2011

Suc Khoe La Quan Trong Hon Sac Dep! Health is Better than Beauty! Improving Breast and Cervical Cancer Screening Outcomes among Vietnamese Women

Anh Nguyen
Virginia Commonwealth University

Follow this and additional works at: https://scholarscompass.vcu.edu/etd

Part of the Psychology Commons

© The Author

Downloaded from
https://scholarscompass.vcu.edu/etd/186

This Dissertation is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.
SUC KHOE LA QUAN TRONG HON SAC DEP! HEALTH IS BETTER THAN BEAUTY!
IMPROVING BREAST AND CERVICAL CANCER SCREENING OUTCOMES AMONG VIETNAMESE WOMEN

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

By: ANH BAO NGUYEN
B.S., Virginia Polytechnic and State University, 2004
M.A., University of Richmond, 2006

Director: Faye Z. Belgrave, Ph.D.
Professor
Department of Psychology

Virginia Commonwealth University
Richmond, Virginia
May, 2011
Acknowledgements

I would like to sincerely thank Dr. Faye Belgrave for her support, guidance, patience, and friendship. Your warm voice and smile made graduate school less daunting while your brilliance made the journey more inspiring. You encouraged me to pursue endeavors that I believed to be out of my reach. Most importantly, you taught me that research can be imbued with a sense of heritage, and for that, I am grateful.

I would like to thank my committee members: Dr. Jeffrey Green, Dr. Aashir Nasim, Dr. Natalie Shook, and Dr. Diane Wilson. I am grateful for your support during this journey. I have learned the importance of surrounding myself with individuals with knowledge and expertise in different domains. Thank you for offering me your invaluable wisdom.

I am indebted to Dr. Barbara Sholley. You helped me to uncover a path that fuses research with compassion. Thank you for offering me your feminist perspective. You revolutionized the way that I view the world.

I would like to thank my wonderful parents, Chan and Nga Nguyen. You have always made me feel loved through your unending support and sacrifice. You are my two greatest teachers, and I am blessed to be your daughter. You traveled across the seas to embrace a foreign world. Your story is one of courage, family, strength, and, most importantly, love. May your story always be told.

To my grandparents, thank you for your sacrifices so that your children and grandchildren could thrive. You left a world of familiar faces and voices for a new world where your family could pursue big dreams. You are all loved and missed. You instilled in me Vietnamese and family values that I will carry with me on my journey so that I can, one day, teach my own children. Ong Noi, thank you for your gift of Vietnamese language. Ba Noi, thank you for your appreciation of good food. Ong Ngoai, thank you for your appreciation of the subtle beauty in music and in life. Ba Ngoai, thank you for your quiet strength.

To the Vietnamese communities at the Vietnamese Church of Martyrs and Hue Quang Buddhist Temple. Thank you for allowing me to become a part of something much larger than myself.
Table of Contents

Acknowledgements .......................................................................................................................... ii
List of Tables ................................................................................................................................. viii
List of Figure ................................................................................................................................... x
Abstract ........................................................................................................................................... xi

Introduction ..................................................................................................................................... 1
Breast and Cervical Cancer among Vietnamese Women................................................................. 1
Theoretical Frameworks .................................................................................................................. 3
  Social Cognitive Theory (SCT) ................................................................................................. 3
  Community-based Participatory Research (CBPR) ................................................................. 6
    Utilization of CBPR Research ............................................................................................... 8
    Developing partnerships and trust ....................................................................................... 8
    Assessing the community .................................................................................................... 9
    Determining the intervention ............................................................................................... 9
    Implementing the intervention ............................................................................................ 9
    Evaluating the intervention ................................................................................................. 10
Summary ........................................................................................................................................ 10

Who Are the Vietnamese? ............................................................................................................. 12
A Brief History ............................................................................................................................... 12
The Vietnamese Population: A Unique Group ............................................................................ 15
  Health Insurance .................................................................................................................. 16
  Income .................................................................................................................................... 17
  Education ............................................................................................................................... 18
  Marital Status ........................................................................................................................ 19
  Cancer Screening ................................................................................................................... 21
Summary ......................................................................................................................................... 22

Breast and Cervical Interventions ................................................................................................. 22
What are Culturally-tailored Interventions? ................................................................................ 23
  Media-based Strategies ......................................................................................................... 25
  Education-based Strategies ................................................................................................. 27
How Can CBPR Increase Cultural Relevance of an Intervention? ......................................... 27
  An Example of CBPR .......................................................................................................... 27
  How Is the Present Study Unique? ....................................................................................... 28
Summary ......................................................................................................................................... 31

Culture and Health ....................................................................................................................... 31
Cultural Models of Health and Illness ......................................................................................... 31
  Traditional Medicine ............................................................................................................ 32
  Fatalism and Karma .............................................................................................................. 32
  Cultural Health Beliefs ........................................................................................................... 33
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness and Knowledge of Breast and Cervical Cancer</td>
<td>34</td>
</tr>
<tr>
<td>Culture and the Self</td>
<td>35</td>
</tr>
<tr>
<td>Individualism and Collectivism</td>
<td>35</td>
</tr>
<tr>
<td>Western Theories of Health</td>
<td>36</td>
</tr>
<tr>
<td>Engendered Cultural Values and Health</td>
<td>38</td>
</tr>
<tr>
<td>Values for Vietnamese Women</td>
<td>39</td>
</tr>
<tr>
<td>Acculturation</td>
<td>42</td>
</tr>
<tr>
<td>What is Acculturation?</td>
<td>42</td>
</tr>
<tr>
<td>A Unidimensional or Multidimensional Construct?</td>
<td>43</td>
</tr>
<tr>
<td>Acculturation and Health</td>
<td>45</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>47</td>
</tr>
<tr>
<td>What is Ethnic Identity?</td>
<td>48</td>
</tr>
<tr>
<td>Ethnic Identity and Acculturation</td>
<td>49</td>
</tr>
<tr>
<td>Ethnic Identity and Health</td>
<td>50</td>
</tr>
<tr>
<td>Religiosity</td>
<td>52</td>
</tr>
<tr>
<td>Buddhism and Catholicism</td>
<td>53</td>
</tr>
<tr>
<td>What is Religiosity?</td>
<td>54</td>
</tr>
<tr>
<td>How is Religiosity Measured?</td>
<td>55</td>
</tr>
<tr>
<td>Religiosity and Health</td>
<td>56</td>
</tr>
<tr>
<td>Summary</td>
<td>59</td>
</tr>
<tr>
<td>Health Communications</td>
<td>60</td>
</tr>
<tr>
<td>Health Communication and Mass Media</td>
<td>62</td>
</tr>
<tr>
<td>Informal Communication</td>
<td>62</td>
</tr>
<tr>
<td>Health Communication in the Family</td>
<td>63</td>
</tr>
<tr>
<td>Health Communication in Faith-based Communities</td>
<td>65</td>
</tr>
<tr>
<td>Summary</td>
<td>66</td>
</tr>
<tr>
<td>Preliminary Studies by the Author</td>
<td>67</td>
</tr>
<tr>
<td>Study One</td>
<td>67</td>
</tr>
<tr>
<td>Study Two</td>
<td>68</td>
</tr>
<tr>
<td>Study Three (Pilot Study)</td>
<td>69</td>
</tr>
<tr>
<td>Aims of the Study</td>
<td>73</td>
</tr>
<tr>
<td>Study’s Hypotheses</td>
<td>74</td>
</tr>
<tr>
<td>Method</td>
<td>75</td>
</tr>
<tr>
<td>Design</td>
<td>75</td>
</tr>
<tr>
<td>Participants</td>
<td>78</td>
</tr>
<tr>
<td>Inclusion Criteria</td>
<td>81</td>
</tr>
<tr>
<td>Exclusion Criteria</td>
<td>81</td>
</tr>
<tr>
<td>Power Analysis</td>
<td>82</td>
</tr>
<tr>
<td>Recruitment and Retention</td>
<td>82</td>
</tr>
<tr>
<td>Setting for the Intervention</td>
<td>83</td>
</tr>
<tr>
<td>Materials</td>
<td>83</td>
</tr>
<tr>
<td>Intervention Session</td>
<td>83</td>
</tr>
<tr>
<td>Control Group Session</td>
<td>85</td>
</tr>
<tr>
<td>Follow-up Session</td>
<td>85</td>
</tr>
<tr>
<td>Measures</td>
<td>86</td>
</tr>
</tbody>
</table>
Immediate Changes in Intention to get Breast and Cervical Cancer Screening.....................................................113
Immediate Changes in Self-efficacy for Breast and Cervical Cancer Screening...............................................................114
Longer-term Changes in Breast Cancer Knowledge..................115
Longer-term Changes in Cervical Cancer Knowledge...............116
Longer-term Changes in Attitudes towards Breast Cancer Screening...............................................................117
Longer-term Changes in Attitudes towards Cervical Cancer Screening.................................................................118
Longer-term Changes in Intention to Get a CBE..................119
Longer-term Changes in Intention to Get a Pap Test........119
Longer-term Changes in Self-Efficacy for Breast Cancer Screening.................................................................119
Longer-term Changes in Self-Efficacy for Cervical Cancer Screening.................................................................121
Longer-term Changes in Breast Cancer Screening..................123
Longer-term Changes in Cervical Cancer Screening........123
Hypothesis 2...........................................................................125
Breast Cancer Knowledge.............................................................126
Cervical Cancer Knowledge...........................................................127
Attitude towards Breast Cancer Screening.............................................................127
Attitude towards Cervical Cancer Screening...........................................................128
Self-Efficacy for Breast Cancer Screening.................................129
Self-Efficacy for Cervical Cancer Screening.................................131
Intention to Get a CBE.................................................................132
Intention to Get a Pap Test.........................................................133
Previous Receipt of a CBE.............................................................134
Previous Receipt of a Pap Test.........................................................134
Hypothesis 3, 4, and 5.................................................................136
Breast Cancer Knowledge.............................................................137
Cervical Cancer Knowledge...........................................................138
Attitudes towards Breast Cancer Screening.............................................................149
Attitudes towards Cervical Cancer Screening...........................................................141
Self-Efficacy for Breast Cancer Screening.............................................................142
Self-Efficacy for Cervical Cancer Screening...........................................................144
Previous Receipt of a CBE.............................................................145
Previous Receipt of a Pap Test.........................................................147
Hypothesis 6...........................................................................148
Hypothesis 7...........................................................................149
Quantitative Data......................................................................151
Qualitative Data......................................................................152
Hypothesis 8...........................................................................156
Discussion..................................................................................158
The Study’s Contributions..............................................................159
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Study’s Hypotheses</td>
<td>161</td>
</tr>
<tr>
<td>Hypothesis 1</td>
<td>161</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>164</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>168</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>170</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>171</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>172</td>
</tr>
<tr>
<td>Hypothesis 7</td>
<td>174</td>
</tr>
<tr>
<td>Hypothesis 8</td>
<td>175</td>
</tr>
<tr>
<td>Implications for Program and Interventions</td>
<td>177</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>180</td>
</tr>
<tr>
<td>Study Limitations</td>
<td>182</td>
</tr>
<tr>
<td>Limitations to Internal Validity</td>
<td>182</td>
</tr>
<tr>
<td>Limitations to External Validity</td>
<td>186</td>
</tr>
<tr>
<td>Conclusions</td>
<td>187</td>
</tr>
<tr>
<td>List of References</td>
<td>189</td>
</tr>
<tr>
<td>Appendices</td>
<td>216</td>
</tr>
<tr>
<td>A. Demographic Questions</td>
<td>216</td>
</tr>
<tr>
<td>B. Cancer Quiz</td>
<td>220</td>
</tr>
<tr>
<td>C. Attitudes towards Cancer Screening</td>
<td>226</td>
</tr>
<tr>
<td>D. Self-Efficacy Scale for Cancer Screening</td>
<td>228</td>
</tr>
<tr>
<td>E. Cancer Screening Behaviors</td>
<td>234</td>
</tr>
<tr>
<td>F. Suinn Lew East Asian Acculturation Scale</td>
<td>238</td>
</tr>
<tr>
<td>G. East Asian Ethnic Identity Scale</td>
<td>246</td>
</tr>
<tr>
<td>H. Religious Orientation Scale</td>
<td>250</td>
</tr>
<tr>
<td>I. General Sources of Health Information</td>
<td>255</td>
</tr>
<tr>
<td>J. Self-Construal Scale</td>
<td>259</td>
</tr>
<tr>
<td>K. Communication of Health Information</td>
<td>263</td>
</tr>
<tr>
<td>L. PowerPoint Presentations and Focus Group Probes</td>
<td>265</td>
</tr>
<tr>
<td>M. Research Subject Information and Consent Form</td>
<td>271</td>
</tr>
<tr>
<td>Vita</td>
<td>276</td>
</tr>
</tbody>
</table>
**List of Tables**

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Participant Demographics</td>
<td>80</td>
</tr>
<tr>
<td>Table 2</td>
<td>Timeline of Measures</td>
<td>94</td>
</tr>
<tr>
<td>Table 3</td>
<td>Cancer Screening Rates</td>
<td>103</td>
</tr>
<tr>
<td>Table 4</td>
<td>Descriptives of Total Summed Variable Scores</td>
<td>104</td>
</tr>
<tr>
<td>Table 5</td>
<td>Descriptives of Mean Summed Variable Scores</td>
<td>105</td>
</tr>
<tr>
<td>Table 6</td>
<td>Bivariate Associations among Variables of Interest</td>
<td>108</td>
</tr>
<tr>
<td>Table 7</td>
<td>Effect of Intervention on Breast Cancer Knowledge</td>
<td>115</td>
</tr>
<tr>
<td>Table 8</td>
<td>Effect of Intervention on Cervical Cancer Knowledge</td>
<td>116</td>
</tr>
<tr>
<td>Table 9</td>
<td>Effect of Intervention on Attitudes towards Breast Cancer Screening</td>
<td>117</td>
</tr>
<tr>
<td>Table 10</td>
<td>Effect of Intervention on Attitudes towards Cervical Cancer Screening</td>
<td>118</td>
</tr>
<tr>
<td>Table 11</td>
<td>Effect of Intervention on Self-Efficacy for Breast Cancer Screening</td>
<td>121</td>
</tr>
<tr>
<td>Table 12</td>
<td>Effect of Intervention on Self-Efficacy for Cervical Cancer Screening</td>
<td>122</td>
</tr>
<tr>
<td>Table 13</td>
<td>Effect of Intervention on Receipt of CBE</td>
<td>124</td>
</tr>
<tr>
<td>Table 14</td>
<td>Effect of Intervention on Receipt of Pap Test</td>
<td>125</td>
</tr>
<tr>
<td>Table 15</td>
<td>Predictors of Breast Cancer Knowledge</td>
<td>126</td>
</tr>
<tr>
<td>Table 16</td>
<td>Predictors of Cervical Cancer Knowledge</td>
<td>127</td>
</tr>
<tr>
<td>Table 17</td>
<td>Predictors of Attitudes towards Breast Cancer Screening</td>
<td>128</td>
</tr>
<tr>
<td>Table 18</td>
<td>Predictors of Attitudes towards Cervical Cancer Screening</td>
<td>129</td>
</tr>
<tr>
<td>Table 19</td>
<td>Predictors of Self-Efficacy for Breast Cancer Screening</td>
<td>130</td>
</tr>
<tr>
<td>Table 20</td>
<td>Predictors of Self-Efficacy for Cervical Cancer Screening</td>
<td>132</td>
</tr>
<tr>
<td>Table 21</td>
<td>Predictors of Previous Receipt of a CBE</td>
<td>134</td>
</tr>
</tbody>
</table>
Table 22. Predictors of Previous Receipt of a Pap Test ............................................. 136
Table 23. Predictors of Breast Cancer Knowledge ................................................. 138
Table 24. Predictors of Cervical Cancer Knowledge .............................................. 139
Table 25. Predictors of Attitudes towards Breast Cancer Screening ....................... 141
Table 26. Predictors of Attitudes towards Cervical Cancer Screening ...................... 142
Table 27. Predictors of Self-Efficacy for Breast Cancer Screening .......................... 144
Table 28. Predictors of Self-Efficacy for Cervical Cancer Screening ....................... 145
Table 29. Predictors of Previous Receipt of a CBE ................................................. 147
Table 30. Predictors of Previous Receipt of a Pap Test .......................................... 148
Table 31. Factors and Item Loadings ................................................................. 150
Table 32. Descriptives of Total Summed Factor Scores ........................................ 150
Table 33. Bivariate Associations among Factor Scores, Cancer Knowledge, and Attitudes towards Cancer Screening ................................................................. 151
Table 34. With Whom Did the Participant Share Health Information? .................... 152
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.</td>
<td>Changes in Breast and Cervical Cancer Knowledge</td>
<td>112</td>
</tr>
<tr>
<td>Figure 2.</td>
<td>Changes in Attitudes towards Breast and Cervical Cancer Screening</td>
<td>113</td>
</tr>
<tr>
<td>Figure 3.</td>
<td>Changes in Intention to Get a Cancer Screening Test</td>
<td>114</td>
</tr>
<tr>
<td>Figure 4.</td>
<td>Changes in Self-Efficacy for Cancer Screening</td>
<td>114</td>
</tr>
</tbody>
</table>
Abstract

*SUC KHOE LA QUAN TRONG HON SAC DEP! HEALTH IS BETTER THAN BEAUTY!* IMPROVING BREAST AND CERVICAL CANCER SCREENING OUTCOMES AMONG VIETNAMESE WOMEN

