. This could explain why in this study, religious salience was negatively associated with intentions only for Latinas and not for non-Latinas, who were also less likely to engage in religious coping in general.

Another well-documented dynamic involved with religious coping among Latinas is the relevance and prominence of fatalistic perspectives, and in particular, their association with cancer screening practices. Fatalism is generally the belief that fate, or what has been set on course, cannot be changed, and as a result, life outcomes are essentially out of one's individual control (Abraído-Lanza et al., 2007). In health, some define fatalism as pessimistic or negative beliefs and attitudes regarding health-seeking behaviors. A consequence of this general pessimism is a rather passive approach to health, disease, and prevention, which has implications for health outcomes, such as underutilization of cancer screening services. Among Latinos, a more recent position on fatalism offers a more nuanced and complex look at fatalism within cancer screening. Fatalistic perspectives are likely rooted in cultural and social factors, but there has been debate about this. On the one hand, some consider fatalism a culturally based trait, but on the other hand, it can be a response to larger social and structural issues which contribute to health inequities (Abraido-Lanza et al., 2007; Leyva et al., 2014).

Fatalistic perspectives can also be considered a religious trait among Hispanics (Leyva et al., 2014). This particular flavor of fatalism would be *religious fatalism* which is distinguished by fatalistic beliefs linked to religion/spirituality (e.g. belief in divine control) which can influence how a person views their own health and health behaviors (Franklin et al., 2007). For many Catholic Latino populations, their religion endorses belief in divine healing (meaning God is able to restore health and well-being) and encourages meditation and prayer concerning issues such as health/illness. This could

lead to a seemingly passive approach to health, but there is still more research needed on how religion, culture, and fatalism play out among Hispanic populations.

In contrast to simplistic notions of fatalism and the limitations posed by a lack of conceptual clarity and consistent operationalization, one qualitative study found that “fatalistic” beliefs regarding breast cancer and cancer screening actually include aspects of resiliency rather than solely hopelessness (Flórez et al., 2009). The concept of destiny, closely linked with fatalism, leaves room for a perspective on fate that allows one’s actions to make a difference. Some Latina women express their views of destiny in such a complex fashion, viewing cancer, in part, as genetically determined but also responsive to personal agency in early detection (Flórez et al., 2009). There is evidence that believing in divine control is not always a passive approach, as it could also include taking an active role in coping (positive reframing or planning or praying/meditating). One study found that this coping approach was present among an ethnically diverse sample (Umezawa et al., 2012). Further, holding a strong belief in divine control was positively related to acceptance and negatively related to avoidance coping (denial and behavioral disengagement) among low-aculturated Latinas (Umezawa et al., 2012). Therefore, the religious fatalistic belief of divine control seemed to provide individuals with peace by facilitating acceptance of health outcomes, but did not seem to stand in the way of also taking action for improving one’s health. Therefore, what may appear at first to be fatalistic or passive religious coping strategies should be critically re-examined to gain insight into how such strategies play out in influencing health behavior action.

The present study did not assess fatalism, but revealed some aspects of a fatalistic perspective in the qualitative data, as Spanish-speaking Hispanic women acknowledged the notion of God having control over one’s health and health outcomes. Interestingly, they did not necessarily express this as a negative or passive approach to one’s health, but rather as a resource for coping with a breast cancer diagnosis. Also, Spanish-speaking Hispanic women endorsed the positive view that one’s religious faith is motivation toward engaging in proactive health behavior and cancer risk management behavior. Therefore, Latinas endorsing a fatalistic approach to coping with cancer risk and consequently taking a

passive approach to cancer risk management options in this study may explain why intentions to engage in cancer risk assessment were low. However, it would still be important to acknowledge the other possible dimensions of fatalistic approach to cancer risk in the future, because it does not necessarily rule out endorsing some aspects of active coping as well.

Arguably the most compelling finding of the current dissertation was the negative association between religious salience and intentions for cancer risk assessment. This should be considered thoroughly and thoughtfully, as there are various factors at play. While it is necessary to remain cautious with this finding because it was not statistically significant, there are still implications for public health interventions that might utilize the relevance of spirituality among Latinos or partner with faith-based institutions to promote cancer-risk assessment services. Previous studies support the idea that positive religious coping among Latina women can be an effective way to reframe cancer screening and enhance motivation for participation in genetic counseling (Jurkowski, Kurlanska, & Ramos, 2010; Wildes, Miller, de Majors, & Ramirez, 2009b). For example, one study explored the influence of various dimensions of religiosity on adherence to cancer screening among Spanish-speaking, church-going Latinas and found a significant association between positive religious coping and cancer screening adherence (Allen et al., 2014). Positive religious coping involved actively seeking spiritual support and working in partnership with God (Pargament, 1999). This study lends evidence to the potential impact of a positive, active religious approach to cancer screening. This approach can be useful to frame the influence of religion on decisions for cancer risk assessment as well. If positive religious coping is relevant among Latinas, there are implications for the enhancement/promotion of positive religious coping to increase the impact of cancer control interventions for Latinas. It is certainly appropriate for health professionals to acknowledge the importance of religious/spiritual faith to those Latinas who hold their religious faith as a vital aspect of their lives. Further, engaging their religious or spiritual faith and reframing the relevance it has in decision-making concerning cancer risk assessment could be a successful strategy for motivating at-risk Latinas to consider cancer risk assessment more seriously.

Perceived cancer risk and religious salience. The second main hypothesis predicted a negative correlation between religious salience and intentions for cancer risk assessment, but only for those at low perceived risk for breast cancer. This hypothesis was partially supported in that the relationship between religious salience and intentions was negative for those believed to be at low risk for breast cancer, but not for those believed to be at high risk for breast cancer. In other words, religious salience seems to have a negative influence on intentions to get cancer risk assessment only for women who do not perceive their risk for breast cancer to be high. Although not statistically significant, given the contrast in correlations exceeded the benchmark for a small effect, it is worth considering in greater depth why religiosity/spirituality was associated with a decrease in intentions for cancer-risk assessment for women at low perceived risk, and why religious salience for women at high perceived risk did not influence intentions.

Schwartz and colleagues (2000) were the first to evaluate the influence of spirituality on *BRCA* genetic testing uptake, specifically considering the role of perceived risk for cancer in getting *BRCA* genetic testing. Since the Schwartz study, there has not been any research to explore this further. That makes studies like the current study so critical, because there is a need to not only further explore this intersection of religiosity/spirituality and cancer risk perceptions, but also begin to identify key mechanisms at play. The second main hypothesis of this current study attempted to replicate these findings in a new context with a new and different population. Schwartz's finding that women with low perceived risk who also reported high spirituality were 80% less likely to receive their genetic testing results than women who reported high spirituality (Schwartz et al., 2000) was replicated to some degree. Although it did not reach statistical significance in this current study, women at low levels of perceived risk with high religious salience also had decreased intentions to get cancer-risk assessment compared to women with low religious salience. Further, for women who were at high levels of perceived risk, religious salience did not appear to make a difference in intentions for cancer risk assessment, matching the finding from Schwartz and colleagues (2000).