By Anh B. Nguyen, M.A.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2011

Major Director: Faye Z. Belgrave, Ph.D.
Professor
Department of Psychology

Vietnamese women experience cancer screening disparities and inconsistent adherence to screening guidelines. The goal of this study was to implement and evaluate a breast and cervical cancer screening intervention to promote cancer screening knowledge, attitudes, self-efficacy, intention, and behavior for Vietnamese women. Secondary objectives of the study included examining the relationships between cultural variables (e.g., acculturation, ethnic identity, religiosity, and collectivism) and cancer screening variables. The study enrolled 102 women from the greater Richmond metropolitan area. Participants were assigned to an intervention group or a print material control group. In the intervention session, participants were exposed to information on female cancers and were taught how and where to access Pap tests and clinical breast exams (CBE). Follow-up data were collected six months after the intervention to determine whether or not there were longer-term program effects. Intervention participants also took part in focus groups that examined their reactions, thoughts, feelings, and experiences in regards to the intervention. In addition, focus groups explored participants’ sources of motivation for cancer screening and whether they shared information obtained in the sessions with other individuals. The intervention was effective in promoting immediate and longer-term gains in
breast and cervical cancer knowledge, attitudes towards screening, self-efficacy for screening, and actual screening behaviors. The study’s findings indicated that acculturation was linked to higher levels of self-efficacy and screening behavior and less positive attitudes towards screening. Personal and social extrinsic religiosity were associated with more positive attitudes towards screening. Social extrinsic religiosity was also associated with more self-efficacy for screening and screening behavior. Intrinsic religiosity was linked to lower levels of self-efficacy for screening. Focus group discussions revealed that the women shared cancer-related information with friends, female family members, and husbands. Focus group discussions also revealed that emphasis on caretaking roles may help increase women’s adherence to screening guidelines. This study provides evidence for the effectiveness of culturally-tailored strategies in developing cancer screening interventions for the Vietnamese population. This study also demonstrates how health information is transmitted across informal channels within faith-based communities.
Breast and cervical cancer are major causes of female morbidity and mortality in the U.S. In 2009, there was an estimated 192,000 newly diagnosed and 40,000 mortality cases of breast cancer; for cervical cancer, there was an estimated 11,000 newly diagnosed and 4,000 mortality cases (American Cancer Society, 2009a). The American Cancer Society (ACS) has established cancer screening guidelines and recommends that women over the age of 40 receive an annual mammogram and clinical breast exam (CBE) and that women between the ages of 20 and 39 receive a CBE every 3 years. The ACS recommends that women receive an annual Pap test three years after the initiation of sexual intercourse or by the age of 21 (ACS, 2009b & 2009c). These screening guidelines have contributed to substantial reductions in morbidity, mortality, and health care costs associated with breast and cervical cancer among U.S. women (IARC, 1986; Otto et al., 2003; Sasieni et al. 1996, Saslow et al., 2004; Tabar et al., 2003, US Preventive Services Task Force, 2002). However, these reductions are not the case among all women, and I will specifically address these cancer-screening disparities among Vietnamese women. The goal of this study was to implement and evaluate a breast and cervical cancer screening intervention for Vietnamese women.

**Breast and Cervical Cancer Screening among Vietnamese Women**

Though there have been marked reductions in cancer prevalence, rates of decline are not equal across all ethnic groups. Asian women, especially Vietnamese women, continue to have high levels cervical cancer due to inconsistent adherence to screening guidelines (U.S. Department of Health for Human Services, 2006). The incidence of cervical cancer is five times higher for Vietnamese women than for White American women (ACS, 2009a) though
Vietnamese women experience a lower incidence of breast cancer than their white counterparts (34.8 compared to 130.6 per 100,000) (Lin, Phan, & Lin, 2002; Ries et al., 2008). However, research shows that breast cancer risk increases in women who move from countries with low incidence to countries with high incidence as acculturation may be a factor (John et al., 2005). When Asian women migrate to the U.S., breast cancer risk increases not only in subsequent generations (Ziegler et al., 1993) but also in the migrating generation itself (Shimizu et al., 1991).

Higher rates of cervical cancer and increasing rates of breast cancer for Vietnamese women highlight the need for cancer-screening among this population. Vietnamese women have very low levels of reported Pap testing compared to other racial or ethnic groups, even compared to other Asian subgroups (De Alba, Ngo-Metzger, & Sweningson, 2005). Ho and colleagues (2005) surveyed Vietnamese women about cancer screening rates and found low rates. Sixty-eight percent had never had a Pap test in her lifetime, and 45% had never had a breast examination by a doctor. Low rates of cancer screening among Vietnamese women have been found in several other studies (Do et al., 2007; Lam et al., 2003; McGarvey, 2003; Nguyen et al., 2006; Taylor et al., 2004).

The primary goal of this study was to implement and evaluate an intervention program that would promote cancer screening variables. Specifically, I was interested in increasing breast cancer and cervical cancer screening variables among Vietnamese women. The primary goal was to raise awareness, knowledge, positive attitudes, intention, self-efficacy, and behavior in regards to breast and cervical cancer screening among the population. Secondary goals of this study were to (1) examine the role of cultural factors in breast and cervical cancer-related awareness, attitude, knowledge, intention, self-efficacy, and behavior
(2) examine the role of informal networks in spreading health information; and (3) examine
the role of cultural values and how they might contribute to Vietnamese women’s motivation
to engage in screening behaviors.

This study is called Suc Khoe La Quan Trong Hon Sac Dep! (Health is Better than Beauty!), a Vietnamese proverb which embodies the underlying importance of one’s health. The study enrolled 102 women in an intervention group or in a control group. In the intervention group, participants were taught information in regards to female cancers and were taught how and where to access Pap tests and clinical breast exams. Follow-up data were collected six months after the intervention session to determine whether or not there were longer-term effects of the intervention.

Theoretical Frameworks

The rationale for the current study is housed under two separate conceptual and complementary frameworks. By using a framework such as Social Cognitive Theory (SCT; Bandura, 1986), we can examine health promotion and focus on psychosocial variables. SCT proposes that the individual will need to experience changes in knowledge, self-efficacy, and outcome appraisals in order for behavior to change. In addition, I utilized complementary approaches found in Community-based Participatory Research (CBPR). When using CBPR, participants have a voice and active role in the study. In essence, the argument for the use of CBPR approaches is who knows how to develop an intervention that is best for a Vietnamese woman than a Vietnamese woman?

Social Cognitive Theory (SCT). The promotion of good health cannot be initiated without effective health practices and behaviors. In order for women to maintain and promote health and well-being, they must engage in health behaviors such as breast and cervical
cancer screening. It is not only essential that women are motivated to engage in these health practices, but it is also imperative that they possess the necessary skills. Social Cognitive Theory (SCT) addresses the acquisition of skills and intentions and serves as the underlying theoretical framework for the current study.

Proposed by Bandura (1986), SCT posits that there are different processes at play for goal attainment and self-regulation. Bandura (2004) later explained that these mechanisms and processes also guide the translation of knowledge to effective health practices. According to Social Cognitive Theory, core determinants of health practices (e.g., Pap screening or breast screening) are influenced by specific factors. First, an individual possesses knowledge of the health risks and benefits of different health practices. For example, knowledge influences screening behavior by providing individuals with a basic understanding of the symptoms of cancer and/or awareness of beneficial screening options for cancer. Another determinant, perceived self-efficacy, is the belief that one can exercise control over one’s health habits. In this case, self-efficacy is the belief that one has the skills and ability to obtain a Pap test or clinical breast exam. In addition, outcome expectations about the expected costs and benefits for different health habits may impact screening behaviors. These outcome expectations may include the expectation that adhering to suggested Pap testing or clinical breast examination screening guidelines will lower the risk of cervical cancer. Also, the health goals people set for themselves and the concrete plans for achieving these goals influence health behaviors. For example, women may set goals to schedule and get a yearly Pap test/clinical breast examination. Having discussions with their physicians or health providers may serve as a strategy to help attain these goals. Lastly, perceived facilitators and impediments to the health practices serve to aid or to obstruct
health behaviors. Examples of facilitators or impediments are having or not having health insurance.

Empirical studies support the use of SCT theoretically-based behavioral interventions. As a side note, a wealth of literature documents the use of SCT in predicting many different types of health-related outcomes. However, I will not include these as a part of my discussion as I am more interested in the application of SCT in changing actual behaviors via behavioral interventions. Social cognitive theory provides a potentially useful and effective framework that guided my intervention and selection of model variables. SCT has shown to be an effective framework for behavioral interventions targeting physical activity (Ince, 2008; Lewis, Forsyth, Pinto, Bock, Roberts, & Marcus, 2006; Opdenacker, De Bourdeauadhuij, Vanden Auweele, & Boen, 2009), nutrition (Rinderknecht & Smith, 2004), weight loss (Turner-McGrievy, Campbell, Tate, Truesdale, Bowling, & Crosby, 2009), alcohol use (Koning et al., 2009), risky sexual behavior (Mausbach, Semple, Strathdee, Zians, & Patterson, 2007; Strathdee et al., 2009), and quality of life (Graves, 2003). Some interventions strive to reduce breast or cervical cancer risk by promoting exercise (Wood, 2008) and dietary changes (Moster et al., 2008). However, to my knowledge, few studies have addressed the potential use of SCT as a theoretical framework in guiding effective breast and cervical cancer screening interventions.

The current intervention delivered health information in order to raise awareness and knowledge of breast and cervical cancer among Vietnamese women through an educational session. The educational session exposed the women to the benefits of engaging in breast and cervical cancer screening with the intention of shaping their expectations to become more favorable toward screening. Participants were also provided with contacts and information
for local resources and physicians that serve underserved, un-insured, and/or low-income populations. After participating in the intervention session, I expected that the women would set goals to obtain Pap testing and clinical breast examination. I expected the women to show increased rates of cancer screening behaviors at follow-up.

**Community-Based Participatory Research (CBPR).** A second conceptual framework provided the rationale for why and how I would culturally tailor this intervention for the Vietnamese female population. One way to tailor an intervention for a specific minority community is by involving participants in the development of the intervention. Community-based participatory research (CBPR) accomplishes this goal. CBPR is a collaborative partnership approach to research that combines the efforts of the researchers and stakeholders. These stakeholders can be community members or organizational representatives (Israel et al., 2001). With respect to cancer screening promotion, CBPR has been successful in targeting diverse minority populations in raising knowledge and cancer screening behaviors (Beck, Young, Ahmed, & Wolff, 2007; Halbert, Weather, & Delmoor, 2006; Powell et al., 2005; Smith, Christopher, & Alma Knows His Gun McCormick, 2004).

The reluctance of ethnic minority populations to participate in past clinical or intervention studies has been largely attributed to a general mistrust and apprehension of researchers or other “outsiders” (Story, Hinton, & Wyatt, 2010). To overcome this distrust, it is important to identify and acknowledge relevant and important values within an ethnic minority community. The inclusion of these values in an intervention legitimizes the program for participants and helps to bridge communication gaps that exist between researcher(s) and community members.
Trust is essential in the success of community-based research. Researchers must continually build community trust through repetitive positive interactions. CBPR fosters a relationship based on mutual trust by recruiting and relying on community liaisons as insider research partners. Community liaisons work with the community and the researchers to build the community’s trust that must be maintained from program development to implementation to evaluation.

The identification and training of individuals who are trusted within the community is essential when developing interventions appropriate for the target population (Beck, Young, Ahmed, & Wolff, 2007; Mock, Nguyen, Nguyen, Bui-Tong, & McPhee, 2006). These trusted individuals legitimize and enable the intervention to be implemented (Beck, Young, Ahmed, & Wolff, 2007). Within the Vietnamese community, individuals affiliated with religious organizations, particularly the Catholic Church or the Buddhist Temple, are trusted members of the community as religious facilities and groups became important cornerstones for the refugee population (Rutledge, 1992). Thus, the involvement of religious institutions in CBPR may be an effective way to reach out and involve the target population for breast and cervical cancer screening interventions for Vietnamese populations. The present study involved members of the church and temple as partners in a CBPR approach in creating a culturally-tailored intervention for breast and cervical cancer screening among local Vietnamese women.

Research has shown CBPR to be an effective approach in implementing cancer screening interventions for Vietnamese populations (Bird, McPhee, Ha, Le, Davis, & Jenkins, 1998; Burke et al., 2004; Jenkins et al., 1999; Lam et al., 2003; Ma, Fleisher, Gonzalez, & Edwards, 2004). In one study, a Vietnamese community advisory board and an
academic research organization identified important health issues such as cervical cancer (Nguyen, 2006). These partners worked together to describe barriers to cervical cancer screening, brainstormed interventions, and helped to develop appropriate instruments for a community action plan that recognized that improvements in cancer knowledge alone were not enough to raise cancer screening. Pre- and post-intervention telephone surveys showed that Pap test knowledge, screening, and intention to screen were significantly higher in samples that received the intervention in comparison to control samples (Nguyen et al., 2006).

The utilization of community-based participatory research in the present study.
CBPR has several steps. These include (1) developing partnerships and building trust, (2) assessing the community, (3) determining the intervention, (4) implementing the intervention, and (5) evaluating the intervention (Minkler & Wallerstein, 2003). Over the past four years my research has progressed through these steps leading up to the current intervention.

Developing partnerships and building trust. I have spent the last four years building a partnership with the Vietnamese Catholic Church by meeting with community leaders to foster collaboration and to design a breast and cervical cancer screening intervention program for Vietnamese women. To maintain trust before and after the completion of my pilot intervention, I volunteered to work with the Vietnamese Catholic community in activities such as daycare and served as a translator for non-insured women who visited local health clinics. Additionally, I initiated a relationship with the Hue Quang Vietnamese Buddhist community. I met with community leaders to plan and gain approval for recruitment of participants. To foster trust, I attended community events (e.g., their Vietnamese New Years
celebration). In addition, during the past year, I have volunteered to teach in their Vietnamese cultural classes. The classes teach Vietnamese children Vietnamese history, culture, and language and take place every Sunday at the Hue Quang School. I continue to teach there still today.

**Assessing the community.** Based on these and other activities, I was able to engage members of the Vietnamese Church of Martyrs to participate in a pilot study. I expected the same level of engagement for the current study. In working with community liaisons from both communities, we initiated a series of discussions that addressed logistics and action plans. We worked out feasible timeframes, participant recruitment methods, and settled on physical location, and session procedures.

**Determining the intervention.** During program development, I consulted with community leaders and members to ensure the cultural appropriateness of the intervention materials (e.g., PowerPoint presentations, flip charts, questionnaires, and booklets/pamphlets). I also conducted focus groups after piloting the intervention in order to receive feedback from participants on the intervention. Members agreed with the format while offering suggestions. These suggestions included modification of some of the wording in questionnaires and using PowerPoint presentation when presenting health information rather than flipcharts. Also, instead of ordering catered Vietnamese food for the participants, the nuns from the Vietnamese Catholic church preferred to cook their own food. The intervention was modified based on these comments.

**Implementing the intervention.** Community members who served as liaisons were trained to facilitate all components of the intervention and evaluation. Members received training in presenting breast and cervical cancer topics, conducting follow-up focus group
sessions, administrating and collecting questionnaires, and distributing health literature (e.g., pamphlets, booklets). I was on site at all times to provide support and to ensure fidelity to the program. I also facilitated the sessions offered in the English language.

**Evaluating the intervention.** After intervention sessions were facilitated, participants were asked to take part in focus groups that examined the women’s experiences in the intervention at follow-up. The women were asked to share their perceptions on the effectiveness, strengths, weaknesses, and areas of needed improvement in regards to the program.

In order to effectively reach an ethnic population using CBPR approaches, interventions need to be tailored for the specific population (Kreuter et al., 2003). Collaboration with community members can guide the development of a culture-specific intervention. CBPR approaches are successful if researchers reciprocate time, effort, and trust that the target community provides. There is mutual understanding among collaborators that interdependency is a key ingredient in the success of community. In addition, the researcher needs to recognize the roles of cultural factors that may impact the intervention and refine the intervention as needed. In this study, several cultural values were examined as they relate to cervical and breast cancer screening. These values will be discussed later in the paper.

**Summary of Introduction, Breast and Cervical Cancer, and Conceptual Frameworks.** Breast and cervical cancer are major causes of female morbidity and mortality in the U.S. Cancer screening guidelines, such as those established by the American Cancer Society, have contributed to substantial reductions in morbidity, mortality, and health care costs associated with breast and cervical cancer among U.S. women. However, Vietnamese
women experience health disparities in the areas of cancer screening. This study’s main aim was to implement and evaluate a breast and cervical cancer screening intervention.

Two conceptual frameworks that served as the rationale and guidelines for the intervention were Bandura’s (1986) Social Cognitive Theory (SCT) and Community-based Participatory Research (CBPR). Key concepts of SCT include knowledge, perceived self-efficacy, and outcome expectations (specifically, beliefs about the benefits of cancer screening). The use of CBPR approaches legitimizes the intervention for the targeted population of Vietnamese and helps to culturally tailor the intervention.

The remainder of the paper will be organized as follows. The next section includes a historical overview of the migration of the Vietnamese population to the United States. This historical overview illustrates that health behaviors among ethnic minority populations cannot be de-contextualized. Behavioral patterns of specific ethnic groups are rooted in socio-political and historical factors. Therefore, I will discuss why it is problematic to make generalizations among different Asian sub-groups, who do not comprise one monolithic population. I will then discuss how the Vietnamese population differs from the general Asian population on key demographic factors that have been linked to cancer-screening outcomes.

Next, I discuss the interplay of culture and health. To do this, I examine how culture can transmit values that manifest into culture-specific conceptualizations, models, beliefs, expectations, and behaviors in the domain of health. I also discuss other relevant cultural constructs that impact cancer-screening outcomes for Vietnamese women. This is followed by a discussion on various channels of health communication, specifically focusing on how ethnic minority populations rely on informal networks found within religious communities to obtain health information.
Who Are the Vietnamese?

Research conducted in the United States on Vietnamese women and cancer screening trends has been limited and primarily focused on populations located on the West Coast (e.g., De Alba, Ngo-Metzger, & Sweningson, 2005; Mock et al., 2009; Nguyen et al., 2006; Tung, Nguyen, & Tran, 2008). There is a paucity of research on Vietnamese populations in other geographic areas, and it is important to examine the beliefs, attitudes, and behaviors of the Vietnamese population elsewhere. The experience of Vietnamese on the West Coast (e.g., southern California) may be atypical for other Vietnamese immigrants as many do not live in communities in which a high percentage of their neighbors are also Vietnamese (D’Andrade, 2008). It is estimated that 46% of Vietnamese living in the U.S. are concentrated in California. However, smaller pockets of Vietnamese populations do exist across the United States such as those found in Richmond, Virginia. This study will contribute to the literature by examining the health behaviors and beliefs of Vietnamese women on the East Coast. However, in order to address health disparities within an ethnic minority community, it is important to understand its history. History helps us to understand who comprises the community of interest and what is important to the community.

A brief history. To appreciate and to understand the reasons for Vietnamese settlement in the United States, it is important to be aware of political, historical, economical, and socio-cultural factors that contributed to the migration of the Vietnamese to this country. Awareness of these factors provides insight about forces that have helped to shape the current milieu of the Vietnamese population. In addition, I will later discuss how beliefs rooted in traditional Vietnamese cultural belief systems transmit values that shape contemporary health beliefs and practices (e.g., those found in the topics of breast and cervical cancer).
In 1954, the Geneva Agreements divided the country of Vietnam along the 17th parallel. As a result, the country was divided into a North and a South, and the Vietnamese were given the choice to live in either the North or the South. Approximately one million Vietnamese chose to move to the South, citing reasons pertaining to fear of the Communist regime in the North (Montero, 1979). The fall of Saigon (the capital of South Vietnam) to the communist North in 1975 marked a period of mass exodus of the Vietnamese to the United States. The exodus was estimated at 132,000 Vietnamese who fled to escape political persecution from the Communist government take-over. Most of these refugees were well-educated, came from moderate- to high affluent backgrounds, and were westernized. In early 1977, there was another large exodus of Vietnamese refugees (estimated at 127,000) who came to the U.S. to escape the post-war communism and fear of political persecution (Rutledge, 1992). These two groups comprise the “first wave” of Vietnamese immigrants who were generally urban residents and arrived with their families intact. Upon arrival to the U.S., they were provided with public assistance programs that included financial assistance, shelter, food, vocational training, English instruction, and jobs to help with the transition to life in the United States.

The experience of the Vietnamese settlers after 1978 was very different from the first wave. The “second wave” was comprised of more rural Vietnamese who were forced to leave under trying circumstances. These refugees are known as the “boat people” as the majority of them escaped in homemade, poorly constructed boats and wooden vessels (Airriess, 2002). In the 1990s, lay-offs and economic problems in the U.S. made it difficult to find employment while programs of assistance for Vietnamese immigrants were drastically cut. Immigrants in the new incoming wave were no longer considered refugees but economic
migrants. This is an important distinction as these economic migrants had to wait three years after entering the U.S. to qualify for public and social services offered to the general public. Refugees are qualified for these services the moment they enter the country (Rutledge, 1992). Immigrants who are deprived of federal assistance are not likely to access resources, particularly health services. Therefore, it is not surprising that the Vietnamese, a relatively new population in the United States, has had less time to acculturate as they have been here for 35 years or less. Some of the experienced health disparities (e.g., those in cancer screening) may be attributed, in part, to the relatively young status of this population.

An essential feature of CBPR is the availability of a community such as the Vietnamese communities found in the current study. In the social sciences, the term “community” refers to a place, a set of common ties and bonds, or a field of social interaction (Aguilar-San Juan, 2009). For refugees and immigrants, a community is often something that arises in response to a need for place-based institutional structures that serve their specific needs. Essentially, community is something that is created when minority groups seek out what Breton (1964) refers to as “institutional completeness.” Institutional completeness refers to a progression of social organizations in which all services and needs are provided by a community. These support systems are important in helping with the social, economic, and psychological adaptation of refugees and migrants to a larger host society (David, 1970; Cohon, 1981; & Haines, Rutherford, & Thomas, 1981).

The Vietnamese enclaves found around the country are communities that have been built around places that have established meaning and purpose (Aguilar-San Juan, 2009). This is why many Vietnamese communities have sprouted from and have developed around shopping centers/marketplaces and faith-based sites. Examples of shopping
centers/marketplaces include places with Vietnamese pho restaurants, nail salons, jewelry stores, and video and music stores. Examples of faith-based sites (i.e., Vietnamese Catholic churches and Buddhist temples) include those found in the present study. Because these communities exist to meet and serve the needs of their members, it is not uncommon for one community site to offer services to accommodate financial, legal, medical, social, and spiritual needs of its members. It is important to emphasize that the term *enclave* denotes the upward mobility of its members, made possible by the services mentioned above. This is the rationale behind the need to incorporate community-based sites and to involve community members in the spread of health information.

**The Vietnamese population: A unique group.** There are currently 15 million Asians who reside in the United States, and they comprise 5% of the general U.S. population (U.S. Census, 2008). The Chinese comprise the largest Asian subgroup (3.6 million), followed by Filipinos (2.9 million), Asian Indians (2.7 million), Vietnamese (1.6 million), Koreans (1.5 million), and Japanese (1.2 million). There is a tendency to assume that Asian subgroups comprise a general homogenous racial group. This assumption is problematic as the differences among Asian ethnic subgroups may be as great as the differences between Asians and other ethnic minority groups (Alvarez, 2002; Tsai, Chentsova-Dutton, & Wong, 2002). These generalizations are difficult to accept considering the fact that as many as 40 different ethnic groups fall under the racial category of Asian (Sue & Sue, 2008).

There is sometimes a tendency to view Asian Americans as the *model minority*, a term that sociologist William Peterson (1966) coined to describe Japanese Americans who had assimilated successfully into American culture. The resurgence of this term in the 1980s was due to stereotypes surrounding Asians who were believed to generally excel in
academics, be responsible citizens, and remain quiet and passive (Rothe, Tzuang, & Pumariega, 2010). However, these stereotypes, while positive, still lead to the false assumptions that Asian American subgroups comprise one homogenous group as a whole. In addition to the justification and perpetuation of racial discrimination, the assumption that Asian subgroups compose a homogenous group may foster stereotypic thinking that all Asian individuals are alike (Alvarez, 2002; Liu, Iwamoto, & Chae, 2010; Lo, 2010). The notion that all Asian subgroups are similar may lead to the delivery of generic and ineffective health messages and interventions intended for the general Asian population. The Asian population is not a monolithic population. This is evident in the different and unique customs, traditions, cuisine, language, and dress found in each ethnic group. As a result, it should come as no surprise that Asian subgroups have differences in the domain of health behaviors.

In order to emphasize the importance of understanding health trends of the Vietnamese population that are independent of the general Asian population, I will review different demographic trends found in Asian subgroups that have implications for cancer screening behavior. These consist of institutional barriers, or essentially, structural incongruities that may inhibit or impede Vietnamese women from assessing health services. In turn, these structural barriers may impact cancer screening rates as research indicates that even screening rates may differ among Asian populations.

**Health insurance.** Issues surrounding health care reform have received much attention under the passage of President Obama’s new health bill. Passage of the new health care plan will help to cut down or eliminate extra charges that health insurance holders incur for health services such as mammogram screening (Organizing for America, 2010). Though the passage of the bill faced many critics, the attention on health care reform illustrates that
cancer screening is not easily attained and afforded even for those with health insurance. However, having health insurance still serves as a seemingly necessary (while not) sufficient antecedent of screening behaviors as much research provide evidence for the link between cancer screening and health insurance (Coughlin, Leadbetter, Richards, & Sabatino, 2008; Hiatt et al., 2001; Lee-Lin, Pett, Menon, et al., 2007; Meissner, Yabroff, Dodd, et al., 2009).

National rates show that 15% of the general U.S. population and 17% of the general Asian population lacks health insurance coverage (DeNavas-Walt, Proctor, & Smith, 2008). However, variability among Asian ethnic groups exists in insurance coverage. The Japanese and Asian Indian population have the lowest percentages of uninsured members (12%), followed by the Filipino population (14%), the Chinese population (16%), the Vietnamese population (21%), and the Korean population (31%; Kaiser Family Foundation, 2008). Similarly, our research has found uninsured rates ranging from 26% to 30% among a Vietnamese sample (Nguyen, Belgrave, & Sholley, 2010). Because the low rate of health insurance in the Vietnamese population serves as a likely barrier to cancer-screening behavior, it is important to connect uninsured Vietnamese women to physicians, clinics, and programs that offer low-cost or free screening services in the present study.

**Income.** Not surprisingly, an individual’s income affects frequency of engaging in screening behaviors, such as Pap testing or receiving clinical breast examinations. In addition, income is strongly associated with health insurance, an important correlate of cancer screening (DeNavas-Walt, Proctor, & Smith, 2008). Eight percent of people in households with annual incomes of $75,000 or more lack health insurance in comparison to 15% for households with incomes of $50,000 to $74,999, 21% for the households with incomes of $25,000 to $49,000, and 25% for the households with incomes less than $25,000.
(DeNavas-Walt, Proctor, & Smith, 2008). The median household income for the general Asian population was $56,161. In 2007, the Asian Indian population had the highest median household income ($68,771), followed by the Filipino population ($65,700), the Chinese population ($57,433), the Japanese population ($53,763), the Vietnamese population ($45,980), and the Korean population ($43,195; U.S. Census Bureau, 2007).

There is also variability in poverty status found among Asian ethnic groups. In the general Asian population, 12% are considered to be living at or below poverty status. The Filipino population has the lowest percentage of poverty (5%), followed by the Japanese population (9%), the Asian Indian population (10%), the Chinese population (13%), the Vietnamese population (14%), and the Korean population (15%; U.S. Census Bureau, 2007). In both indices of financial stability, the Vietnamese population appears to fall behind most of the other Asian subgroups. Coupled with the lack of health insurance, it is likely that the lack of financial resources may prevent Vietnamese women from receiving Pap tests and breast examinations simply because they can not afford it. This provides further evidence that an effective intervention to raise screening rates will connect Vietnamese women to physicians, clinics, and programs that can accommodate a non-insured and low-income population.

**Education.** Research has shown that having higher levels of education is associated with higher levels of breast and cervical cancer screening (Benyamini, Blumstein, Boyko, & Lerner-Geva, 2008; Couture, Nguyen, Alvarado, Velasquez, & Zunzunegi, 2008). Because education serves as a proxy indicator of SES, it should come as no surprise that lower education poses as a barrier to breast and cervical cancer screening. In the general Asian population, 15% have less than a high school education. The Filipino population has the
lowest percentage of members having less than a high school education (9%), followed by the Asian Indian population and Korean population (10%), the Chinese population (19%), and the Vietnamese population (30%; U.S. Census Bureau, 2007).

Differential gender expectations govern how boys and girls are raised in Vietnam (Phan, Rivera, & Roberts-Wilbur, 2005). Girls are watched much more closely, are expected to stay closer to home, and are provided with more domestic and household chores. It is not uncommon for girls to remain at home while the family finances education for boys. As a result, many Vietnamese women who immigrate to the United States have received little formal education. This may contribute to less exposure to health topics such as breast and cervical cancer. A component of my intervention will address this lack of exposure to breast and cervical cancer topics and provide women with some education and training in these topics.

*Marital status.* A Vietnamese woman through her marriage is regarded as a daughter-in-law, then mother, and last, as a wife (Bich, 1999). As seen through a cultural lens, the institution of marriage is based upon different expectations and values which are manifested in the types of roles and tasks expected of married women from culture to culture. For example, a Vietnamese wife is largely expected to be a submissive daughter-in-law by serving her husband’s family. She is also expected to be a good worker and to produce and to care for the children. A wife’s duties often include carrying the burden of household chores. As a result, marital status is often accompanied with a saliency of caretaking roles and duties. I will return to this issue in later discussion, but it is important to note that members of southeastern Asian societies perceive parts as merely comprising the greater whole, whether the whole is represented as the family, community, or state (Markus and Kitayama, 1991;
Triandis, 1995). Because of these cultural values, being married implies a range of responsibilities and duties for the care of others for the Vietnamese woman. This may serve as motivation for the Vietnamese woman to take care of herself in order to care for others and to carry out her duties.

Marital status is associated with increased levels of cancer screening behaviors (Do et al., 2007; Fernandez-Esquer, Espinoza, Ramirez, & McAlister, 2003; Islam, Kwon, Senie, & Kathuria, 2006; Yi, 1994). In the general Asian population, 62% are married. The Asian Indian population has the highest rate of members who are currently married (69%), followed by the Chinese population (65%), the Korean population (62%), the Filipino population (61%), the Japanese population (59%), and the Vietnamese population (56%; U.S. Census Bureau, 2007). Vietnamese women have the lowest rates of being married, and this may contribute to the lower rates of cancer screening. In addition, marital status may afford women a higher family income and health insurance through her partner’s insurance plans, consequentially, making it easier to attain and access health services.

However, the relationship between marital status and cancer screening may be moderated by the cancer site. One study by Couture, Nguyen, Alvarado, Velasquez, and Zunzunegi (2008) found that marital status exerted different effects on breast and cervical cancer screening. They found that being married was associated with higher levels of Pap testing, while being married was associated with lower levels of mammography screening. The authors suggested that the inconsistencies found in the relationships between marital status and cancer screening might be explained by perceived risk; that is, women who are married may perceive themselves at higher risk for cervical cancer but at lower risk for breast
cancer. The authors do not offer explanations of the cognitions that may underlie these perceptions of risk.

*Cancer screening.* Heart disease is the leading cause of death for all American racial and ethnic groups except Asian Americans for whom cancer is the leading cause of death (American Cancer Society, 2008). Breast cancer incidence rates have either stabilized or decreased for all other racial and ethnic groups, yet rates for Asian American women are rising. In spite of high mortality rates, Asian American women have the lowest screening rates in comparison to all other racial and ethnic groups in the United States (Swan et al., 2003).

Data indicate that cancer incidence and cancer screening is not equivalent among Asian subgroups, illustrating that health disparities exist even among ethnic minority populations. A study by Kagawa-Singer and colleagues (2007) examined screening behaviors among diverse Asian subgroups. The findings indicated that Filipina Americans (81%) had the highest percentage of Pap test screening while Vietnamese Americans (61%) had the lowest percentage. For mammography, Japanese American (78%) women had the highest level of mammography screening while Korean Americans (53%) had the lowest level. In addition, regression modeling indicated that predictors for breast and cervical cancer screening varied for Asian subgroups except for marital status (being married predicted Pap test screening for all groups). For example, being older reduced the likelihood of Pap testing for Filipina American women. Having a college education, longer tenure in the U.S., and visiting a medical doctor predicted Pap testing for Korean American women. Being 50-64 years old, having a usual source of care, and having seen a doctor at least once in their lifetime predicted Pap testing for Japanese American women. For Vietnamese American
women, being between the ages of 40-64 and having seen the doctor at least once in the past year predicted Pap testing. The results illustrate that not only do factors relating to cancer screening vary across Asian subgroups but the magnitude of the relationship between these factors and screening vary as well.

**Summary of Who Are the Vietnamese?** The factors influencing Vietnamese settlement in the United States are political, economical, and socio-cultural in nature. It is important to avoid de-contextualizing the reasons why the Vietnamese reside in this country. Their history and culture offer meaning to their present milieu which has implications in a variety of domains including health. Asian populations should not be treated as monolithic as each ethnic group has different and unique customs, traditions, cuisine, language, and dress. The Vietnamese also differ from other Asian groups on correlates of health behaviors such as health insurance, income, educational attainment, and marital status. Breast and cervical interventions aimed at increasing screening behaviors in the Vietnamese population should connect participants to local health care providers who can accommodate women from low-income or no-health insurance backgrounds. In addition to providing a historical narrative that explains the current state of the Vietnamese in this country, culture can also engender unique pathways to development. Consequentially, this will have implications for health behaviors.

**Breast and Cervical Screening Interventions**

Many interventions have been developed to promote breast and cervical cancer screening variables (Ahmad, Cameron, & Stewart, 2005; Nguyen, Tanjasiri, Kagawa-Singer, Tran, & Foo, 2008; Nguyen, Le, Nguyen, et al., 2009; Pasick, D’Onofrio, & Otero-Sabogal, 1996; Vega, 1992; Fu et al., 2003; Wang et al., 2006). Standardized interventions have
universal appeal. However, more research is needed in order to evaluate their effectiveness and relevance for ethnic minority populations. Some interventions have specifically targeted immigrant and/or ethnic minority communities but have neglected to utilize evidence-based health promotion approaches (Ahmad, Cameron, & Stewart, 2005). The current buzz word for interventions for ethnic minority groups appears to be *culturally-tailoring* and refers to the tailoring and emphasis on sociocultural sensitivity in the development of health messages, materials, and interventions.