The finding that there is a potential interaction between perceptions of cancer risk and religious

salience among Latina and non-Latina women at increased risk for hereditary breast cancer poses further questions as to what contributes to this effect. Religiosity/religious beliefs seem to be associated with negative attitudes towards genetics in medicine (Botosaneanu et al., 2011; White, 2009).

Religiosity/spirituality has also played a significant role in coping with cancer generally, however, it also plays a major role in coping specifically with the uncertainty of risk for cancer. Since risk is experienced as the possibility of loss, and the definition of what is considered “loss” varies from one person to another (White, 2009), risk is made meaningful when it is personally defined in terms of a particular individual or family (perceived risk). How people bring meaning to or frame their level of risk for cancer is important, because religious or spiritual faith and worldviews can play a major role particularly in how a person internalizes objective indications of cancer risk, that is, how they make it personally relevant.

Religiosity/spirituality can therefore impact: (1) initial interpretations of cancer risk, or how a person frames their risk and (2) coping with the threat of cancer risk, or how a person deals with their personal risk for cancer.

It is important to consider how religiosity influences perceptions of risk through one’s sense of locus of control for health outcomes. If religion or spirituality has an influence on a person’s external locus of control, it may cause them to discount the benefit of genetic testing and, instead, place greater focus on the potential of divine control (Quillin et al., 2006), which would have implications for how much at risk a person judges himself or herself to be. Religiosity or spirituality may also influence a person’s internal locus of control, placing importance on being a good steward of your body (“temple” in 1 Corinthians 6:19) as a spiritual and righteous duty. This would also have implications for making personal judgements about cancer risk. Taking this example, a religious/spiritual external locus of control might discourage a person from seeking cancer risk assessment, because they may not perceive a need to know more about his or her genetic risk. However, a religious/spiritual internal locus of control might encourage the use of cancer-risk assessment as a means to practicing one’s faith. The belief that God and the individual play a collaborative role in health characterizes an active, spiritually-oriented health locus of control (Holt, Clark, & Klem, 2007). This type of locus of control may motivate positive engagement

in preventative screening for cancer and risk management practices. However, a passive, spiritually-oriented health locus of control may result in not taking protective health actions because of a belief that God is in sole control of one's health and can promote a lack of engagement in risk management options (Holt et al., 2007).

In the current study, the finding that religious salience was associated with lower intentions for cancer risk assessment when the risk of cancer is considered low suggests that religious salience may contribute to how women cope with their cancer experience and their cancer risk. Using religious/spiritual strategies to cope with the threat of cancer (cancer risk) would have consequences for what actions are taken to manage or address that risk.

A lot rests on the importance placed on finding a cause or meaning for a cancer diagnosis and whether or not using religion or one's spiritual faith can provide this. If religious/spiritual coping is effective in providing a person with some peace about their cancer, there may not be a great, pressing need to know more definitively if heredity was the cause of cancer. Hence, having greater acceptance and a sense of meaning behind one's cancer experience could decrease motivation to take action, learn more about one's risk, and pursue cancer risk assessment. This could also be related to lower perceived risk, because having accepted one's cancer could decrease one's sense of being at risk from it.

Taking cancer risk into consideration, the impact of religious salience varies. In this current study, the looming threat of cancer for those at high perceived risk was strong enough to override the influence of religious coping. Even when religious or spiritual faith is important and influential in an individual's life, this risk threat may negate any influence religious/spiritual coping has on coping with cancer if risk for cancer or severity of a condition is great enough. However, when there does not appear to be a threat (risk is low), religiosity/spirituality can make a difference on coping. There is evidence that the salience of one's cancer risk also makes a difference in perceptions of risk. One study found that for women with a family history of breast cancer, more frequent spiritual coping was associated with lower risk perceptions, but not for those with negative family histories (Quillin et al., 2006). This suggests that

when the threat of cancer is more salient (having a family history), religious coping may serve to deal with that threat effectively at a psychological level, as indicated by lower perceptions of cancer risk.

In the current study, even if a woman considered her religious or spiritual faith important and influential in her life, perceiving a high risk of cancer seemed to outweigh everything. Despite claiming high religious salience, intentions for cancer risk assessment were high if cancer risk was high. However, when there did not appear to be a threat (cancer risk was low), religious salience made a difference by discouraging these women from seeking cancer risk assessment. Therefore, religiosity/spirituality may be effective in coping with one's cancer experience when there is no threat (or when threat is not perceived), but not when a person seems overwhelmed by the threat of cancer risk.

Also at play is another psychological process, cancer worry. The aforementioned scenarios may be true more for individuals that are not experiencing too much distress over their cancer experience, because they may utilize religious/spiritual coping strategies to deal with that distress. For those women who remain concerned about their cancer and risk for another cancer diagnosis, then opportunity to learn more about one's risks would be more welcomed, perhaps, to supplement or strengthen their religious/spiritual coping. This speaks to the role of cancer worry in motivating action toward risk management, especially for those at increased risk whether they perceived themselves to be at higher risk or not. While cancer worry and perceived risk for cancer were significantly and positively correlated with each other, the current study (in an unreported analysis) found virtually no evidence that cancer worry had a moderating influence on religious salience's effect on intentions for cancer risk assessment. However, it is still important to consider how emotional and cognitive processes duel and complement one another in motivating or discouraging the use of cancer risk assessment.

Strengths & Limitations

A strength of this research is that this is one of the few research studies that has examined the intersections of religiosity/spirituality, engagement in cancer risk assessment or genetic testing for hereditary cancer, and psychological processes among a diverse population. This study not only offers insight into the perspective of Latina women using the rich qualitative data, but the quantitative findings

also are suggestive regarding the potential impact of religious salience on intentions for cancer-risk assessment as moderated by ethnicity and risk level. Previous related research has examined separately the relationships of spirituality and genetic testing uptake (Schwartz et al., 2000), of spiritual coping and perceived risk (Quillin et al., 2006), of religiosity and attitudes toward genetic testing (Botoseneanu et al., 2011), and of religious locus of control and decisions for genetic testing among African Americans (Kinney et al., 2001). This is the first study that attempts to speak to the intersection of all these factors all at once: religious salience meets psychological processes meets ethnic differences.

Another strength of this study is that there was an excellent representation of Latina women, both Spanish- and English-speaking. The level of acculturation can have quite a significant influence on certain health outcomes, as monolingual Spanish-speaking Latina women will likely experience unique cultural and language-related barriers to seeking cancer risk assessment. Although Spanish-speaking Latinas were only represented in the qualitative data, their perspectives on cancer risk assessment were insightful. A main limitation to acknowledge about this study is the small sample size of the quantitative portion. This study conducted the main quantitative analyses with only thirty-six participants. Recruitment through the New Mexico Tumor Registry may have been successful, but efforts to recruit more women into the study were not timely. Along these lines, the small sample size means this research must be regarded as an initial, exploratory study.