**What are culturally-tailored interventions?** Culturally-tailored interventions are those that are informed and guided by the cultural beliefs and characteristics of the target population; these interventions directly address the cultural and environment needs and resources of a community (Pasick, D’Onofrio, & Otero-Sabogal, 1996; Vega, 1992). Culturally-tailored interventions are effective when the delivered messages are developed using prior knowledge about targeted ethnic minority populations. This increased cultural relevancy leads to heightened attentiveness of the target audience to the message while limiting audience defensiveness to the message (deNooijer, Lechner, & de Vries, 2002).

Earlier, I emphasized that Asian subpopulations should not be lumped into a monolithic group as they each have vastly different traditions, language, dress, customs, songs, values, beliefs, and cuisine. I want to alert the reader that this point is not to be forgotten as I discuss the effectiveness of culturally modeled interventions for Asian populations. Even later, I will discuss the success of interventions that consider the role of culture in influencing cancer screening, potentially those that incorporate allocentric, collectivistic values. Clarification is needed to emphasize that the focus on collectivistic
values and Eastern traditional values in interventions does not undermine my argument for
the unique distinctiveness of Asian subgroups.

Kagawa-Singer and colleagues (2002) developed a framework called “Form and
Function” that can be used to model different culturally tailored breast and cervical cancer
screening programs. Functions are common elements present in all cultures to achieve a
particular aim. Forms are the tailored strategies used to address the unique needs of cultural
groups to accomplish the function. Strategies in identifying functions and forms are
necessary in order to make particular interventions acceptable to specific cultural populations
or communities. Take, for example, one salient function common to most breast or cervical
cancer screening interventions: the use of educational materials. This function is relevant for
interventions targeting diverse Asian subgroups (e.g., Japanese, Filipino, Chinese, and
Vietnamese subgroups). However, the forms should be unique for each Asian subgroups (i.e.,
educational materials would be translated in respective languages for respective subgroups).
While functions may be similar across Asian subgroups, neglect of forms will come at the
cost of illegitimating the intervention.

An intervention study by Fu and colleagues (2003) demonstrated the value of tailored
strategies guided by Form and Function (Kagawa-Singer, Nguyen, Rezai, & Fu, 2002). The
CARE Program (A Community Approach to Responding Early to breast and cervical cancer)
is a national program that provides culturally appropriate intervention strategies to promote
breast and cervical cancer early detection and screening to Asian American and Pacific
Islander (AAPI) populations. Based in California, CARE’s program goal was to improve
breast and cervical cancer outcomes for AAPI women by improving the capacity of six
community-based health centers (CHCs) that each served an AAPI population: Thai,
Cambodian, Filipina, Samoan, Chinese, and Native Hawaiian. Each CHC delivered a breast and cervical cancer screening intervention to its specific population with similar functions; however the forms were tailored to be unique for each community. For example, educational messages (function) on breast and cervical cancer were delivered to all communities, but the method of the delivery was contingent on the medium (form). Some women preferred to be educated one-on-one in a clinical setting while others preferred informal gatherings and discussion. These strategies by CARE were effective in promoting cancer screening behaviors among AAPI populations.

**Media-based culturally-tailored strategies.** Previously successful breast and cervical cancer screening interventions for Asian populations have incorporated the use of media in educating women on issues of female cancers. Printed materials (e.g., pamphlets, leaflets, booklets, articles, newspapers *etc.*.) are commonly used as a type of media educational tool in the area of cancer prevention and control (Paul, Redman, & Sanson-Fisher, 2003). A review by Paul and Redman (1997) found that printed materials impacted knowledge, attitudes, and behavior in a variety of health domains.

The popular use of printed health materials has also been documented to be effective in the transmission of health information in regards to breast and cervical cancer (Ahmad, Cameron, & Stewart, 2005; Champion, Skinner, Hui, et al., 2007; Rimer, Halabi, Skinner, et al., 2001). For example, Ahmad, Cameron, and Stewart (2005) implemented a breast cancer screening intervention for South Asian women by publishing ten articles on breast cancer in community newspapers. The intervention was culturally tailored as the published articles included content that was based on cultural values of Urdi and Hindu women (e.g., one benefit of cancer screening is the improvement of quality of family life). Personal relevance
was increased by incorporating survivor stories from South Asian women. Participants received the newspapers every two weeks. Results indicate that there were significant increases in clinical breast cancer screening knowledge from pre- to post-intervention. However, the lack of a control group significantly detracts from the study and weakens the argument for the promotive effect of culturally tailored media interventions on breast cancer screening outcomes.

Media-based campaigns also rely on medium other than print material to promote cancer screening knowledge and behaviors (Ma, Fleisher, Gonzalez, & Edwards, 2004, Mock et al., 2007; Wang et al., 2006). For example, a study by Wang et al. (2006) demonstrated effective use of culturally tailored strategies in creating a relevant and appropriate video for Chinese women to promote mammography knowledge, intention to screen, and perceived benefits. The authors describe three phases in the development and delivery of the media intervention. In the *formative phase*, focus groups were conducted to gain an understanding of Chinese women’s culturally based views of breast cancer, attitudes towards mammography, and preferred content and format of the video intervention. An advisory board convened after completion of the focus groups in order to identify appropriate themes and format of the video. In the second *production phase*, the local Chinese communities and the video company collaborated to produce the intervention video. In the last *quantitative phase*, the video intervention was evaluated for effectiveness. Results indicated that the intervention effectively improved mammography knowledge, intention to screen, and perceived benefits. Thus, media-based campaigns have been proven to be effective in promoting health outcomes provided that they are culturally relevant and appropriate for the targeted population.
Education-based culturally-tailored strategies. However, research suggests that sole reliance on media-based campaigns may have less success in influencing behavioral outcomes in comparison to interventions that use media resources as supplements to education-based sessions (Jenkins et al., 1997; Mock et al., 2007; Rimer, Halabi, Skinner, et al., 2001). Jenkins and colleagues (1999) found that a media-based educational intervention led to significant increases in awareness of and intention to undertake breast and cervical cancer screening for Vietnamese women. However, the intervention did not affect behavioral outcomes (e.g., actual receipt of CBE, mammogram, or Pap test). Another study suggested that media-based campaigns may be effective (Nguyen et al., 2009). However, results indicated that the strongest increases in cancer screening outcomes were experienced by Vietnamese participants who received a media education that was coupled with educational sessions. While media-based campaigns may lead to gains in awareness, knowledge, and positive attitudes towards cancer screening, they may not be as effective in changing actual screening behaviors. Therefore, the present study uses media print resources (e.g., brochures and handouts) only as supplemental resources in addition to educational in-class sessions.

How can CBPR increase cultural relevance of an intervention? Community-based participatory research is a joint collaboration between researcher and community (Israel et al., 2001). The active role of the community partner(s) in all facets of program development and implementation ensures cultural appropriateness of the program for the targeted ethnic minority population.

An example of CBPR in the development and implementation of an intervention. In one study, a Vietnamese community advisory board and a community-academic research organization, the Vietnamese Community Health Promotion Project (VCHPP), collaborated
to identify important health issues such as cervical cancer (Nguyen et al., 2006).

The community advisory board and the community-academic research organization worked together to recruit ten organizations that were familiar with the VCHPP for coalition building (Nguyen et al., 2006). After the coalition was formed, community forums were held to uncover barriers to cervical cancer screening and to brainstorm and develop interventions. The coalition then developed appropriate instruments for a community action plan that recognized that improvements in cancer knowledge alone were not enough to raise cancer screening. Pre- and post-intervention telephone surveys showed that Pap test knowledge, screening, and intention to screen were significantly higher in samples that received the intervention than a comparison sample that only received a media-based campaign (Nguyen et al., 2006). Thus, the CBPR model can be effective in increasing screening behavior in a Vietnamese population.

**How is the present study unique?** The present study utilized a community-based participatory approach but differs from the above study in several ways. First, the study by Nguyen and colleagues (2006) recruited their intervention sample (n = 500) in Santa Clara County, California, where the intervention was conducted. The comparison sample (n = 500) was recruited from Harris County, Texas. Though the regions from which the samples are drawn are similar in demographic characteristics in regards to gender, age, English proficiency, and education, we can not ignore the possibility of contextual contrasts found in the cultural milieu of Santa Clara and Harris County. Santa Clara is home to more than 100,000 Vietnamese while Harris County is home to 58,248 Vietnamese (about half the rate of Santa Clara County).

The experience of Vietnamese on the West Coast (e.g., California) may be atypical for
Vietnamese immigrants as many do not live in communities in which a high percentage of their neighbors are also Vietnamese (D’Andrade, 2008). As a result, the comparison group pulled from Harris County may not have had similarly developed media resources (i.e., radio stations, newspapers, and television stations) for a successful media-based campaign, making it a nonequivalent sample to the sample drawn from Santa Clara. In contrast, the present study randomly assigns recruited women from the local Vietnamese Buddhist community and local Vietnamese Catholic community (both from the same city in the southeastern US region) into either the intervention or control group.

Second, the study by Nguyen and colleagues (2006) recruited women (N = 1000) who lived in highly developed Vietnamese enclaves that offer many resources for financial, social, health, educational, and spiritual support. In contrast, while the present study takes advantage of pre-existing faith-based or spiritual communities to recruit members, it is not clear whether existing smaller enclaves and communities in the East coast can be used to effectively disseminate health information and resources. In the present study, the faith-based sites were used to distribute health information and health literature (e.g., booklets, pamphlets, and handouts). If the results of the present study indicate that the intervention is effective, then it provides initial support for the flexible role of faith-based sites in offering multiple resources to the Vietnamese living in the East Coast. It will also provide external validity for CBPR approaches for Vietnamese populations.

Third, the present study is interested in the role of culture on health-related outcomes. The assumption is that culture influences attitudes and behaviors at both the distal and proximal level. Similar to the previously mentioned studies that utilized culturally-tailored mechanisms and CBPR approaches, this study draws on cultural features of the current
population in devising and refining the intervention to meet the needs of the local Vietnamese female population.

Culture may be viewed is a distal variable found in the macrosystem (Berk, 2000) that should not be ignored. The idea that culture serves as a distal variable comes from classic theory such as those proposed by Bronfrenbrenner’s (1977) theory of ecological development and Vygotsky’s (1978) concept of a socio-cultural matrix. The idea is that culture organizes early every day experiences of the individual in childhood and these experiences shape the individual’s development. The distal cultural matrix permeates the individual’s experience through socialization and transmits social mores and values that are considered important and valued for the individual. This is relevant to health behaviors as adherence to cultural values will influence an individual’s framework for illness and disease, thus impacting health behaviors and outcomes. As a result, the present study relies on CBPR methods as well as culturally tailored strategies in making the intervention more acceptable for the current sample.

More importantly, the present study is unique from previously mentioned studies as it examines proximal-level cultural traits and their effects on the intervention’s outcomes. In this sense, cultural variables are seen as individual-level psychological constructs. This feature of the study will be examined in further detail later, but it is noteworthy to point out that the study examined cultural traits existing at the individual level (e.g., religiosity, ethnic identity, acculturation, and collectivism) and how they potentially impacted cancer-screening knowledge, attitudes, and behavior. To summarize, the present intervention study relied on culture to build an appropriate intervention, but it maintains that proximal cultural variables will predict breast and cervical cancer screening outcomes. To my knowledge, there are not
any current studies that examine the role of cultural variables in cancer-screening outcomes for Vietnamese women.

**Summary of breast and cervical cancer screening interventions.** Many interventions have been developed to promote breast and cervical cancer screening and related outcomes. However, culturally-tailored interventions may be especially effective for ethnic minority populations. Culturally-tailored interventions are informed and guided by the cultural beliefs and characteristics of the target population. When the goal is to promote behavior change, education-based strategies may be more effective than media-based strategies. Utilization of community-based participatory research can help increase cultural relevance of an intervention. The present study relied on CBPR approaches in all aspects of the research. It expanded on the pilot study’s findings and addressed the limitations of the pilot study.

**Culture and Health**

Research suggests that cultural factors may influence cancer screening practices (Lee-Lin et al., 2007; Simon, 2006). However, it is not necessarily cultural membership *per se* that impacts health behaviors. Instead, culture-specific beliefs, attitudes, norms, and expectations about health help to shape health behaviors. While it is important to address socioeconomic barriers such as the lack of health insurance or education, effective interventions for minority populations will also acknowledge and address the role of cultural factors.

**Cultural models of health and illness.** Cultural models of health and illness provide individuals with a framework that guide their understanding of sickness and health. The individual uses this framework in helping him or her interpret and conceptualize health topics such as breast or cervical cancer. Health is rarely seen as a characteristic that is solely
physical in nature. The concept of holism that is often found in Eastern cultures is an emergent theme when discussing health and well-being. In most Western societies, the cause of illness is attributed to causative agents that include viruses, germs, or other pathogens as conveyed by traditional biomedical models of health and illness (Wade, 2004). Like most Eastern cultures, the Vietnamese perceive good health to be the result of the harmony and balance between the body, mind, and physical environment (Dong & Zhang, 2002).

**Traditional medicine.** Because of the longstanding history between Vietnam and China, Traditional Vietnamese Medicine (TVM) is based on concepts found in Traditional Chinese Medicine (TCM) such as the concepts of *yin* and *yang* and *qi* (Thai, 2003). Good health is the result of the delicate balance between the opposing yet complementary forces of *yin* and *yang*. *Yin* represents energy that is static, internal, downward, female, negative, dark, and cold. *Yang* represents energy that is dynamic, external, upward, male, positive, light, and warm (Tang, Liu, & Ma, 2008). *Qi* is essentially the vital energy and life force that is manifested through the balanced forces of *yin* and *yang*. A healthy and strong *qi* is credited for the vitality and health of various organs, vessels, and the body (Williams, 1995).

**Fatalism and karma.** Every culture provides a model of health and illness that influences people’s subjective interpretation and experience of illness, risk, and risk reduction. For example, Meana, Bunston, George, Wells, and Rosser (2001) found that prior to arrival to North America, some Asian immigrant women had never heard of breast cancer or considered it a very rare disease. Some believed that the disease was exclusively terminal and that it was God’s will. For some women with cancer, religion can lead to feelings of shame because they perceive cancer to be the result of bad karma or divine retribution for past wrong-doings or sins (I will revisit the topic of fatalistic beliefs in cancer diagnosis later.
in the paper when discussing issues relevant to religiosity). Beliefs such as these may ultimately lead some women to live with the disease privately and secretly (Meana et al., 2001). Other research indicates that Asian women may believe breast cancer to be a disease specific to Western women, therefore, decreasing perceptions of vulnerability and self-susceptibility (Kliewer & Smith, 1995).

**Cultural health beliefs.** Cultural knowledge is important when addressing beliefs that Vietnamese women may have in regards to their understanding of breast and cervical cancer. Burke and colleagues (2004) conducted interviews and focus groups with Vietnamese women and examined their beliefs and perceptions of risk factors of cervical cancer. Some of the Vietnamese women considered the practice of vaginal washing (*rua ray*) as good hygiene as well as preventive for cervical cancer. Some of the women talked about “white blood” (*huyet Trọng* or *huyet Bach*) that is caused by a virus, poor hygiene, or an imbalance in internal heat. If left untreated, *huyet Bach* is thought to accumulate in the body, block circulation, and develop into cancer. The women believed that *huyet Bach* could be managed by regularly washing their vagina with home remedies such as alum and salt which are believed to tighten the uterus and draw it back up into the body. In addition, staying calm and keeping stress levels low were believed to help manage *huyet Bach* levels. Some women revealed that they avoided Pap tests because they heard that the tests were painful. Also, some believed cancer to be terminal, often believing that being diagnosed with cancer meant that it was fatalistic.

Other research indicates that there may taboos found in Southeastern Asian cultures that prohibit women from touching their own bodies and enforce modesty in discussion of bodily topics even with family members and health professions (Choudhry, Srivastava, &
Fitch, 1998). As discussed later, Vietnamese women are less likely to initiate health discussions with physicians or health care professionals due to perceived taboos. This suggests that it is necessary to place Vietnamese women in environments that foster comfort, security, and trust in order for these conversations to take place.

**Awareness and knowledge of breast and cervical cancer.** Vietnamese women may not have the necessary knowledge of breast and cervical cancer in order to understand risk. One study found that roughly half of the participants knew that older age, early age of first sexual intercourse, and giving birth to many children were risk factors for cervical cancer (Do, Taylor, Burke, Yasui, Schwartz, & Jackson, 2007). Around two-thirds understood that having a sexually transmitted disease, having sexual activity with a man who has multiple sexual partners, and having multiple sexual partners increased the risk of cervical cancer. However, only a small percentage of the women knew that not getting regular Pap tests increased the risk, and that Vietnamese women are at higher risk for cervical cancer than White women.

A study by Burke and colleagues (2004) provide more evidence for the lack of cancer knowledge for some Vietnamese women. They found that some women associated poor hygiene, not observing the post-partum period or “sitting month” properly, and having the uterus surgically scraped increased risk for cervical cancer. In order for educational components of breast and cervical cancer screening interventions to be effective for Vietnamese women, it is important to offer knowledge that is based on their cultural framework of health. De-contextualizing breast and cervical cancer topics by ignoring the cultural belief systems of an ethnic population may diminish the effectiveness and perceived legitimacy of an intervention program. In order to disseminate health information to the
Vietnamese population, it important to convey health messages in a culturally appropriate way.

For ethnic minority populations, effective strategies for promoting cancer-screening behaviors will consider cultural factors. I will now discuss some cultural factors that influence Vietnamese women’s health behaviors.