A limitation of this study pertains to the typical age of the sample of women who participated in the GRACE study. This is important to consider because, in comparison to the national trends, there are noteworthy differences. Nationally, in 2014 the median age of Hispanic females/Latinas was 29 years old and of non-Hispanic white females was 44 years old (Pew Research Center, 2016). More relevant to the current research is the typical age of women with breast cancer: for non-Hispanic white women, the highest rates of breast cancer occur between the ages of 70-74 years and for Hispanic women it is between 65 -69 years (National Cancer Institute SEER, 2015). In the current study, median age for Latina women was 59 years old and non-Latinas was 58 years old. Specifically this study's sample of women

was considerably younger than what might have been expected given the national data on when women are typically diagnosed with breast cancer.

Age is also important to consider, because age and generational status are correlated with greater religiosity. According to the 2013 National Survey of Latinos and Religion conducted by the Pew Research Center among Latinos in the U.S., there has been a gradual shift away from Catholicism to Protestant affiliations or no religious affiliation at all, particularly for younger generations (Funk & Martinez, 2014). Younger Latinos are less likely to be Catholic, as 45% of Latinos under the age of 30, 57% of Latinos between 30 and 49 years old, and 64% of Latinos over the age of 50 are Catholic (Funk & Martinez, 2014). Foreign-born, immigrant Latinos are more likely to be Catholic as well, as 60% of foreign-born Latinos and 48% of U.S.-born Latinos are Catholic (Funk & Martinez, 2014). While age and religiosity tend to be positively associated with each other, the very large statistically significant differences in religious salience between Latina and non-Latina women in this study who were of very similar median ages suggests that age effects do not account for the findings regarding religiosity in this study.

Another limitation of this study is that this sample of women was from New Mexico and regionally, there are certain unique characteristics of the Latino/Hispanic population in New Mexico. While the findings from this study do provide insight into the influence of religiosity on decisions to seek cancer risk assessment, it is important to note that there may be some unique cultural contribution as well. In New Mexico, about 67% of Hispanic/Latinos are of Mexican-origin and of 33% non-Mexican-origin (Pew Research Center, 2014). In New Mexico, among Hispanic/Latinos who do not claim Mexican roots, these Hispanic/Latinos may identify as having roots in other Latin American countries or in New Mexico itself (which was previously Spanish territory), as New Mexican Hispanic is a unique cultural identity. Therefore, the Latino populations of New Mexico may not necessarily be representative of the diverse Latino populations in the U.S. as a whole. Generalizing the trends and findings of this study to other Latino sub-populations in the country should be approached cautiously.

A final limitation of this study is that the women may not be representative in terms of education. In particular, the Latina women in the intervention phase of this study had a much higher educational attainment level than Latinas do nationally. In the general U.S. population of adults aged 25 and older, according to the U.S. Census Bureau's Current Population Survey of 2016, 15.5% of Hispanics had a Bachelor's degree or more whereas 36.2% of non-Hispanic whites had a Bachelor's degree or more (Ryan & Bauman, 2016). In the current study, 35.3% of Latina and 42.1% of non-Latina women had a college degree. This is a major departure from what is expected nationally, especially for Latinas. Thus, this sample of Latinas are strikingly older and more educated than Latinas on average in the U.S. It is possible that a sample of less educated Latinas may be less interested in genetic counseling than was observed in the current study.

Although this research was primarily an exploratory study, and the findings concerning the two main hypotheses proposed were not supported by statistically significant results, this study still makes a meaningful contribution because it provides preliminary evidence for the impact of religious salience on intentions for cancer risk assessment among at-risk Latina women. Studies like this one are necessary as a starting point providing some guidance on what directions are most promising for future research.

Future Research

For a more comprehensive portrait of the impact of religiosity on intentions and actions toward cancer risk assessment, three key areas of focus for future research are: 1) assessment of various dimensions of religiosity, 2) a more diverse sample of Latina women, and 3) assessing more diverse outcomes, ranging from interest/intentions to actual uptake of genetic counseling/genetic testing for hereditary cancer.

While the current study assessed three main dimensions of religiosity (religious attendance, religious/spiritual importance, and religious coping), it may be useful to explore how other dimensions of religiosity/spirituality may or may not be relevant in how individuals approach and make decisions about cancer risk assessment. For example, religious or spiritual locus of control seems promising, as it could

potentially be relevant in assessing perceptions of risk and the utility of options such as genetic testing for hereditary breast cancer. A more comprehensive assessment of religious coping also seems worthy of further exploration of how religiosity/spirituality may interact with coping with the distress associated with being at increased risk for breast cancer. Despite being a less common strategy, negative religious coping might reveal some interesting processes, such as religious or spiritual growth that might eventually come from a period of doubt and struggle. Therefore, including negative religious coping in an assessment may be useful. It may be also beneficial to look at religious coping from a cultural perspective, appreciating the fact that there may be specific ways in which culture might influence religious coping. For example, for Hispanic Catholics, it may be important to consider the specific ways in which Catholic traditions show up in religious coping.

This study was successful in its recruitment attempt of reaching a diverse set of Hispanic women in New Mexico. However, more diverse samples of Latina women in future studies would be necessary to generalize findings to the general population of Latinas in the U.S. Latino populations are not homogenous, as there is a great deal of diversity among Latinos in the U.S., and it is important to note the regional differences. Also, it would be important to consider how socioeconomic factors, cultural factors (acculturation, values, language), and other social factors influence Latinas at increased risk for hereditary breast cancer and their approach to cancer risk assessment.

While it is important to capture a continuum of outcomes, most research on cancer risk assessment outcomes has focused on interest or intentions. Future research should expand outcomes to actual engagement in genetic counseling and/or uptake of genetic testing for hereditary cancer. In order to test what is actually predictive of engagement in cancer risk assessment for Latinas and other populations, it is necessary to utilize more behaviorally oriented outcomes, along with intentions and interest.

Finally, the most promising research is that which can inform clinical application. The goal of genetic counseling is to provide quality counseling that is congruent with a patient's needs and values. If religion is an important and salient aspect of a patient's life, it may be appropriate to integrate this into their cancer risk assessment. Some genetic experts may be more equipped or comfortable with addressing

religion and/or spirituality in the clinical setting with their patients. Much more research in collaboration with clinicians is needed to explore how patients would like to address their spirituality and to identify the strategies to integrate religion and/or spirituality in a way that is relevant and beneficial in the clinical setting. In this study, religious salience did seem to have an impact on intentions for cancer risk assessment, dependent on level of perceived cancer risk. This could be important to explore further, and it may have implications for clinical practice.

What role should clinicians play regarding spirituality in the care of patients? Reis and colleagues (2007) propose that medical care should integrate spirituality because patients may have spiritual needs that need to be given attention. Spiritual assessment within healthcare may enhance the quality of care, if it is relevant and meaningful for the patient (Koenig, 2002). Striving for optimal health outcomes involves providing care where patient values and cultural competency are central (Puchalski et al., 2009), and that includes recognizing that religion can be a primary cultural element (Thompson et al., 2016). Clinical genetics professionals would benefit from even a rudimentary understanding of religious coping, because spiritual needs may be very salient for some patients (Boyle, 2004). In their study, Reis and colleagues found that, although limited, discussion that involves spirituality is at times present within genetic counseling sessions, but such discussions are most likely patient-initiated or associated with end-of-life issues (Reis et al., 2007).

Risk communication is also another vitally important aspect of cancer risk assessment. As cancer risk assessment continues to expand into public safety net settings and becomes more available to economically and ethnically diverse populations, it is imperative to consider the significance of cultural values that influence decisions regarding risk assessment services. Therefore, effective communication regarding cancer risk can play an important role in addressing cancer health disparities because issues surrounding language barriers, health literacy, and cultural values can thereby be addressed (Joseph & Guerra, 2015).

The role of patient preferences seems extremely relevant, but there has not been much research investigating whether or not patients would like genetic counseling to cover topics of spirituality. Routine

incorporation of religion in genetic counseling is not generally considered a priority (Thompson et al., 2016). The preferred approach seems to be genetic counselors being prepared to discuss religion and spiritual issues if patients initiate the discussion (Thompson et al., 2016). Patient preferences for how cancer risk assessment services incorporate spirituality might vary based on other cultural domains. For Latinos or other ethnic and racial minorities, there might be a greater need and preference for their genetic counselor to discuss spiritual issues. Understanding patient preferences for how genetic counseling can incorporate spirituality is essential for future research to consider.

There are not only clinical implications but also implications for prevention efforts. Religious or spiritual values may play a role in primary cancer prevention behavior among Latinos and further exploration of the dimensions of religiosity/spirituality that impact health perspectives and behaviors is essential to inform cancer prevention interventions. Public health interventions should be sensitive to religion and religious values so that interventions do not conflict with the values of the patients but instead take advantage of religious platforms for public health education.

Final Summary & Conclusion

The aims of this study focused on exploring the impact of religious salience, cancer worry and risk, and ethnicity on intentions to seek cancer risk assessment. Noting the main findings from this study, Latina women demonstrated significantly greater religious salience than non-Latina women. Latina women also had significantly lower intentions controlling for religious salience. Religious salience was also negatively associated with intentions for cancer risk assessment for Latina women, while for non-Latina women, it was positively associated. For women at low risk for hereditary breast cancer, religious salience was negatively associated with intentions for cancer risk assessment, but for women considering themselves at high risk, it was positively associated. These interactions were non-significant, but they reveal patterns worth considering and merit future research. This study offers mixed-methods evidence for the relevance and potential impact of religious salience on coping and responding to cancer risk among Latina and non-Latina women, which can inform public health interventions. For those who consider religiosity/spirituality a salient and defining influence in their lives, building on this potential opportunity to engage an individual's religious/spiritual faith can encourage positive and active religious coping with cancer distress and in framing risk perceptions, which could be a promising, culturally-centered approach to promoting cancer risk assessment.

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Appendix A

Literature Review

Disparities in Utilization of Cancer Risk Assessment

Breast cancer disparities and Latinas. The burden of breast is heaviest for women of color and socioeconomically disadvantaged populations (Polacek et al., 2007). Breast cancer disparities manifest in diverse ways, such as mortality rates, survival rates, exposure to risk factors, and access to breast cancer prevention and care/treatment resources. Disparities in breast cancer exist because of biological, social, and health system determinants; while biological factors are not modifiable, social and systems factors can be (Wheeler, Reeder-Hayes, & Carey, 2013). Social factors including poverty, financial insecurity, poor access to care, poor health literacy, lack of health insurance, language barriers, mistrust in medical providers, and differential care (among many other influences) contribute to cancer health disparities.

Although the incidence of breast cancer for Latinas in the U.S. is not necessarily higher than that of non-Latina Whites, Latinas are more likely to be diagnosed with later stage, more aggressive breast cancer and this decreases survival (Siegel, Naishadham, & Jemal, 2012). There is also evidence that African Americans and Latina women are at a higher risk of more aggressive subtypes of breast cancer (Howlader et al., 2014). Despite equal access to health care services, one study found that Latina women had a younger mean age at diagnosis of 56 years, were more likely to be diagnosed with stage IV disease, had larger tumors, and were 22% more likely to die during the five years post diagnosis (Watlington, Byers, Mouchawar, Sauaia, & Ellis, 2007). There is evidence for differential treatment of ethnic groups, such that Latina women have failed to receive local therapy for curable breast cancer more often than Whites, even after adjusting for cancer characteristics and access to an oncologist (Bickell et al., 2006). There have been remarkable advances in the science of breast cancer treatment and survival, but this has not translated into improvements in breast cancer survival across all socioeconomic and ethnic-racial populations.

Cancer risk assessment. Breast cancer is the leading cancer diagnosis among women in the U.S. and the leading cause of cancer death among Latina/Hispanic women in the U.S. (American Cancer

Society, 2015). Hereditary Breast and Ovarian Cancer (HBOC) Syndrome refers to cancer risk (genetic mutations) that is passed on within a family (American Society for Cancer Oncology, 2017). Hereditary Breast and Ovarian Cancer accounts for up to 10% of all breast cancer cases (Claus et al., 1996). With a confirmed genetic mutation (BRCA1/2), the risk for breast cancer increases up to 85% and the risk for ovarian cancer increases up to 63% (King et al., 2003). The risk of cancer is a very real threat to many women and their families, especially to vulnerable Latina populations at increased risk and lacking access to cancer prevention resources.

The purpose of cancer risk assessment (also known as genetic counseling/genetic testing) is to identify those at highest risk for hereditary cancer who could benefit the most from early detection, prevention strategies, and risk management resources (Sussner et al., 2015). Genetic counseling is the process of helping individuals and families understand and adapt to the medical and psychological implications of genetic or inherited risk (Riley et al., 2012). Not only is genetic counseling crucial for informing decisions concerning medical care, it can help address anxiety and distress related to the uncertainty of cancer risk (Hopwood et al., 2001; Nelson et al., 2014). Genetic counseling is recommended when genetic testing is done, to interpret test results within the context of each person's risk factors and medical history as well as to explain risk management options (Daly et al., 2001).

Hereditary cancer risk among Latino populations has recently gained research attention (Chalela, Pagán, Su, Muñoz, & Ramirez, 2012; Glenn, Chawla, & Bastani, 2012; Joseph & Guerra, 2015; Lagos et al., 2008; MacDonald et al., 2008; Sussner, Jandorf, Thompson, & Valdimarsdottir, 2010; Sussner, Jandorf, Thompson, & Valdimarsdottir, 2013). Genetic risk factors for breast cancer, particularly BRCA mutations, have been identified among Latinos at comparable and even higher prevalence as compared to other ethnic minorities (John et al., 2007; Weitzel et al., 2013; Weitzel et al., 2005; Weitzel et al., 2007). In the largest study of Latina breast/ovarian cancer families in the U.S. to date, a high prevalence of BRCA mutations (25%) was observed in a mostly Mexican-American population (Weitzel et al., 2013). In another independent study of Puerto Rican female breast cancer patients, a 52% mutation rate

was reported (Dutil, Colon-Colon, Matta, Sutphen, & Echenique, 2012). This demonstrates that Latinas are just as likely if not even more likely than other populations to be at risk for hereditary breast cancer.