**Culture and the self.** In understanding current health behaviors and practices among the Vietnamese population, it is important to recognize beliefs rooted in traditional Vietnamese cultural belief systems. Culture transmits values that shape health beliefs and practices. More often than not, health beliefs and practices arise from the same assumptions, values, and worldviews embedded in a specific culture much like traditional costume, food, norms, and observation of specific holidays.

**Individualism v. collectivism.** Markus and Kitayama (1991) proposed two types of cultures: one that fostered the independent self-construal and one that fostered the interdependent self-construal. Members from individualistic Western cultures (e.g., United States, England, and France) tend to view the self as an *independent* being; whereas, members from collectivistic Eastern cultures (e.g., Japan, China, and Vietnam) tend to view the self as an *interdependent* being (Markus & Kitayama, 1991; Triandis, 1995). Many Western cultures foster the belief that the individual is inherently separate and distinct from others. Individualistic societies emphasize an independent self which leads to the endorsement of values such as autonomy, egocentrism, separateness, self-containment, and uniqueness. Collectivistic societies emphasize an interdependent self, and this leads to the endorsement of values such as contextualism, allocentrism, relatedness, harmony, holism, and connectedness (Markus & Kitayama, 1991; Triandis, 1995).
Understanding how cultural context can give rise to different values can help us to understand their influence on health behaviors, and more specifically, to understand underlying motivations that influence health behaviors. To place this into context, most immigrants (post the 1960s) entering the U.S. largely originate from Latin America, Africa, and Asia (Schwartz, Unger, Zamboanga, Szapocznik, 2010). These are regions where collectivistic values are emphasized over individualist values (Triandis, 1995). These migrants are presently settling in North America, Western Europe, and Oceania, regions where individualistic values are emphasized over collectivistic values. Consequentially, there will be conflicts in cultural values between, for example, Vietnamese migrants and the societies that are receiving them (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). These differences are found in values that will influence an individual’s subjective interpretation of health and illness.

**Western theories of health.** Many Western models that explain health behaviors fall under an umbrella of theories found in rational choice models which assume that people are rational, aware, self-creating agents of their own health. Implicit in these models is the assumption that individuals are able to behave in the pursuit of self-interest, can make rational health decisions, and can make decisions in isolation from the social context (Boudon, 1998; Kaufman & Cooper, 1999; Mutaner & Lynch, 1999). Western theories and models such as the Health Belief Model (HBM; Rosenstock, 1966; Rosenstock, Stretcher, & Becker, 1988), Social Learning Theory (Bandura, 1977), and Self-determination Theory (Deci & Ryan, 1985) mainly focus on processes that act upon the *individual* in explaining and predicting health behaviors, while ignoring contextual factors and the influence of others.
There are a few exceptions. Mentioned earlier, Bandura’s SCT includes psychosocial factors and proposes that learning can take place through observation of an other. The Self-determination Theory (Deci & Ryan, 1985) also is an exception as it accounts for unconscious acceptance of external standards as a product of a desire for social approval. However, the Self-determination Theory ultimately focuses on the individual’s role in initiating behavior change, and implicates psychological health with more autonomy, a value highly regarded in individualistic cultures. Many Western models and theories of health behavior and health change tend to downplay other factors and processes that extend beyond the individual such as family members or community factors.

Another social cognitive-based model is the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975). This model is popularly used in explaining and predicting behavior. It does afford some examination of the role of others in predicting the individual’s health behaviors as it includes subjective norms. Based on research, one would predict that subjective norms might have a stronger relationship with health behaviors for collectivistic members, and research confirms this prediction. Park & Levine (1999) recruited students from Korea, Hawaii, and the United States. Participants were asked to complete scales that measured each component of the TRA while focusing on a specific behavior, studying for upcoming final exams. The researchers found that self-construals affected the strength of attitudinal and normative components of TRA. Specifically, the strength of the interdependent self-construal was positively associated with normative beliefs, motivation to comply, and subjective norm while the strength of the independent self-construal was not related to those constructs. With regard to the attitudinal component, the strength of the interdependent self-construal was positively associated with social attitude toward behavior.
and was negatively related to personal attitude toward behavior. The strength of the independent self-construal was positively related to personal attitude toward behavior and negatively related to social attitude toward behavior. Because of cultural emphasis on group harmony and cohesion, collectivistic members are likely influenced by perceived or real opinions of others. It is likely that this attentiveness to others will also guide the health decisions that members make.

**Engendered cultural values and health.** Collectivists are closely linked individuals who view themselves primarily as parts of a whole, be it a family unit, a network of co-workers, a tribe, or a nation (Triandis, 1995). The collectivistic orientation of Vietnamese culture provides a context in which people are seen within the family structure rather than as independent and autonomous individuals (Chung & Bemak, 1998). Ideally, members of a family are expected to subordinate their personal interests to those of the family or collective whole (Bich, 1999). The values that are found in Vietnamese culture are rooted in Buddhist, Taoist, and Confucian philosophy. For example, filial piety (children’s duty and devotion to parents) is an important core value of family hierarchy and obedience to elders (Nguyen, 1982) and comes from Confucian doctrine.

Values for Vietnamese women. In Vietnamese culture, accepted female traits and qualities are ones that are closely aligned to the “three submissions.” These three cultural values that are prescribed for the Vietnamese women include: (1) obedience to the father; (2) obedience to the husband, and (3) serving and caring for children (Chung & Bemak, 1998). These three submissions clearly define expected gender roles for the Vietnamese woman.

Understanding these inherent cultural values is important as they will lead to different core motivations for maintaining one’s health. Davis (2000) conducted interviews and focus
groups with Vietnamese women and explored topics surrounding the family. The women revealed that it was expected that individuals put forth the needs of the family before their own, and to consider all actions and how these would affect the family. This is congruent with expectations found within collectivistic societies. When interviewed about the role of the health within the family, one Vietnamese participant responded, “I think if you don’t have health, you couldn’t do nothing. The most important thing is your health. You have to be healthy, and then you can do anything you want: go to work, go to play, and help your kids. Take care of your kids.” The implication is that the motivation that an individualist has in maintaining his or her health and well-being may differ greatly from the motivations of a collectivist.

The influence of culture on health raises two important points to consider. First, members of individualistic societies perceive health to be a domain that falls under personal responsibility. Therefore, greater emphasis is on individuals to be responsible for maintaining their well-being. In contrast, for members of collectivistic societies, the family unit plays a central role in coping and healing and health-related decision-making for the individual (Braun, Mokuau, Hunt, Kaanoi, & Gotay, 2002; Davis, 2000). In general, collectivists are not accustomed to making medical decisions regarding their own health and wellness without consulting the family (Beauchamp, 1997). This may be due, in part, to their deep regard and respect for the opinions and feelings of the family. In addition, when one member of the family gets sick, it is the responsibility of the entire family to look after him or her.

The second point to consider is what this paper specifically examines. Members from collectivistic societies are perceived as parts that comprise the whole, whether the whole is represented as the family, community, or state (Markus and Kitayama, 1991; Triandis, 1995).
As a result, responsibility for members’ health falls upon the shoulders of others as reflected by beliefs that healthy members are able to contribute to the whole of the community and be productive citizens (Davis, 2000). Collective responsibility is seen in other domains such as the gendered division of labor. For example, cultural Asian values have established traditional gender roles where the husband is employed and provides financial security for the household while the wife is expected to care for the home and to care for the family (Bich, 1999; Chung & Bemak, 1998; Noor, 1994).

Even as more modern Vietnamese women take up employment and contribute to family income (Sakamoto & Woo, 2007), collectivist women are still expected to be primarily responsible for taking care of the home and the children (Davis, 2000). The point here is to increase motivation for the Vietnamese woman to take care of herself (e.g., adhering to cancer screening guidelines), by making salient the fact that people rely on her and need her to be around. Because Vietnamese cultural values may influence health beliefs and behaviors for women, one might expect that longer exposure to Western culture might also lead to some adoption of Western values with implications in health.

However, the traditional patriarchal nature of Eastern collectivistic societies may offer juxtaposing influences on Vietnamese women’s readiness to engage in cancer screening. For example, the numerous and demanding caretaking roles taken up by Asian women may serve as impediments to cancer screening and limit opportunities for interacting with the dominant population, therefore, decreasing the visibility of normative health practices and transmission of health information. Acculturation discussed in the next section is an important mechanism that may lead to the adoption of practices found in the host country. In addition, the rigidity of the division of labor found in Eastern gender roles produces many childcare and household
responsibilities for the Vietnamese woman. George and Ramkissoon (1998) observed that the accrued tasks may lead Vietnamese women to neglect self health, especially if the benefits are perceived to be distant. Lastly, research with Southeastern Asian female population report that a strong familial orientation may result in lower prioritization of self-care as it may compete with other demands and duties (Bottorff et al, 1998; Chandarana & Pellizzari, 2001).

Though maintaining a collectivistic orientation potentially serves to inhibit cancer screening behavior, I believe that emphasis on Vietnamese women’s caretaking roles and the dependence of others can serve as a powerful motivator to engage in cancer screening behaviors. It will be important to reframe the focus so that cancer screening is not perceived as a competing task to caretaking duties; rather, through a cultural lens, cancer screening needs to be perceived as an enhancing event that will allow Vietnamese women to be able to carry out responsibilities in the family and the household. There is some support for this as other studies have found acculturation to be linked to poorer health outcomes. For example, Le and Kato (2006) found among Asian Americans, higher levels of individualism were associated with increased unprotected sex. A study by Nasim, Corona, Belgrave, Utsey, and Fallah (2007) indicated that collectivist attitudes toward the family were protective against marijuana use. Another study found that an interdependent self-construal was associated with seeking breast health information (Oetzel, De Vargas, Ginossar, & Sanchez, 2007). These findings suggest that cultural values can potentially serve as important protective mechanisms for Vietnamese women.

As mentioned earlier, the emphasis on collectivistic values in the development and implementation of a breast and cervical cancer screening intervention for Vietnamese women
does not detract from the culturally-tailored nature of the intervention. Kagawa-Singer and colleagues’ (2002) “Form and Function” framework posits that while functions may be similar across Asian subgroup, emergent forms will be unique and distinct. The function of addressing traditional gender roles in order to promote cancer screening outcomes and motivation will have unique forms for the current population. Up until this point, I have discussed the contextual role of culture, existing at a macro-systems level. However, it will also be important to look at cultural factors that may influence health behaviors at the individual level.

**Acculturation.** As ethnic minorities in the United States, the Vietnamese face difficult challenges with transitioning and adjusting to a new cultural milieu. The Vietnamese individual may encounters issues and experiences that challenge her to negotiate her identity as Vietnamese and her identity as American (Chae & Foley, 2010). Two important psychological constructs that examine the cultural adjustment process for Vietnamese Americans (and other ethnic minorities) are acculturation and ethnic identity. I will explore the topic of acculturation first then follow with a discussion on ethnic identity.

*What is acculturation?* Scholars have offered many definitions and measures of acculturation as it is a complex term that encompasses many things. Acculturation is an ongoing process of change that occurs for the individual as he or she is confronted with two or more cultures. Acculturation occurs when a minority individual adopts attitudes, beliefs, values, and behaviors of another dominant culture (Berry, 1980; Robbins et al., 2006). Essentially, the minority individual must change and learn how to function in the new environment. These changes can occur in contexts involving any type of intercultural contact (such as globalization; Arnett, 2002). However, most acculturation research focuses on
immigrants, refugees, and asylum seekers, who live in countries or regions other than where they were born and are assumed to be permanently settled in their new homeland (Berry, 2006). The exception is that of the sojourners who relocate to a new country for a limited time period for a specific purpose with the intention to return to the native country (e.g., international students or seasonal workers). Acculturation research is not just limited to immigrants as even children of immigrants may not be accepted as full members of the host society. Acculturative stressors may play active roles beyond the first generation of immigrants (Suarez-orozco et al., 2008). Hence, acculturation is a relevant construct to examine in the present sample as Vietnamese participants will constitute immigrants and second generation Vietnamese and beyond.

A unidimensional or multidimensional construct? One perspective on acculturation is that it is unidimensional (Abe-Kim, Okazaki, & Goto, 2001). However, other researchers believe that the dichotomization of acculturation is misleading and oversimplified. This other perspective led to the development of multidimensional approaches (Hall & Barongan, 2002). For example, Berry (1980) posited that depending on the attitudes that the ethnic minority individual chooses to adopt towards the host culture and towards his or her native culture, acculturative attitudes can fall into four categories: integration, assimilation, separation/segregation, or marginalization. Integration occurs when the individual maintains his or her own cultural identity while also accepting the host culture, thus the individual is said to be bicultural. Assimilation occurs when the individual rejects his or her own cultural identity while accepting the host culture. Separation/segregation occurs when the individual maintains his or her own cultural identity while rejecting the host culture. Lastly, marginalization occurs when the individual rejects his or her own cultural identity while also
rejecting the host culture. It is important to note is that both integrative and assimilative attitudes are linked to higher acculturation for ethnic minority individuals. However, research suggests that integrative acculturation is linked to healthier and more positive outcomes for the ethnic minority individual as discussed later.

Acculturation research focused solely on Asian populations also produces similar acculturative attitudes though the category of marginalization is largely excluded (Suinn, Ahuna, & Khoo, 1992; Suinn, Richard-Figueroa, Lew, & Vigil, 1987). The validity of marginalization as an acculturative category is questioned (Del Pilar & Udasco, 2004) as the likelihood that an individual will develop a cultural sense of self without reliance on the host culture or native culture is very low. Previous studies using clustering techniques find very small or nonexistent marginalization groups (Schwartz & Zamboanga, 2008; Szapocznik, Kurtines, & Fernandez, 1980; Unger et al., 2002). In addition, scales that attempt to tap into marginalization typically have poor reliability and validity in comparison to scales that measure the other acculturative categories (Cuellar, Arnold, & Maldonado, 1995; Unger et al., 2002). In the present study, marginalization is omitted as a type of acculturative category.

Research that examines the relationship between acculturation and indices of psychological well-being for Asian populations suggests that the adoption of an integrative (or bicultural) orientation offers benefits to the individual. For example, Asian individuals who espouse an integrative orientation show higher levels of self-esteem (Phinney et al., 1992), experience less acculturative stress and employment problems (Dion & Dion, 1996), higher levels of life satisfaction (Ying & Lee, 1999), and higher positive psychological functioning (Chae & Foley, 2010; Farver et al., 2002; Kim, 2009; Lo, 2010; Nguyen, Messe, & Stollak, 1999) in comparison to individuals that adopt separated or assimilated
acculturative attitudes. Assimilation and separation are linked with negative ethnic identity, low self-esteem, and high stress levels (Lieber, Chin, Nihira, & Mink, 2001; Tran, Wright, & Mindel, 1987). Thus the equilibrium achieved by accepting both the host and majority culture and one’s own native culture is believed to produce healthy outcomes for the individual.

**Acculturation and health.** Acculturation has also been linked to many other health outcomes. In some cases, the literature shows that higher rates of acculturation may actually be harmful in that higher levels of acculturation are associated with negative health outcomes. One possible explanation is that the highly acculturated ethnic minority individual has molded a new self by radically assimilating into American culture and society (Leong & Chou, 1994). This hyper-assimilation comes at a cost as the individual essentially rejects his or her cultural identity.

Sue and Sue (1971) propose that this highly acculturated individual measures self worth with acceptance by the dominant culture and individuals contained in it. However, the individual is still confronted with evidence that he or she does not entirely belong to Western culture, resulting in insecurity that stems from having an unstable identity. Empirical evidence comes from a study that indicates that highly acculturated Korean Americans were more likely to experience depression (Shin, 1994). For studies with Vietnamese samples, acculturation is linked to increased cigarette smoking (An, Cochran, Mays, McCarthy, 2008), substance abuse (Kaplan et al., 2003; Reid, Higgs, Beyer, & Crofts, 2002), risky sexual behavior (Yi, 1998), and poor dieting and sedentary lifestyle (Kaplan et al., 2003).

However, higher levels of acculturation can also be linked to increased promotive behaviors. Research has shown that more acculturated Vietnamese women are more likely to
endorse help-seeking behaviors for mental health (Luu, Leung, & Nash, 2009). Importantly, acculturation has been linked to cancer-screening, and in general, Asian women who are more acculturated are more likely to undergo cancer-screening in comparison to women who are less acculturated (Tang et al., 1999; Yi & Reyes-Gibby, 2002; Tang et al., 2000). Because Vietnamese Americans tend to be less acculturated than other Asian subgroups (Stein, 1979; Matsuoka, 1990), this may explain why Vietnamese women engage in lower rates of Pap testing and breast examinations. For example, 55% of the Vietnamese population reported that they spoke the English language “less than well” in comparison to the Korean population (49%), the Chinese population (48%), the Japanese population (27%), the Indian population (23%), and the Filipino population (22%; U.S. Census Bureau, 2007). English language fluency is often used as a proxy for acculturation.

Why does acculturation appear to have a diametric role in influencing health outcomes for the Vietnamese population? One explanation may be that increasing levels of acculturation leads the minority individual to adopt the behaviors of the majority culture, but these adopted behaviors will be those that are normative. Simply put, some normative behaviors in Western individualistic cultures such as the United States are negative, such as substance use, and are relatively more common in Western cultures than Asian cultures (Harris, 1999). On the other hand, other normative Western behaviors are positive (e.g., cancer-screening). So it can be argued that acculturation does not specifically lead to the adoption of positive or negative traits and behaviors, per se, but rather, acculturation leads to the adoption of normative traits and behaviors found in the dominant culture.