Utilization disparities in cancer risk assessment. Despite crucial advances in genomics which have significant implications for cancer risk assessment, not all demographic and socioeconomic groups have benefited equally (Pagán et al., 2009). Historically, minority and low-income populations have been limited in access to medical technologies and genetic testing is not an exception (M. J. Hall et al., 2009; Wideroff, Vadaparampil, Breen, Croyle, & Freedman, 2003).

Ethnic minorities encounter a multitude of barriers to cancer risk assessment services, primarily due to a lack of awareness of genetic counseling and/or genetic testing among minorities (Armstrong, Micco, Carney, Stopfer, & Putt, 2005; W. Chen et al., 2002; M. Hall & Olopade, 2005; Ramirez, Aparicio-Ting, de Majors, & Miller, 2006). In a large, national sample of high-risk breast cancer patients, Black women (12%) and Latina women (18%) were significantly less likely to be tested than non-Jewish white women (34%) (Levy et al., 2011). In another study evaluating a national cohort of patients receiving BRCA1/2 testing in community-based settings from 1996-2006, Latina women were only 4% of all those tested (M. J. Hall et al., 2009). In another national-level study looking at receiving BRCA 1/2 testing within a community setting, of 650 individuals surveyed, the vast majority were White (94%) and the minority were Asian (2%), some other race (2%), African American (1%), and Latino (1%) (W. Chen et al., 2002). Among Latino populations, utilization of BRCA genetic counseling or testing has remained low (W. Chen et al., 2002; M. J. Hall et al., 2009; Ricker et al., 2006).

Barriers to cancer risk assessment for Latino populations. In attempting to understand the factors that lead to low utilization of cancer risk assessment among Latinas, two general hypotheses have been proposed (Ricker et al., 2006). In essence, it is thought that Latinas (or other ethnic minorities) are not represented in cancer prevention practices because of access issues and culturally-based or culturally-related barriers.

Awareness issues. An underlying factor that influences the utilization of cancer genetic risk assessment services among Latino populations is lack of knowledge (Vadaparampil, McIntyre, & Quinn,

2010). There is a consistent lack of knowledge about *BRCA* testing among ethnic minorities (Armstrong et al., 2005; Vadaparampil, Wideroff, Breen, & Trapido, 2006; Wideroff et al., 2003). Lack of awareness of cancer genetic services is a major barrier to access for Latino populations, as being aware is one of the first steps towards approaching these services.

In the 2000 National Health Interview Survey, 42% of all participants reported having some knowledge of genetic testing for cancer risk, including 50% of non-Latino Whites but only 20% of Latinos (Honda, 2003; Wideroff et al., 2003). Almost a decade later, another study found that only 19% of Latinos overall were aware of genetic testing cancer risk, with rates being even lower among those with lower levels of English-speaking preference, but almost half (48%) of White women were aware of genetic testing (Pagán et al., 2009). Even after adjusting for factors such as educational attainment, age, and marital status, awareness still remains lower among minorities as compared to Whites (Pagán et al., 2009). In a study investigating awareness and educational needs related to genetic counseling among those at high risk for hereditary breast cancer, the majority (57%) of Latina women were unaware of *BRCA* testing, compared to only 34% of non-Latina women (Gammon et al., 2011).

Despite limited knowledge of genetic testing for cancer risk, Latina women and their families have shown high interest in genetic testing (Chalela et al., 2012; Gammon et al., 2011; Hughes et al., 1997; Jaggi et al., 2015; Bryan Leyva et al., 2014; Ramirez et al., 2006; Ricker et al., 2006; Sussner et al., 2015; Sussner et al., 2010). Spanish-speaking Latina women have demonstrated even greater interest in genetic testing than women of other ethnic groups (Jaggi et al., 2015). Latinas at risk might be very interested in preventative cancer genetics services, but may lack access, which prevents utilization. When access to cancer genetics services is provided, one study showed that 88% of underserved Latinas referred to cancer risk assessment took advantage of the opportunity and received genetic counseling (Ricker et al., 2006).

Institutional issues. At the institutional, health systems level, there is a lack of sufficient bicultural and/or bilingual providers (Forman & Hall, 2009). Awareness on the part of the physician or medical care provider is also an issue, as many providers are not knowledgeable about hereditary cancer

risk and are not able to identify which of their patients are at increased risk for hereditary cancer (Louise Wideroff et al., 2005). Safety net institutions predominantly serve low-income, ethnic minority, immigrant populations, as these populations are more likely to seek care at safety-net institutions; however, these safety-net institutions are limited in resources and specialty services (Komenaka et al., 2015). Another main challenge is the limited availability of cancer risk assessment services and providers (Wideroff et al., 2005), which raises the challenge of being able to provide culturally-relevant counseling (Collins, Villagran, & Sparks, 2008; Erwin et al., 2010). There is a great need for cancer risk assessment services to be available in diverse settings, as the demand for them is increasing among Hispanic and younger breast cancer patients (Jagsi et al., 2015).

Utilizing a population-based sample, one study found that a genetic testing discussion with a healthcare provider was the single strongest predictor of receiving genetic testing and that compared to non-Hispanic white breast cancer survivors, minority women (Hispanic and African American) were less likely to have had such a discussion (Cragun, Kinney, & Pal, 2017). A recommendation from a healthcare provider has proven to be a critical and primary element in the determining whether or not a patient gets genetic testing, and the lack of a referral is a top barrier to genetic testing among breast cancer survivors (Anderson et al., 2012; Jagsi et al., 2015; McCarthy et al., 2016; Pagán et al., 2009; A. G. Ramirez et al., 2015).

Socioeconomic issues. For Latinos, one of the main barriers to cancer prevention is lack of resources (Warren, Londono, Wessel, & Warren, 2006). Low levels of education, low income, lack of health insurance, and low acculturation influence opportunities to access cancer risk assessment for Latinas (Levy et al., 2011; Penchaszadeh, 2001; Ramirez et al., 2006). Just the act of seeking genetic counseling may prove to be burdensome for low-income women because, for example, these populations have less flexible occupations, may rely more on public transportation, and may not have childcare readily available (Levy et al., 2011). For economically disadvantaged women at high risk for hereditary cancer, seeking cancer risk assessment actually costs them relatively more, as there is more that these women must negotiate to get cancer risk assessment.

Culturally based issues. For Latinos, proposed sociocultural barriers to cancer risk assessment include fear of cancer, fatalistic beliefs, and further, certain norms that disrupt conversations on family history of cancer (Cheong, 2007; Lagos et al., 2008). Fatalism (*fatalismo*) is a dominant cultural belief among Latino populations, and has been suggested as a barrier to cancer prevention (Abraido-Lanza et al., 2007; De Los Monteros & Gallo, 2011; Powe & Finnie, 2003). Specifically within the context of health, fatalism manifests as pessimistic attitudes towards preventative health practices and disease outcomes (De Los Monteros & Gallo, 2011), such as believing that little can be done to change the course of one's fate with regards to cancer outcomes (Pérez-Stable, Sabogal, Otero-Sabogal, Hiatt, & McPhee, 1992). Religious attributions and cultural values are potentially interwoven with each other and may contribute to the construct of fatalism (Abraido-Lanza et al., 2007; Powe & Finnie, 2003). This fatalistic perspective towards cancer and cancer prevention could cause Latinas to downplay the benefits and emphasize the disadvantages of genetic testing.

The general patterns of fatalistic attitudes among Latinos have been interpreted as stemming from a cultural base, because acculturation and other socioeconomic factors have been associated with fatalism (Hubbell, Chavez, Mishra, & Valdez, 1996; Otero-Sabogal, Stewart, Sabogal, Brown, & Pérez-Stable, 2003). However, while the current state of the literature confirms that Latinos may subscribe to fatalistic beliefs, the behavioral consequences of those beliefs are uncertain (Abraido-Lanza et al., 2007). Latinas are as likely as their White counterparts to agree that cancer detected early can be cured (Hubbell et al., 1996; Smiley, McMillan, Johnson, & Ojeda, 2000). In actuality, Latinos are not solely fatalistic towards cancer but also hold positive attitudes towards cancer prevention.

The relevance of fatalism in Latinas' cancer prevention practices should be considered alongside social and systemic factors and disparities that impact access to health-enhancing resources (Abraido-Lanza et al., 2007; Chavez et al., 1997). For disadvantaged populations, poverty, racism, discrimination, and inequitable access to education and health services are a reality and can have significant deleterious impacts and present obstacles to health. These structural barriers may be at the root of fatalistic beliefs and attitudes; therefore, fatalism may be a reflection of the reality many disadvantaged populations face

(Abraido-Lanza et al., 2007; De Los Monteros & Gallo, 2011). In summary, for Latino populations, the structural context (sociocultural factors and structural barriers to care) is fundamental to conceptualizing fatalism's influence on cancer prevention behaviors and attitudes (Abraido-Lanza et al., 2007; De Los Monteros & Gallo, 2011).

Acculturation. Acculturation may also influence access to risk assessment, particularly because it limits awareness of cancer risk. Less acculturated, predominantly Spanish-speaking, immigrant Latinas are less likely to engage in cancer risk assessment (Echeverria & Carrasquillo, 2006; Lagos et al., 2008; Vadaparampil et al., 2006). In a study exploring barriers and facilitators to genetic testing among an ethnically diverse sample of cancer survivors, traditional gender roles posed a hindrance for Latinas (Glen et al., 2012). Unique to Latinas, there was a cultural obligation to prioritize their family's need over their own health needs (Glen et al., 2012).

Immigrants are a particularly vulnerable group because they are most likely to lack health insurance coverage and less likely to have a usual source of care (Echeverria & Carrasquillo, 2006). Less acculturated individuals may also be more likely to subscribe to traditional cultural values and norms, such as fatalistic beliefs (De Los Monteros & Gallo, 2011), which could decrease engagement in cancer prevention behaviors. Younger Latinas being less likely to subscribe to the traditional cultural beliefs (e.g., cancer fatalism) that may pose as barriers to genetic counseling (Sussner et al., 2015). Also linked with fatalistic beliefs is faith or spirituality, which can be driven by acculturation level, with one study showing that Mexican and Cuban women were reluctant to accept a provider's recommendation to seek genetic testing because God and their religiosity were considered to supersede a provider's recommendation (Vadaparampil et al., 2010; Vadaparampil et al., 2010). Immigration status appears to accentuate the disparities in access to cancer risk assessment among lower-income Latino populations (Chalela et al., 2012).

Facilitating access to cancer risk assessment among underserved populations should be a public health priority. In order to develop effective public health interventions and culturally relevant promotion

strategies, considering the socioeconomic and cultural factors that determine how Latina women experience access to cancer-related care and resources across the breast cancer continuum is key.

Psychological Factors in Utilization of Cancer Risk Assessment

What motivates individuals to seek cancer risk assessment? Psychosocial factors have been associated with cancer risk assessment engagement (Hopwood et al., 2001; Lerman et al., 1995). Influential in behavior has been the extent to which an individual perceives herself to be at risk for and worries about cancer. Perceived risk for breast cancer has been shown to be a key motivator in health behavior, as it is strongly related to intentions to use breast cancer preventative screening services (see Cameron & Reeve, 2006 for review). Disease-related worry and anxiety may also be important in motivating and promoting health behaviors. Greater cancer worry has been associated with engagement with cancer screening (see Cameron & Reeve, 2006 for review). Perceived risk stems from more cognitively focused processes, whereas cancer worry stems from more emotionally focused processes (Cameron & Reeve, 2006).

Although cancer risk assessment for high-risk populations is the recommended standard of care and could be potentially life-saving, there are many reasons why a high-risk individual decides for or against cancer risk assessment. The decision-making process can be heavily guided by a variety of psychological influences. At the individual level, these psychological influences may be linked to core beliefs and values a person may hold. For example, spirituality and religiosity might play a role in how cancer risk and cancer worry influence cancer preventative behavior or decisions to get cancer risk assessment.

Common Sense Model of Self-Regulation. The interactive nature of psychological factors are described in the Common Sense Model of Self-Regulation (Leventhal, Meyer, & Nerenz, 1980). According to this model, reacting to and interpreting the significance of a health threat involves two simultaneous cognitive and emotional processes; also, these two parallel processes can mutually influence one another (Hagger & Orbell, 2003; van Oostrom et al., 2007). The Common Sense Model of Self-Regulation could be applied to the context of genetic risk for breast cancer, considering that women faced

with the threat of hereditary cancer are likely to interpret this threat through cognitive and emotional processing. In response to the threat of hereditary cancer, a woman might have an initial emotional response but attempt to regulate her worry and cancer fear by considering her options for action. Both risk and worry work in tandem to determine which course of action could be the most fruitful or practical.