Another explanation for the conflicting role of acculturation on health outcomes may be linked to the way acculturation is measured. Because much of the research on
acculturation and health relies on unidimensional measures of acculturation (Abe-Kim, Okazaki, & Goto, 2001), the promotive effect of integrated or bicultural orientations may not be captured. Epidemiological studies are especially likely to use unidimensional measures of acculturation such as tenure or length of residence in the United States (Alegri’a et al., 2007) or language fluency (Allen et al., 2008). Correlates with these unidimensional measures of acculturation and health outcomes tend to be negative. The present study contributes to the literature by clarifying the role that acculturation plays in cancer screening outcomes for Vietnamese women. The study examines whether there is a linear trend in the relationship between acculturation and health outcomes or whether it best understood within an integrated approach specifically within a Vietnamese population.

If acculturation and cancer-screening are related then effective interventions should target normative health beliefs or behaviors found in Vietnamese culture that might obstruct or promote behaviors. Thus, there is a need to measure acculturation and assess its specific relationship to intervention outcomes. I previously discussed integrative acculturative attitudes in which an ethnic minority individual may choose to maintain his or her cultural identity while accepting the dominant cultural identity (Berry, 1980). I will now continue with this discussion by focusing on ethnic identity and its relationship with health outcomes for the Vietnamese.

**Ethnic identity.** Phinney’s (1993, 2003) work on ethnic identity formation proposes that an individual develops his or her identity by experiencing three phases: the unexamined phase, moratorium phase, and ethnic identity achievement phase. In the first phase (unexamined phase), the individual places little significance on his or her ethnic or cultural heritage. In the second phase (moratorium or ethnic identity search phase), the individuals is
keenly interested in exploring and learning about his or her ethnic group. In the third stage (ethnic identity achievement stage), the individual feels secure about his or her sense of self as a member of the ethnic group. It is in this third stage that the individual adopts feelings of ethnic pride and belonging. Although most individual experience the three phases in a sequential pattern, these phases can be experienced in a non-linear fashion (Phinney & Kohatsu, 1997). In addition, I will discuss how ethnic identification develops in an orthogonal fashion with acculturation.

**What is ethnic identity?** Ethnic identity is the awareness and knowledge of an individual’s ethnic membership combined with shared values and attitudes of other members of one’s ethnic group (Phinney & Chavira, 1992). Ethnic identity describes the degree to which individuals recognize themselves as part of a specific ethnic group in combination with the degree to which the belonging is valued (Phinney, 2003). Ethnic identity is an important construct, particularly for later generation immigrants who reside in ethnic communities such as those found in the current study.

Ethnic communities or enclaves are areas where the majority of the residents are from the same ethnic group. These enclaves offer “institutional completeness” (Breton, 1964) by providing social, economic, and psychological resources to members (David, 1970; Cohn, 1981; Haines, Rutherford, & Thomas, 1981). In these enclaves, the native culture is preserved in such a way that the ethnic minority residents can function daily without interacting with, or acquire the values, beliefs, and behaviors of the host culture (Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). The presence of these enclaves also promotes the retention of the language, tradition, values, beliefs, and identity of the native culture among second generation individuals (Stepick, Grenier, Castro, & Dunn, 2003). As a result,
rich cultural traditions and values are preserved in the faith-based communities found in the present study. Ethnic identity is important to examine among the current sample comprised of first and second generation Vietnamese. The faith-based communities in the study comprise the type of communities that contribute to ethnic identity.

**Ethnic identity and acculturation: An orthogonal relationship.** Although the terms ethnic identity and acculturation are often used interchangeably, they are separate concepts (Lee & Zane, 1998; Umana-Taylor, Yazedijian, & Bamaca-Gomez, 2004). Acculturation focuses on the strategies that the ethnic minority individual develops and adopts to function in a new cultural milieu. The focus is on whether the individual adopts attitudes, beliefs, values, and behaviors of another dominant host culture. Ethnic identity development, which may co-occur with the acculturation process, involves personal feelings about being a member of an ethnic group (Phinney, 2003). Essential components of ethnic identity include that the individual feels a sense of belonging and has positive attitudes towards his or her ethnic group. In addition, ethnic identity is concerned with how the individual views his or her self-concept whereas acculturation is less self-reflective (Lieber, Chin, Nihira, & Mink, 2001). Although acculturation and ethnic identity are related, they are conceptually independent.

Because ethnic identity involves identifying with one’s ethnic group and acculturation addresses the adoption of values, beliefs, and behaviors with the dominant and majority group, it is easy to conceptualize these two constructs existing on polar ends of a continuum. On the one hand, research may suggest that as one increasingly affiliates and identifies with one’s own minority ethnic group, identification with the dominant group grows weaker (Uba, 1994). However, Phinney (1995) posited that an individual could possess high ethnic identity
and be fully integrated with or fully separated from the majority host culture. Indeed, research has provided evidence that ethnic identity may operate independently of the acculturation process and that these two constructs may be orthogonal, meaning that an individual can be highly acculturated while maintaining a strong ethnic identity (Costigan & Su, 2004; Johnson, Wall, Guanipa, Terry-Guyer, & Velasquez, 2002; Leong & Chou, 1994; Li, 2007; Lieber, Chin, Nihira, & Mink, 2001). A study by Li (2007) suggested that Asian Americans who were born in the US may attribute substantial importance to their ethnic Asian identity and their national American identity, both parts comprising a type of bicultural identity found in Berry’s (1980) conceptualization of integrative attitudes found in acculturation. Li found that when participants’ ethnic identity was strong, their national identity was also likely to be strong, suggesting that ethnic identity and acculturation with the dominant culture do not necessarily exist on two opposite ends of the spectrum.

**Ethnic identity and health.** Ethnic identity is believed to play a vital role in self-esteem, mental health, satisfaction with and quality of life, and a myriad of illness and health outcomes (Chae & Larres, 2010; Triandis, 1972; Finch et al., 2000; Cabassa et al., 2007). Furthermore, evidence suggests that ethnic identity plays a role in promoting healthy practices among ethnic minority populations. Higher levels of ethnic identity may protect against risky health behaviors such as tobacco use, alcohol use, and marijuana use for ethnic minority individuals (Belgrave et al., 1997; Brook, Duan, Brook, & Ning, 2007; Love, Yin, Codina, & Zapata, 2006). There is scant literature that examines the relationship between ethnic identity and breast and cervical cancer screening. However, there is some initial evidence that ethnic identity may play a role by motivating some cultural groups to engage in cancer screening. In a study of 220 Jewish women, participants with a high cultural identity
expressed greater interest in breast cancer testing. This may be due to a heightened awareness of breast cancer risk factors for Jewish women (Bowen et al., 2003). However, to my knowledge, there are no studies that have examined the role of ethnic identity in breast and cervical cancer screening behavior among Vietnamese women. This study will examine the link between ethnic identity and cancer screening behaviors for Vietnamese women.

For Vietnamese women, the role of ethnic identity as a protective factor may operate through different mechanisms. Vietnamese women are five times more likely than White women to have cervical cancer (ACS, 2009a). As a result, membership in this ethnic minority group is linked to increased cancer risk. Among Vietnamese women who are familiar with this knowledge, increased ethnic identity may make this cancer risk more salient and may motivate them to engage in cancer screenings. In addition, ethnic identity promotes pride in ethnic group membership, and this may lead to increased contact and involvement with the community. Chae and Foley (2010) examined the interrelationship among ethnic identity, acculturation, and psychological functioning among a sample of 334 Chinese, Japanese, and Korean American men and women. The results indicated that increasing levels of ethnic identity were associated with increased community involvement, increased attendance at religious meetings, and increased psychological well-being. The implications of this study are important as community involvement may help to connect Vietnamese women to many different resources in the community including health resources. Also, it is worth noting that both ethnic identity and acculturation provided unique variance as predictors of psychological well-being for the sample. Similarly, Lieber, Chin, Nihira, & Mink (2001) found that ethnic identity and acculturation contributed independently to, and interacted in, the prediction of life satisfaction in a sample of 83 Chinese immigrants. Thus,
while acculturation is likely a relevant construct, ethnic identity may also play a positive role in increasing cancer awareness and screening in Vietnamese American women in the current study. Another cultural factor that may enhance effective community interventions by increasing salient community membership and thus, involvement, is religiosity.

**Religiosity.** Vietnamese communities can be found in pockets throughout the United States. The Vietnamese have formed ethnic enclaves in major U.S. cities that can be commercial in nature, harboring ethnic restaurants (e.g., pho houses), nail salons, herbal medicine stores, and music and movie stores. In addition, these small communities can be found in religious enclaves such as the communities in the present study. Immigrant individuals who settle in the United States can experience challenges in the cultural adjustment process as previously mentioned. As a result, some immigrants will search for religious institutions or communities in order to extend their social networks and to gain social support in their new country (Lim & Yi, 2009).

In Asian American communities, churches and temples serve as well-established networks. Individuals participate in church or temple activities in order to interact with other similar individuals. The church is more than a church. The temple is more than a temple. The Vietnamese Church of Martyrs and Hue Quang Buddhist Temple are two distinctly different Vietnamese faith-based sites in the same city. The former attends to a Vietnamese Catholic population while the latter attends to a Vietnamese Buddhist population. The Vietnamese Church of Martyrs and Hue Quang Buddhist Temple hold events to celebrate the Vietnamese holidays. Both faith-based sites observe and celebrate traditional Vietnamese holidays such as *Tet* (i.e., Vietnamese New Year) and *Tet Trung Thu* (i.e., the Mid-Autumn Festival or Moon Festival). These events include festivals with traditional food, dancing performances,
musical performances, and socializing. Vietnamese individuals attend the community celebrations, regardless of the venue and regardless of their religious affiliation.

These faith-based sites also transmit cultural values, knowledge, traditions, and practices to younger generations. For example, the Hue Quang Buddhist Temple provides Vietnamese school for children. Enrolled children learn grammar and vocabulary of their native language as well as traditions and history of their native culture. Though the Vietnamese school is on Hue Quang grounds, the student body is not comprised exclusively of children from the Hue Quang Buddhist community. A large portion of the children are Catholic and are from families who worship at the Vietnamese Church of Martyrs. These constitute examples of how ties to ethnic faith-based communities allow Vietnamese members to connect to the Vietnamese community at large.

**Buddhism and Catholicism.** Most native Vietnamese (up to 85%) practice Buddhism, an Eastern philosophy that was largely introduced by China (Rutledge, 1992). On the other hand, Roman Catholicism is practiced by roughly only 10% of the native Vietnamese population, but it is estimated that as many as 40% of the Vietnamese population in America practice it. The high numbers of Vietnamese practicing Catholicism in the U.S. is not incidental; rather, it reflects their previous experience as refugees in 1954, when they had to leave North Vietnam for fear of persecution by Vietnamese communists (Do, 2005). Roman Catholicism is a by-product of Western influence, attributed to historical ties and events to Portugal, Spain, and largely, France. On the other hand, the practice of Buddhism can be traced back to Eastern influence, mainly China.

Despite differences in geographical origins of Catholicism and Buddhism, I propose that higher levels of religiosity, in general, will be associated with higher levels of cancer
screening awareness, knowledge, and behaviors. Because of the high proportion of Buddhist and Catholic Vietnamese residing in the United States, Vietnamese communities are often faith-based such as the ones in the current study. Vietnamese individuals who practice these religions are afforded an advantage as they belong to community centers that often provide assistance for refugees and immigrants. Being a part of a religious community is important also as studies of Asian samples indicate that higher levels of social isolation are associated with lower levels of religiosity (Mytko & Knight, 1999; Reynolds, 2006). People who are more religiously involved may benefit greatly from drawing on resources offered by the church or temple (Park & Bernstein, 2008; Thoresen & Harris, 2002). These resources range from helping members find employment, to housing, cultural activities, and counseling.

**What is religiosity?** When defining religiosity, it is important to differentiate it from another closely related construct, spirituality. Religiosity is defined by the presence of institutional organization and affiliation, expressions of particular beliefs and dogma, and rituals that are rooted in beliefs of supernatural or divine powers that transcend the physical world (Pargament & Mahoney, 2002). In contrast, spirituality is defined as a broader construct that encompasses subjective processes such as the search for existential meaning and purpose in life as well as an awareness of a being or force that transcends the material world. Essentially, religion incorporates spirituality, but spirituality does not necessarily require the institutional organization of religion. Spirituality is conceived as a more personal process (Spilka et al., 2003).

While Catholicism is commonly accepted as a religion, there is a bifurcation of perspectives on Buddhism: one which espouses the view of Buddhism as a type of spirituality and one that conceptualizes it as a religion. Proponents of Buddhism as a type of
spirituality emphasize values of autonomy and individuation and stress that it is a subjective process (Saroglou, 2003). However, Glock’s (1962) main components of religion include beliefs, ritual, community, and specific governing codes, and these components are evident in the Buddhist temple on community grounds. I believe that Buddhism embodies spirituality, yet can also be measured as an individual-level psychological construct of religiosity.

Because my participants belong to a specific community institution (i.e., Hue Quang Buddhist Temple) and congregate to observe religious holidays and rituals, institutional organization is evident.

**How is religiosity measured?** Classic work by Allport and Ross operationalized religiosity and divided the construct into two domains: extrinsic religiosity and intrinsic religiosity in the Religious Orientation Scale (ROS; Allport & Ross, 1967). This is one of the earliest and most widely used scales measuring religious motivation. Allport and Ross concluded that intrinsically motivated people *live* their religion while extrinsically motivated people *use* their religion. Later work with religiosity focused on factor analytic techniques that often produced three factors: intrinsic religiosity, social extrinsic religiosity, and personal extrinsic religiosity (Gorsuch & McPherson, 1989; Hunt & King, 1971; Kirkpatrick, 1989; Leong & Zachar, 1990). Social extrinsic religiosity addresses how the person uses religion for more secular or social purposes. Personal extrinsic religiosity encompasses how the person uses religion for more personal reasons such as comfort, security, and protection.

The ROS is not without critics; Cohen and colleagues (2005) argued that the distinction between intrinsic and extrinsic religiosity is culturally constrained to individualism rooted in American Protestantism and it may not be appropriate in the measurement of religious motivation in communitarian religions such as Roman Catholicism. However, research
shows that the intrinsic subscale taps a valid and important aspect of religiosity, and there are many robust associations with various health outcomes (Koenig, Pargament, & Nielsen, 1998; Watson et al., 2002). Relevant to this discussion, the ROS scale has been validated in Muslim and Buddhist populations outside the United States (Tapanya et al., 1997; Thoreson, 1998; Watson et al., 2002).

There are many existing measures of religiosity. Single item measures that ask participants to respond to questions in regards to religious affiliation or church attendance are popularly used though they fail to capture the multidimensionality of religiosity (for a review, see Hall, Meador, & Koenig, 2008). Providing a brief glimpse at the variability in measures of religiosity, these measures can range from measuring religious well-being (Paloutzian & Ellison, 1982; Peterman et al., 2002) to religious coping (Koenig et al., 1992; Pargament, 1999; Pargament, Koenig, & Perez, 2000); religious quest (Batson, 1976; Batson & Raynor-Price, 1983; Batson & Schoenrade, 1991); and religious maturity (Benson et al., 1993; Boivin, 1999; Dudley & Cruise, 1990; Hill & Hood, 1999; Stevenson, 1999). In addition to its ability to distinguish between extrinsic and intrinsic motivations, the ROS was chosen to measure religiosity in the current study because of its ability to capture a global sense of religiosity. In this sense, the ROS can distinguish the “religious” from the “non-religious” in multiple domains. This will be important as I will explore whether being “religious” in specific domains will predict health outcomes for Vietnamese women as previous literature offers support for the promotive role of religiosity.

Religiosity and health. In general, the promotive effect of religiosity on a variety of life indicators and outcomes has been documented. Religiosity may be linked to preventive and promotive behaviors such as abstinence from drinking (Epler, Sher, & Piasecki, 2009),
increased dental visits, (Felix, Levine, & Burstin, 2003), decreased risky sexual behavior (Haglund & Fehring, 2010), and increased coping strategies for stress and depression (Belgrave et al., 2010; Kirchner, & Patino, 2010). Religiosity has also been linked to higher levels of cancer screening for African American women (Levine, & Burstin, 2003; Fox, Pitkin, Paul, & Duan, 1998),

It is important to distinguish the components of religiosity that I believe are and are not responsible for promoting health behaviors such as cancer-screening. I am not suggesting that religious and spiritual beliefs directly influence Pap testing or clinical breast examinations. Similarly, I am not proposing that there are tenets in Buddhist or Catholic doctrine that directly guide women in making health-related decisions. Instead, I believe that an instrumental function embedded in religiosity, serves to connect individuals to relationships, programs, and other instrumental facets within a religious community. Essentially, I believe that extrinsic religiosity will be associated with health-related outcomes while intrinsic religiosity will not as these two components of religiosity underlie different motivations (Allport and Ross, 1967).

One explanation for the promotive effect of religiosity on health behaviors may be due to the fact that minority members who have higher rates of religiosity may be more actively involved in their church. These members may have more connections to information about health-related issues. This is supported by studies that highlight the roles that faith-based organizations play in increasing breast cancer awareness and screening behaviors among other ethnic minority groups (Erwin, Spatz, & Stotts, 1999; Weinrich et al., 1998). I predict that the social extrinsic domain is one component of religiosity that influences health behaviors and outcomes. Vietnamese women who attend church or temple for social reasons
may have better community ties and connections to health-related information through the church or temple.