Risk perception. One of the key motivators is how individuals estimate their own individual risk. This is a subjective process which involves reasoned cognitions concerning the threat of cancer and the possible protective actions one can take (Leventhal & Brissette, 2003). Essentially, forming risk perceptions not only involves thinking and reasoning about one's level of risk but also gathering options for action to minimize that risk. According to the Common Sense Model of Self-Regulation (Leventhal et al., 1980), interpreting one's risk involves a careful weighing of the utility of potential actions to mitigate that risk. This is why perceived risk might be such a powerful motivator of behavior, because if the outcomes of a potential action is unequivocally beneficial, that is sufficient motivation to follow through with the action (Cameron & Reeve, 2006). If the utility and efficacy of the potential actions are equivocal, then risk perceptions will only be weakly associated with behavior, because there is not enough motivation to pursue an action that has unknown or modest utility (Cameron & Reeve, 2006). Essentially, perceptions of risk engage more cognitive resources, which may be more directly associated with critically reasoning through how worthwhile a potential action would be in responding to a health threat. Concerning cancer risk assessment as a potential action to pursue, if it is not considered to be an effective method to reduce one's risk, there will not be much motivation to seek cancer risk assessment. These judgments on the benefits or disadvantages of cancer risk assessment are initiated by the process of estimating risk and interpreting the significance of this risk.

Cancer worry. Another motivating factor in seeking cancer risk assessment is the degree to which fear or worry about getting cancer impacts one's daily functioning. For those with a family history of cancer and cancer survivors, worry or fear of cancer is a common experience (Hopwood et al., 2001; Stanton et al., 2005). Breast cancer worry has been both a barrier and a motivator to positive screening behavior, as it has been associated with decreased mammography for women with a family history (Kash,

Holland, Halper, & Miller, 1992; C. Lerman & Schwartz, 1993), increased mammography use among both women at average risk (McCaul, Branstetter, Schroeder, & Glasgow, 1996) and women at increased risk (Andersen, Smith, Meischke, Bowen, & Urban, 2003; Diefenbach, Miller, & Daly, 1999). Greater breast cancer worry has also been generally associated with higher interest in or intentions to seek genetic counseling and testing (Cameron & Reeve, 2006; Durfy, Bowen, McTiernan, Sporleder, & Burke, 1999; Hopwood et al., 2001; Jagsi et al., 2015; Lerman et al., 1994; Lerman et al., 1995; Wang, Gonzalez, Janz, Milliron, & Merajver, 2007). If cancer worry is salient and psychological distress sufficient enough to motivate action towards resolving that distress, that may encourage taking action to learn more about one's risk.

Previous research looking at the impact of risk and worry on interest in genetic testing found that high cancer worry was associated with positive attitudes toward, and more perceived benefits of, getting genetic testing (Cameron & Diefenbach, 2001; Cameron & Reeve, 2006). Furthermore, at low worry levels, testing interest increases with more positive beliefs about testing benefits; but at high worry levels, interest is high regardless of testing benefit beliefs (Cameron & Reeve, 2006). Cancer worry is emerging as the more influential factor over and above risk perception, in motivating behavior to cope with and protect against the threat of HBOC. Worry motivates behavior through a non-rational, impulsive route, prompting action even when it might be irrational (Cameron, 2003). Perceived risk may be also be negatively associated with interest in genetic testing, as higher perceived risk seems to be associated with more skepticism about the utility of genetic testing, which decreases likelihood of utilizing cancer genetics services (Cameron & Reeve, 2006).

Both perceived risk of cancer and cancer worry have emerged as two of the most important motivating influences in cancer risk assessment. While cognitive interpretations of cancer risk and emotional responses to the threat of cancer might be related to each other, these have distinct motivating influences as well. There is still much to learn about what other factors motivate positive cancer preventative action. It is important to acknowledge that cognitive risk interpretations and emotional worry responses are subjective by nature. Because of this, the individual context is important, especially who the

person is and what matters most to that person. Perceptions of cancer risk and coping with worry of cancer might be dependent on one's coping resources and personal beliefs about control over one's health. These include religious and spiritual values; we turn next to how such values impact risk perceptions and emotional responses to health threats.

The Influence of Spirituality on Cancer Risk Assessment

Resiliency. Adversity is a universal human experience and resilience is the ability to adapt or cope when faced with adversity (or stress) while maintaining normal psychological and physical functioning (Rutter, 2012; Wu et al., 2013). Learning to overcome life's challenges lies at the heart of resilience and enables individuals to become positively transformed by them. The experience of cancer, whether personal or indirect through a loved one, can be one of the most defining events in life and an example of adversity that can prompt resilience (Rowland & Baker, 2005).

Among the many factors that foster resilience is spirituality. Spirituality is a personal, subjective, private experience of the divine (transcendence) and can be present at all levels of religiosity (Reutter & Bigatti, 2014). Religiosity reflects the collective, institutional, and public experience of the divine (Reutter & Bigatti, 2014). Religiosity can be expressed and measured through behavior and practices (Hummer, Rogers, Nam, & Ellison, 1999; Koenig, 2001). Religion and spirituality have been described as distinct but similar, with overlapping qualities, and inextricably intertwined for many people (Churchill, 2009; Hill et al., 2000; Miller & Thoresen, 2003; Schlehofer, Omoto, & Adelman, 2008). In many cultures, spirituality/religiosity and culture have been indistinguishable (Dein, 2005). Spirituality or belief systems provide a foundation which enables individuals to interpret life events, especially adverse life events (Kagee & Dixon, 2000).

Spiritual coping and cancer survivors. Research on the association between spirituality/religiosity and health has revealed that there is a salubrious impact of spirituality on physical and psychological well-being (Koenig, 2009, 2012; Miller & Thoresen, 2003), but there are also disadvantageous effects (Dein, Cook, & Koenig, 2012; Ellison & Lee, 2010). Spirituality may be integrally related to well-being through the mechanism of coping, as religious/spiritual coping has been

associated with decreased distress and increased quality of life (Lavery & O’Hea, 2010; Purnell, Andersen, & Wilmot, 2009). Research attention is devoted to identifying what specific components or dimensions of religious coping are most relevant for promoting resilience (Alcorn et al., 2010; Lavery & O’Hea, 2010; Unterrainer, Ladenhauf, Moazedi, Wallner-Liebmann, & Fink, 2010).

Spirituality and religiosity may play a major role for some individuals, as they have been central resources for coping with the psychological, physical, and mental challenges of a cancer diagnosis (Costanzo, Ryff, & Singer, 2009; Lavery & O’Hea, 2010; Salsman et al., 2015). Specifically for women with breast cancer, religion or spirituality has been cited as a salient aspect of their cancer experience (Feher & Maly, 1999; Jim, Richardson, Golden-Kreutz, & Andersen, 2006; Meraviglia, 2006). Coping infused with spirituality may be a bridge that links coping and resilience, especially for those who have experienced cancer or another life-threatening illness, offering a sense of meaning, comfort, control, and personal growth (Pargament, Koenig, & Perez, 2000).