Personal extrinsic religiosity assumes that the person uses religion for more personal reasons such as comfort, security, and protection. This is supported by a study by Mitchell and colleagues (2002). The authors surveyed 682 African American women and found that the majority of the women believe that God works through doctors to cure breast cancer. Therefore, I also predict that personal extrinsic religiosity will lead to increased cancer screening knowledge and behavior. If Vietnamese women take comfort in religion, they may use it as a coping mechanism to assuage anxiety surrounding breast and cervical cancer. I predict that the intrinsic component of religiosity will not be as strongly linked to cancer-screening awareness and outcomes as the other two components of religiosity. There are not specific tenets embedded in Catholicism or Buddhism that serves to influence Vietnamese women’s health behaviors or beliefs.

Some initial research has examined the relationship between cancer screening outcomes and religiosity. This research suggests that belief in a higher being or God may lead an individual to surrender his or her outcomes because of the belief in destiny or fate. For example, research has found that delays in seeking medical care and/or non-adherence to cancer screening guidelines occur for individuals with fatalistic views of cancer diagnosis (Liang et al., 2008; Powe, 1997). A person who holds a fatalistic view of cancer believes that disease is a matter of fate, determined by God (Azaiza & Cohen, 2008; Sheppard, Christopher, & Nwabukwu, 2010). Cancer is seen as punishment for improper behavior with death as the extreme consequence. Fatalism also encompasses the perception that cancer is a way to atone for bad deeds, a test by God. However, it should be noted that fatalism may be,
at best, a peripheral trait of religiosity as not all religious or spiritual individuals hold fatalistic health views. For example, Mayo and colleagues (2001) did not find religiosity and spirituality to be significantly correlated with fatalistic beliefs. A non-significant association between religiosity and fatalistic beliefs was also found in a study by Gullatte, Brawley, Kinney, Powe, and Mooney (2010). This study examined whether religiosity and spirituality predicted the seeking of medical care for breast cancer in a sample of African American women. The lack of significant findings between fatalism and cancer screening highlights the fact that religiosity is comprised of several components, only some of which are associated with cancer-screening outcomes.

Other studies that directly connect religiosity and spirituality to cancer focus on the coping mechanisms that are afforded by religiosity and spirituality in breast cancer diagnosed patients or survivors (Lengacher et al., 2006; Lim, & Yi, 2009; Rippentrop, Altmaier, & Burns, 2006). Here, religious or spiritual coping strategies are expected to lead to psychosocial adjustment and increased quality of life for cancer patients. The present study contributes to the literature by examining whether different facets of religiosity connect Vietnamese women to faith-based sites, thus increasing their exposure to health-related information. Higher rates of religiosity may lead to increased cancer awareness and screening if faith-based site (such as churches and temples) are involved with programs that provide health and cancer prevention information to the community. If this connection is established, effective interventions could use the community church or other religious and spiritual institutions in helping to disseminate knowledge and information about cancer.

**Summary of culture and health.** Cultural models of health and illness provide individuals with a framework that guides understanding of sickness and health. Culture
affects the formation of self-concepts. Individualistic Western cultures tend to foster independent self-construals while collectivistic Eastern cultures tend to foster interdependent self-construals. Themes of individualism and autonomy, values found in Western cultures, are evident in theories found in the Rational Choice Model. On the other hand, values embedded in collectivistic cultures (such as holism, harmony, and hierarchy) lead to different motivations underlying Vietnamese women’s health behaviors.

Other important cultural concepts to consider are acculturation, ethnic identity, and religiosity. Higher levels of acculturation and ethnic identity are both believed to predict higher rates of cancer screening. In addition, Vietnamese women with high levels of extrinsic religiosity will have better health-related outcomes due to higher involvement with faith-based communities. Now, I will turn to a discussion on health communication and the promotion of health behaviors.

Health Communication

Literature that examines the communication of health information (specifically, cancer-related information) has typically focused on communication between the patient and the provider (Donnelly, 2008; Politi, Clark, Rogers, McGarry, & Sciamanna, 2008; Royak-Schaler, Lemkau, & Ahmed, 2002; Stoddard et al., 1998). In general, a positive communication style between the patient and the physician is linked to increased screening rates (Crane, Kaplan, Bastani, & Scrimshaw, 1990; Roberts & Birch, 2001). One study found that patient-provider communication on topics related to cancer screening practices predicted increased adherence to breast and cervical cancer screening recommendations and guidelines for women (Politi, Clark, Rogers, McGarry, & Sciamanna, 2008). However, the communication of health-related information between the patient and the health practitioner
may work less effectively and/or be less relevant for the Vietnamese population (Woodall et al., 2006). As mentioned earlier, Vietnamese members have lower rates of being insured, and this makes them less likely to routinely engage in health behaviors (e.g., receiving yearly check-ups), thus decreasing potential contact with physicians.

In addition, the transmission of health information from physician to patient may be constrained by cultural barriers that prevent the discussion of topics that are considered taboo or private. For example, in the Vietnamese culture, a woman’s body is considered private and there is a strong tendency for Vietnamese women to experience embarrassment and hesitation when discussing issues such as breast and cervical examination (Donnelly, 2006). Stigmas attached to diseases, such as cervical cancer, often prevent women from seeking help, and consequentially, some women will choose to live with their disease privately and secretly (Donnelly, 2008). In addition, if Vietnamese patients are unsatisfied with the care they receive from doctors and nurses, they may perceive the health care system to be untrustworthy and may be unwilling to depend on providers as reliable sources of health information (Meredith & Siu, 1995).

Values found in collectivistic cultures also contribute to patient communication and sometimes dissatisfaction. As discussed earlier, collectivistic societies stress that it is important for the individual to sacrifice his or her needs for the greater good of society and to maintain harmonious relations (Lebra, 1976). Thus, the collectivistic patient may act constrained and unassertive, contributing to the maintenance of fluent relationships that avoid confrontation and self-assertion between the patient and physician (Beauchamp, 1997). Because of these considerations, it may be easier for Vietnamese women to initially approach breast and cervical cancer topics with individuals that they trust, such as friends and family.
These interactions will likely provide a more comfortable and safe environment in which women can gain information about breast and cervical cancer.

**Health communication and mass media.** Other modes of health communication for messages on breast and cervical cancer can be found in mass media. In one study, the authors found that primary care providers played a limited role in conveying information about breast cancer screening to a sample of African American and White women (Nekhlyudov, Ross-Degnan, & Fletcher, 2003). However, the results of the study showed that most of the cancer-screening information came from mass media sources. Effective mass media communication channels used to relay important cancer-related and other health-related issues include television, newspapers, magazines, and information available in physician offices (Schecter, Vanchieri, &Crofton, 1990). However, ethnic minority individuals are sometimes less effectively reached through popular media, especially when the media is a medium of the dominant culture. As mentioned previously, the Vietnamese population has lower rates of English proficiency than other Asian subgroups (U.S. Census Bureau, 2007), and this may hinder the effectiveness of mass media health messages. However, some research has shown that mass media campaigns can be particularly effective when the medium is offered in the Vietnamese language (Hill et al., 2009; Jenkins et al., 1997; Jenkins et al., 1999; Mock et al., 2007). Because ethnic minority individuals are less effectively reached through conventional sources of health information, informal communication may be a better outlet for the spread of health information.

**Informal communication.** Research suggests that ethnic minority populations may rely on informal methods to access health-related information (Cheong, 2007). For example, White Americans may rely on physicians, newspapers, and printed materials while minority
individuals may heavily rely on family and friendship networks as sources of health information (Belgrave, 1998; Hudson & Watts, 1996; Kar, Alcalay, & Alex, 2001). This speaks to the importance of the role of informal communication in the spread of health information among ethnic minority populations. The current study was interested in examining the role of informal communication which tends to be spontaneous, interactive, and organismic (March & Simon, 1958; Tushman & Nadler, 1978).

Unlike formal networks of communication, informal communication is exchanged interactively (e.g., through meetings and casual conversations) and is often unplanned. Because it is interactive, informal communication tends to be fluid and will change to take into account the participants’ current interests and understandings (Kraut, Fish, Root, & Chalfonte, 1990). Two individuals who are engaged in informal communication respond to what they perceive are the current state of affairs (i.e., the communication up until that point and perceptions of the other individual’s reactions to it). Because feedback is incorporated into this conversation-style of health communication, informal communication can sometimes be more effective than formal channels. In informal communication, participants in the conversations can elaborate what they have to say in order to deal with conflicts, confusion, and misunderstandings (Kraut, Lewis, & Swezey, 1982).

**Health communication in the family.** Research has examined the role of informal communication between peers and family members on cancer topics (Cline, 2003; Green, Richards, Murton, Statham, & Hallowell, 1997; Husaini et al., 2001; Gravell, Zapka, and Mamon, 1985). One study explored the possible influence that mothers have on their daughters by examining how likely mothers were to provide advice on breast cancer prevention (Sinicrope, et al., 2008). Fifty-five percent of the women in the study reported
providing breast cancer prevention advice to their daughters. Predictors of maternal advice to daughters in breast cancer prevention included having a personal history of breast cancer, having higher levels of breast cancer concerns, engaging in higher numbers of health-promoting behaviors, and having performed a previous BSE. Jones, Denham, and Springston (2006) examined the effects of family communication of cancer screening on screening behaviors among college and middle-aged female participants. Participants who discussed breast cancer topics with other family members more strongly adhered to recommended screening practices than women who did not engage in family discussions.

One area of research that speaks to newly developed roles for the Vietnamese woman in America concerns cultural translation or “cultural brokering” in which immigrants serve as cultural translators for family members, other adults, and their peers (Trickett & Jones, 2007). Cultural brokering can include a wide range of activities such as translating documents from school or government agencies, making appointments with medical or social service agencies, and filling out federal or state tax forms. Cultural brokering can also include answering the telephone, explaining to parents what they are saying when speaking to native speakers, and translating for younger siblings (Buchanan, 2000; Buriel, Perez, De Ment,, Chavez, & Morgan, 1998; Orellana, Dorner, & Pulido, 2003; Tse, 1995).

Because the Vietnamese woman is expected to serve the family and collective whole, one can assume that when possible, she serves as the cultural broker for her parents, her husband, her younger children, and her peers. Vietnamese women are likely candidates to “broker” and relay foreign health topics such as breast and cervical cancer and screening procedures. This is an important mechanism that should be examined especially after Vietnamese participants undergo the intervention. I was interested in finding out whether
they culturally broker what was discussed in the intervention with loved ones. Next, I discuss how health information may be potentially transmitted in faith-based communities.

**Health communication in faith-based communities.** Informal communication of health messages within minority populations can often occur within a religious or faith-based setting (Agadjanian & Menjivar, 2008; Faulkin & Strauss, 2000). Although research that focused on the role of informal communication within religious communities (e.g., church or temple communities) in regards to breast and cervical cancer topics was not identified, there has been some work with topics such as HIV/AIDS (Agadjanian & Menjivar, 2008).

Informal communication within a religious setting may affect cancer-related outcomes due to the saliency of religious behavioral norms, the availability of moral and psychological support provided by congregation members, and the financial assistance provided by the church to access health care (Agadjanian & Menjivar, 2008). In essence, informal communication about health issues is helpful as it can help members obtain social support that is needed in the prevention, management, and cure of a disease (Faulkin & Strauss, 2000). Agadjanian and Menjivar (2008) surveyed members of different congregations about their interactions with other congregation members (other than family and the congregation’s leadership) in regards to the topic of HIV/AIDS. The results indicated that approximately 58% of the respondents had previously had a conversation with another community member about HIV/AIDS. Nearly half of these recent conversations included discussion about the need for prevention and HIV/AIDS prevention practices.

A study by Woodall and colleagues (2006) examined the sources of health communication among Vietnamese men. The findings indicated that participants referenced Vietnamese and English newspapers, magazines, internet sources, radio sources, and
television sources for health information. More than half of the participants reported that they also received health information from informal sources such as friends and family. Interestingly, more than 30% reported that they received health information from pagodas, temples, or churches. The findings from this study indicate that, outside of formal print sources, informal communication occurs in religious communities.

Individuals who belong to faith-based networks may have access to valuable health information through informal channels. Informal communication networks are powerful sources of health information for ethnic minority populations because these networks are easily accessible, well-utilized, and personally involving for most people (Kreps, 1990). Therefore, this study was interested in how much information on the topics of breast and cervical cancer was shared and transmitted within faith-based communities.

There are relatively few studies that report how individuals use health information provided by informal sources, such as friends, relatives, or community groups (Ford & Kaphingst, 2009). Informal and interpersonal sources found in faith-based communities could be particularly important for individuals with limited access to media resources. Informal sources may also be useful for those who are less likely to seek health information online, such as individuals with fewer years of education and lower income levels (Cotton & Gupta, 2004). However, the content and accuracy of information provided by different informal sources of health information may vary. This study examines whether health information sources may be linked to cancer-related beliefs and attitudes.

**Summary of health communication.** Vietnamese women may be less effectively reached via conventional sources of health information such as those found in the patient-provider relationship and mass media, unless the media is offered in the native language. The
Vietnamese may rely more on informal channels of communication in accessing health information. These informal sources may include friends, family members, and other community members. Another informal channel of communication that may aid in the diffusion of cancer-related information is found within faith-based communities.

**Preliminary Studies by the Author**

The present study utilized a CBPR approach from its inception (from identifying and understanding the problems) to the delivery of the intervention. See Nguyen, Belgrave, & Sholley, 2010 for a fuller description of this process. In this section, I briefly discuss preliminary studies leading up to the present study.

**Study one.** In 2005, 42 men (n = 19) and women (n = 23) from a local Vietnamese Catholic community were recruited to participate in one of six focus group discussions. The goal of the discussions was to uncover important and relevant health issues and concerns in the local Vietnamese community. I believed these discussions would reveal important health issues that needed to be addressed in the community.

Facilitated by trained members of the Vietnamese community, the discussions revealed that the Vietnamese population neglected health-based services because of lack of finances, health insurance, and/or appropriate knowledge to find these services. Even when some participants desired access to health services such as Pap tests, mammograms, or clinical breast exams, they did not feel they could navigate through the health system to seek out these services. Of particular interest was the low level of breast and cervical cancer screening among the women because of cultural barriers. These results highlighted the disparities in breast and cervical cancer screening among Vietnamese women in the local community. Further research was needed to examine the beliefs and attitudes that
Vietnamese women had towards breast and cervical cancer and to verify that the women in the community experienced lower screening rates.

**Study two.** The next logical step was to develop and administer a survey to examine correlates, trends, and perceived barriers to breast and cervical cancer for Vietnamese women. In 2006, 72 Vietnamese women from the Vietnamese Catholic community were recruited to complete surveys that included items constructed from emergent themes found in the previous focus group discussions. Community leaders, a panel of priests and nuns from the church, and members from the Vietnamese community reviewed the surveys and provided feedback to ensure that the items were appropriate, respectful, and easy to understand. After following recommendations from community advisors, the surveys were finalized and administered.

The study’s results indicated that the Vietnamese sample engaged in lower rates of breast and cervical cancer screening behavior in comparison to national rates as well as other ethnic populations as found in the literature (De Alba et al., 2005). The findings also revealed that having a regular physician and health insurance influenced screening behavior, suggesting that effective interventions should connect Vietnamese women to low-cost providers and to providers who do not require health insurance. In addition, the findings indicated that cancer screening behavior was influenced by a lack of knowledge and information about female cancer topics, suggesting a need for an educational intervention. The results indicated that women with a male physician were more likely to adhere to screening guidelines for CBE. This increased compliance to men is consistent with cultural values of a general reverence to elder and male figures in the Vietnamese population (Kibria, 1990). This finding also made salient a need to focus on the influence of traditional values.
and beliefs in screening behaviors. Lastly, the low rates of English proficiency and acculturation highlighted the importance of developing a culturally sensitive intervention.

**Study three (pilot intervention).** The next step was the development and piloting of a breast and cervical cancer screening intervention for the Vietnamese population. With funding from VCU’s Institute for Women’s Health (a Women’s Center of Excellence), I was able to implement a pilot intervention. In 2007, 21 Vietnamese women were recruited from the local Catholic Vietnamese church community. These women had not participated in the previous studies. Community members who could facilitate intervention sessions in the Vietnamese language were identified and trained. Pretest, posttest, and follow-up surveys were constructed in collaboration with and reviewed by community members to ensure readability, and cultural appropriateness.

Vietnamese participants arrived to the church grounds and were invited to a meeting room where they completed pretest measures of baseline breast and cervical cancer screening awareness, knowledge, self-efficacy, intention to screen, and actual behaviors. The women also completed cultural measures of ethnic identity, acculturation, and religiosity. After they completed the pretest measures, the women were invited to serve themselves Vietnamese food that was catered from a local Vietnamese restaurant. The facilitators then presented an educational session in PowerPoint on breast and cervical cancer topics. The information contained in the presentation was adapted from materials on female cancer topics that were culturally validated by *Suc Khoe La Vang!* (Bird et al., 1998).

The presentation covered topics and information related to definitions, symptoms, treatment, risk factors, and screening of breast and cervical cancer. Afterwards, the women were encouraged to raise concerns, ask questions, and discuss the topics they heard in the
presentation. The women then completed posttest measures on breast and cervical cancer screening knowledge, self efficacy, and intention to screen in order to assess short-term changes. The women were given monetary incentives for their participation as well as booklets and pamphlets on breast and cervical cancer topics to take home at the close of the session. Participants were asked to return three months to take part in the follow-up sessions. In this session, they completed surveys to assess longer-term changes in cancer screening related outcomes, and they participated in focus group sessions. The session lasted about two and a half hours.