Latinos, spirituality, and cancer. For Latino populations, the influence of religion has been prominent. Latinos are highly religiously committed, with the majority of Latinos identifying as Catholic (55%) or Protestant (22%) (Funk & Martinez, 2014). Faith is interconnected with family and community (Campesino et al., 2009). Historically and culturally, religion is a central influence among Latino populations. In promoting the health and well-being of Latinos, spirituality should be considered because it is an important component in defining and understanding health (Mendelson, 2002)

For Latinos, religion may play a major role in health locus of control, via fatalistic beliefs on cancer screening. An internal locus of control was associated with increased screening practices among elderly Hispanic women (Bundek, Marks, & Richardson, 1993). Having an internal locus of control was associated with more favorable outcomes among older Mexican cancer survivors (Farone, Fitzpatrick, & Bushfield, 2007). Compared to non-Hispanic White women, Hispanics are not necessarily less likely to hold internal locus of control beliefs, but are significantly more likely to hold external and chance locus of control beliefs (Smiley et al., 2000).

On the other hand, religion's influence on locus of control does not necessarily lead to fatalistic beliefs but could possibly lead to an internal locus of control. For example, the view that one's relationship with God can result in a collaborative effort to promote positive outcomes (Allen et al., 2014; Abraído-Lanza et al., 2007; de los Monteros et al., 2011; Leyva et al., 2014; Pargament & Brant, 1998). Fatalistic beliefs can be nuanced, holding a belief in that cancer is fated but also allow for the influence of other factors such as personal control and chance (Sussner et al., 2015). As a coping strategy for Latina breast cancer patients, engaging in active religious practices, such as prayer, can be a source of spiritual well-being and meaning and can enhance resilience (Ashing-Giwa, Padilla, Bohórquez, Tejero, & Garcia, 2006; Juarez, Mayorga, Hurria, & Ferrell, 2013). Some Latina women who have overcome breast cancer have credited their spirituality and report that their spirituality had strengthened as a result of their experience overcoming cancer (Farone et al., 2007).

Generally, a belief in a higher power is often mentioned as important in the lives of Latinas, and religion is cited as a main coping resource to face the uncertainty and challenges of cancer (Sussner et al., 2015). For Latina women, the experience of breast cancer, as well as treatment and prevention decisions, may be framed by in terms of their spirituality or faith. Tapping into the spirituality of Latinos may enhance coping and promote resilience (Hunter-Hernández et al., 2015).

Religion/Spirituality and genetics. Genetics are not solely about biology, because genetics are connected to identity and can provide a framework for understanding disease and health (Churchill, 2009). Because spirituality is also tied to identity and conceptions of health and disease, genetics and spirituality do intersect. While the intersection of spirituality and genetics may be contentious, there is a need to explore how spirituality might be a relevant influence within the context of cancer risk assessment and cancer prevention. Religious and spiritual concerns may arise when dealing with genetics, because genetic information can be morally and spiritually problematic (Fanning & Clayton, 2009; White, 2009). Moral and ethical concerns stem from the notion that it is not our place to intervene in God's will or the natural order of life (Fanning & Clayton, 2009; Harris, Parrott, & Dorgan, 2004).

There has been some research attempting to identify the direct and indirect influence of religion and/or spirituality in attitudes and intentions toward genetics and medicine. In a study exploring the role of religiosity in making genetic testing decisions, the effects of religious involvement, attitudes, knowledge, and previous experience with genetic testing were considered using a representative sample of U.S. adults (Botosaneanu, Alexander, & Banaszak-Holl, 2011). Greater religious involvement was related to more negative attitudes towards genetic testing, and this seemed to be influencing intentions to get genetic testing in a negative way (Botosaneanu et al., 2011). Other studies have demonstrated that one reason why individuals decline genetic testing is concern that such testing is thought to interfere with God's will (Fanning & Clayton, 2009).

In another study looking at the role of spirituality on genetic testing decisions for Hereditary Breast and Ovarian Cancer (HBOC), the effect of spirituality was dependent on levels of perceived risk (Schwartz et al., 2000). Among women with low levels of perceived risk, highly spiritual patients were much less likely to receive BRCA testing compared to women with low spirituality (Schwartz et al., 2000). On the other hand, among women with high levels of perceived risk, spirituality did not seem to have an impact on receipt of BRCA testing (Schwartz et al., 2000). It may be the case that when the threat of cancer is deemed to be significant, more importance is placed on medical knowledge than spirituality or other values (Schwartz et al., 2000).

In another similar study exploring the relationship between spiritual coping mechanisms and risk perceptions for cancer among women with and without a family history of cancer, the main finding was that for women with a family history of breast cancer, spiritual coping was negatively associated with perceived risk (Quillin et al., 2006). For those women with no family history, there was not a significant association between spiritual coping and perceived risk (Quillin et al., 2006). Given a family history of cancer, engaging in spiritual coping may be more likely and may serve to minimize the threat of cancer risk. Holding a spiritual locus of control typically means giving prominence to God's control, which might be especially relevant for those who have a family history of breast cancer (Quillin et al., 2006).

There is no comparable research among ethnic minorities pertaining to issues of religion and genetics in health care, therefore these perspectives are largely unknown.

Spirituality and the ambiguity of risk. There is uncertainty regarding what “risk” means, what risk management should look like, and how to make informed decisions regarding cancer care and preventative health behaviors. Spirituality may serve as a coping mechanism that allows one to deal with the general uncertainty and complications that come with a cancer diagnosis (Choumanova, Wanat, Barrett, & Koopman, 2006; Sussner et al., 2015). Especially since there is a great deal of uncertainty in genetic risk, spirituality can be a resource for becoming reconciled to the ambiguity inherent in genetic risk (White, 2009). Spirituality may be a resource to finding certain comfort, hope, and strength, especially when there is none provided by medicine. Spirituality/religiosity may indeed have a significant influence on both the importance given to genetic risk factors and on decisions to engage in prevention and risk management behaviors (Botosaneanu et al., 2011; Quillin et al., 2006; Schwartz et al., 2000; White, 2009).

Implications for clinical practice of cancer risk assessment. Reis and colleagues (2007) have argued that spirituality should be integrated into medical care because patients may have spiritual needs that ought to be given attention. Spiritual assessment within healthcare may enhance the quality of care, if it is relevant and meaningful for the patient (Koenig, 2002). Striving for optimal health outcomes involves providing care where patient values and cultural competency are central (Puchalski et al., 2009), and that includes recognizing that religion can be a primary cultural element (Thompson et al., 2016). Within the context of genetic counseling, debate continues regarding whether clinicians should be trained to handle spiritual and religion elements in their practice (Thompson et al., 2016). Focusing on the intersection between spirituality and cancer risk assessment is crucial because acknowledging the importance of spirituality for Latinos (and other groups) is a component of providing culturally sensitive care (Reis et al., 2007).

Spirituality might be an important factor in how individuals perceive cancer genetics services, because personal values and beliefs determine positive or negative attitudes toward cancer genetics

services. Spiritual coping may be one effective method for dealing with the fear and anxiety raised by a sense of being at risk. Considering the increasing diversity of patients, more attention should be given to how cultural issues like spirituality might be meaningful to the patient. Because religion and spirituality can be central to the process of interpreting and responding to cancer risk information and consequent behavior and action, it is necessary to more closely examine how religion and/or spirituality may matter for cancer risk communication and may affect decision-making regarding cancer risk management.