The pilot intervention results indicated participants experienced significant increases from pretest to posttest for the following outcomes: breast and cervical cancer knowledge and self-efficacy in cancer screening. The women also had significant gains from pretest to follow-up (three month lapse), indicating that longer-term changes had occurred. There was also an increase in intention to get both clinical breast examinations and Pap tests from pretest to posttest and from pretest to follow-up. The data also indicate that there were increases in the percentage of women who were up-to-date with their CBEs and Pap tests after participating in the intervention. The results of the pilot intervention provide preliminary support in its effectiveness in promoting cancer screening knowledge, self-efficacy, intent, and behavior for short-term and longer-term changes.

There were additional correlates between cultural variables and cancer screening outcomes. Acculturation was positively related to knowledge of breast and cervical cancer such that participants with higher levels of acculturation had greater knowledge of breast and cervical cancer. Ethnic identity was negatively related to cancer screening knowledge such that higher levels of ethnic identity were associated with less cancer screening knowledge.
These findings suggested a polarized relationship between ethnic identity and acculturation such that higher identification with Vietnamese cultural values and membership were associated with decreased adoption of Western values. These Western values may include positive attitudes towards cancer screening and normative routine screening behaviors. However, some perspectives of identity orientation espouse the view that ethnic identity and acculturation are orthogonal measures, meaning they constitute independent measures (Costigan & Su, 2004; Johnson, Wall, Guanipa, Terry-Guyer, & Velasquez, 2002; Leong & Chou, 1994; Li, 2007; Lieber, Chin, Nihira, & Mink, 2001). More research was warranted to elucidate the role of ethnic identity and acculturation on screening outcomes.

After the intervention session, participants were invited to take part in focus group discussions during a follow-up session. There were notable emergent themes from the discussions that highlighted the need for additional areas of investigation for the next intervention study. First, it was clear that the sample of Vietnamese participants relied on informal networks in the distribution and receipt of health information. While many of the participants voiced that they received health information and guidance from physicians or other health care providers, there was an overwhelming response from the women indicating that they share and receive health information from family and friends. Many participants informed the researchers that they shared with family, friends, and co-workers the information that they had learned from the intervention’s sessions. One woman said,

*After I participated in this study, I brought the [pamphlets and handouts] to my workplace and told my friends about breast cancer and cervical cancer. Two of my friends listened to me and got clinical exams right away because they have not been examined for two to three years.*

In addition, I discovered that the Vietnamese church played a role in dispensing different types of aid and services to its parishioners. One woman said,
The parish is the place for parishioners, for people who go to mass and pray. I think the church is also a center for those who seek help. For example, people come here to ask the priests or nuns to take them to a clinic or hospital…to apply for citizenship…to apply for jobs. The priests and nuns here are always ready and willing to help. That makes me feel safe and comfortable.

This information obtained from the focus group provided insight into how health information is potentially disseminated within ethnic minority populations. As discussed in more detail later in this paper, further study of how Vietnamese women receive and share health information was indicated. Specifically, this information could contribute to the health communication literature by examining the type of information that the participants are sharing with their informal networks and with whom they are sharing it.

The role of the Vietnamese church in dispensing information and services that fall outside religious and spiritual domains warranted further examination. This prompted the question, would other faith-based institutions play a similar informal role in connecting its members to health information and services? As discussed later, a local Vietnamese Buddhist population affiliated with a Temple was recruited along with the Catholic Church population.

Another emergent theme found in the focus group discussion involved motivation for engaging in health behaviors. Many Vietnamese women voiced that they were motivated to stay healthy in order to fulfill caretaker duties and roles. These comments were offered by one woman,

When I was single, living with my sisters gave me the inspiration to help others. At that time, if I had the chance to have a Pap test and mammogram, I would have done it [for] my sisters. I would have explained to them [breast and cervical cancer screening] to help them understand the benefits and the risks. After I got married, I cared even more about my health. I can only care for and help my husband and my children if I am in good health.

This theme resonated with many of the participants. The collectivistic and allocentric values embedded in Vietnamese culture emphasize the fulfillment of societal roles, obligations, and
duties (Bich, 1999; Chung & Bemak, 1998; Davis, 2000; Nguyen, 1982; Noor, 1994). This warranted further investigation and suggested that the present intervention needs to examine how the fulfillment of caretaking roles can serve as a motivator for Vietnamese women to engage in breast and cervical cancer screening.

Despite promising results, the pilot study suffered from limitations. Due to the small sample size of the pilot study (N = 21), it is possible that insufficient power muted other potential effects between cultural factors and cancer screening outcomes. In addition, the pilot study lacked a control group, weakening the study’s internal validity. The pilot study recruited participants solely from the Vietnamese Catholic community, and recruitment from different faith-based sites was necessary to strengthen external validity. These limitations were noted and considered during program development for the present study.

**Aims of the Study**

The current study was called *Suc Khoe La Quan Trong Hon Sac Dep!* (*Health is More Important than Beauty*) due to the success of the Vietnamese Community Health Promotion Project’s use of the Vietnamese proverb *Suc Khoe La Vang!* (*Health is Gold!*) in their organization. This study took place in a mid-sized Southeastern city in the U.S. and recruited 103 Vietnamese women. Churches, temples, and other faith-based locations often serve as central meeting grounds for ethnic minority populations and are the primary dispensers of information and services in health, education, financial advising, and family matters (Markens et al., 2002; Davis et al., 1994). Because existing Vietnamese enclaves have developed around the local Vietnamese Catholic Church and Vietnamese Buddhist Temple, participants were recruited from these two faith-based communities.

The primary goal of this study was to implement and evaluate a culturally relevant
breast and cervical cancer screening intervention for Vietnamese women. Specifically, the primary goal was to increase knowledge, positive attitudes, intention, self-efficacy, and behavior in regards to breast and cervical cancer screening in the population. Secondary objectives of this study were to (1) examine demographic correlates of breast and cervical cancer-screening outcomes in the Vietnamese female population; (2) examine the role of cultural factors in breast and cervical cancer-related screening outcomes; (3) examine the role of informal networks in disseminating health information; (4) examine how different sources of health information are associated with different beliefs and attitudes in regards to breast and cervical cancer screening; and (5) examine how cultural values and roles influence Vietnamese women’s motivations to engage in cancer screening behaviors. The study used both quantitative and qualitative approaches to address goals and objectives.

**The study’s hypotheses.** The study hypotheses are as follows:

1. Women in the intervention group will show increases in breast and cervical cancer screening variables (e.g., knowledge, attitudes, intention to screen, self-efficacy, and actual screening behavior) from pretest to posttest and from posttest to follow-up. Women in the intervention group will show higher increases in outcomes than women in the control group.

2. Demographic variables (e.g., marital status, children status, educational attainment, employment status, household income, health insurance status, and regular physician status) will be positively associated with breast and cervical cancer screening-related variables.

3. Acculturation will be linearly associated with favorable cancer-screening variables, but this relationship will be best understood using an integrated (bicultural) framework of acculturation.

4. Ethnic identity will be positively associated with cancer-screening variables.
5. Religiosity, specifically extrinsic social religiosity and extrinsic personal religiosity, will be positively associated with cancer-screening variables.

6. Different sources of health information will be associated with knowledge and attitudes regarding breast and cervical cancer screening. I predict that reliance on media sources and informal sources will be associated with more knowledge and more positive attitudes in regards to breast and cervical cancer screening.

7. Informal networks in the church and temple communities will play a positive role in disseminating health information among the Vietnamese population.

8. Culturally relevant values and roles for the collectivistic Vietnamese woman (e.g., being a mother and a caretaker) will be associated with cancer screening-related behaviors such that an emphasis on caretaking roles will increase motivations for the Vietnamese women to get screening.

Focus group interviews were conducted during follow-up sessions. Focus groups were conducted to collect additional and complementary data to triangulate quantitative data collected to address hypotheses 7 and 8. In addition focus groups examined the participants’ reactions, thoughts, feelings, and experiences in regards to the intervention. The focus groups also explored topics surrounding breast and cervical cancer screening including motivation, fears, and perceived importance of cancer screening. I also asked questions that assessed the role of cultural values and their impact on breast and cervical cancer screening attitudes and behaviors. More specifically, I explored whether traditional female collectivistic roles (e.g., being a mother and caretaker) serve as influential motivators for women to stay healthy.

Method

Design
Data were collected from the intervention group at three points: pretest, posttest, and follow-up. Data were collected from the control group at two points: pretest and follow-up. The study utilized a mixed factorial design or a 2 (intervention vs. control) X 2 (baseline x follow-up) design. The between-participants variable is the assignment into either the intervention group or the print materials control group. The within-participants variable is the time in which questionnaires were administered: baseline (pretest) or follow-up. In addition, participants in the intervention group completed questionnaires at an additional time point at posttest phase immediately after completing the educational session. Posttests were administered to assess if immediate changes occurred after exposure to the intervention. Because the control group was not exposed to an intervention, there was no need for a posttest.

This was an experimental design. Once potential participants were identified by community liaisons from both sites, they were randomly assigned to either the intervention or control condition. This study initially proposed a quasi-experimental design in which participants as one site would be assigned to the intervention group and those at the other site would be assigned to the control group. This design was originally proposed because of the potential for contamination. The Buddhist and Catholic Vietnamese communities are intimate and tight-knit communities, and it was possible that participants might discuss their experiences in the sessions with other members of the same community as suggested by studies that examine informal networks in religious communities. In order to minimize this contamination, the study initially proposed to assign the HQT community to the intervention group while assigning the VCM community to the control group, making it a quasi-experimental design.
However, during outreach and community activities with both the VCM and HQT, I recognized members from the VCM while attending HQT-sponsored events and vice versa. This was an important observation as I soon learned that members from both communities often participated in events that were not necessarily held on the grounds of their respective communities. For example, one Sunday, I taught at the HQT Vietnamese school. Afterwards, I drove directly to the VCM to celebrate the anniversary of the nuns at VCM. Upon arrival at the VCM, students from my HQT Vietnamese school greeted me, “Chào cô,” which is a greeting from a student to his or her female teacher. I was also greeted by members of the parent-teacher association of the HQT Vietnamese school as they recognized me during a student-teacher assembly on the first day of school. It became apparent to me that the distinction between the VCM and HQT communities was not as apparent as social interactions were commonplace between communities.

Therefore, a decision was made to utilize random assignment into the intervention and control condition as it would strengthen internal validity of the study. With these types of social exchanges among members in both communities, the potential problem of contamination could not be reduced by assignment of sites to conditions. It was decided that the increase in internal validity that random assignment into the conditions afforded benefitted the overall study and exceeded the potential threat of contamination from assigning members from both communities into the intervention and control group. Because interactions between members of the VCM and HQT were commonplace, attempts in reducing contamination through the use of a quasi-experimental design would have likely been minimal. To randomly assign participants into conditions, the first 12 participants were assigned into the treatment condition. The next 12 participants were assigned into the control
condition. This strategy continued until the study recruited the desired amount of participants.

In order to measure and to control for potential contamination effects, participants were asked whether they had previously heard of any of the information from the intervention sessions. They were also asked about the nature of the information during debriefing. Some of the participants responded that they had friends who recommended that they sign up for the study because of the beneficial knowledge that they had gained. However, none of these women responded that they heard any specific details of the educational sessions. Therefore, I was confident that contamination was minimal.

Participants

One hundred and three Vietnamese American women from the Richmond metropolitan area were recruited to participate in this study. The study recruited a nonprobability sample which is acceptable given the community context in which a sampling frame would have been challenging to acquire. More specifically, the study relied on convenience sampling. Given the experimental design and the fact this study is not descriptive in nature, convenience sampling was justified. In the current study, effort was made to ensure that samples from both the Catholic Vietnamese Church of Martyrs (VCM) and Hue Quang Buddhist Temple (HQT) were equally represented in both the intervention and control groups. Overall, 25 members of the VCM and 25 members of the HQT were assigned into the print material control group, while 39 members of the VCM and 14 members of the HQT were assigned into the intervention group.

Mean age of participants was 39 years (SD = 13.7). The minimum was 18 years while the maximum was 70 years. One participant was 78 years old, and because she exceeded the
age limit set in the inclusion criteria, her data was excluded from the analyses, leaving a sample size of 102 participants. Out of 102 participants, 95 returned for the follow-up session. This resulted in a 7% attrition rate. As a result, data that involve measures at that time point will be based on 95 participants.

In regards to education, 28% had some high school education, 25% had attained a high school diploma or equivalent (GED), 18% had some college education, 26% had a college degree, and 3% had post college/professional training. In regards to marital status, 25% were single, 66% were married, 6% were divorced, and 3% were widowed. In addition, seventy percent of the women had children. For additional information related to participants’ demographics, refer to Table 1.
Table 1.

<table>
<thead>
<tr>
<th>Participant Demographics</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some high school</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>High school graduate/GED</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Some college</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>College graduate</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Post college graduate</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>72</td>
<td>70</td>
</tr>
<tr>
<td>No</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Household income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>$10,000-15,000</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>$15,000-25,000</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>$25,000-50,000</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>$50,000-75,000</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Over $75,000</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Married</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Divorced</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Widowed</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td><strong>Do you have a regular physician?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td><strong>Do you have health insurance?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>No</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Have you ever had a hysterectomy?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>92</td>
</tr>
<tr>
<td>No</td>
<td>93</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note. Numbers may not always add up to 102 due to missing responses*
**Participant inclusion criteria.** Participants were at least 18 years of age, female, and identified with a Vietnamese ethnic background. According to the American Cancer Society (ACS, 2009a; 2009b), mammograms and clinical breast exams should be continued regardless of a woman’s age. However, women who are 70 years and older and who have had three or more consecutive normal Pap test results with no abnormal Pap test results in the last 10 years may choose to stop undergoing cervical cancer screening. Therefore, recruitment targeted women from the ages of 18 and 70. All participants provided informed consent before participation.

**Participant exclusion criteria.** Women who reported a previous hysterectomy were eligible to participate, but their data were excluded from analyses that involved cervical cancer screening. A hysterectomy is the second most common surgery among women in the United States with childbirth by cesarean section delivery being the most common surgery in women (US Department of Health and Human Services, 2011). Women who have had a hysterectomy do not need to get regularly Pap tests. As a result, data from eight women with previous hysterectomies were excluded where appropriate. Women who had been previously diagnosed with breast or cervical cancer would also have been excluded from the study’s analyses, but none of the women indicated that they had been previously diagnosed.

Although men can also be diagnosed with breast cancer, they were excluded from the study. Because of physical and hormonal differences, women develop mammary ducts and lobules of the breast after puberty while men lack lobules and possess ducts that remain unpronounced. This makes male breast cancer less common, and the study solely focused on women.

**Power analysis.** A power analysis was conducted to estimate the total number of
participants needed for the study. The majority of the hypotheses are addressed by conducting multiple regression analyses. To achieve power of .90 with an expected $R^2 = .35$ and with seven predictors, I needed to recruit a sample size of at least 60. The current sample size meets the minimum requirements to achieve a power of .90.

**Recruitment and retention.** Potential participants were identified and recruited with the help of community liaisons through service announcements, church/temple bulletins, and referrals made by the church and temple. The community liaisons included teachers from the Hue Quang Vietnamese Language School and nuns from the Vietnamese Church of Martyrs. Participants were offered monetary incentives ($20) as well as food for participating in the intervention sessions. The food was catered from a local Vietnamese restaurant. Participants in the intervention condition were asked to attend one education component at pretest. Once the intervention participants completed the educational session at pretest, they were asked to provide a contact number and address for the follow-up session six months later. The women were also provided monetary compensation ($30) for participating in the follow-up session. The intervention session lasted approximately 2.5 hours.

Women who were assigned to the print material control group attended the initial pretest session but did not complete posttest surveys as they did not participate in an intervention. They were given monetary incentives ($20) for completing the pretest session. They were also asked to provide a contact number and address so that they could be contacted six months later to complete follow-up surveys. They were provided monetary incentives ($20) for completing these surveys. The print control sessions lasted approximately 30–40 minutes.
Setting for Intervention

The intervention and print control sessions were conducted in private meeting rooms at the Vietnamese Church of Martyrs (VCM) and at Hue Quang Buddhist Temple (HQB). There were approximately 8-10 participants in each session. Because the women participated in sessions held on their worship grounds, and all sessions were facilitated by and in the company of exclusively Vietnamese women, the settings was a culturally familiar and inviting environments. Vietnamese food was also served at the intervention session. Men were not allowed to attend the intervention sessions in order to foster a private and comfortable environment for women.

Materials

**Intervention session.** Findings from a previous study with the target population (Nguyen, Belgrave, & Sholley, 2010) indicated low rates of English proficiency, acculturation, and knowledge of female cancer topics by the targeted female Vietnamese population. Therefore, it was important to have educational intervention materials in the Vietnamese language that were culturally appropriate. The health organization, *Suc Khoe La Vang!* (*Health is Gold!*), located on the West Coast, works with a Vietnamese population in prevention topics and was contacted for help with intervention materials. The current intervention used a modified form of the Vietnamese flip charts on female cancer topics used by *Suc Khoe La Vang!* (Bird et al., 1998).

Participants in the intervention condition attended an educational session that lasted from two hours to two and a half hours. The presented materials were in a PowerPoint presentation. Women were exposed to information about breast and cervical cancer. The women learned clinical definitions (e.g., What is cancer? What areas of the body are affected
in breast and cervical cancer?). They also learned about symptoms (e.g., dimpling and redness of the breast and lumps in the breast may indicate breast cancer), treatment (e.g., chemotherapy), cancer screening guidelines (e.g., how frequently should women get Pap tests or mammograms?), and detection methods (e.g., Pap tests, clinical breast exams, mammograms, breast self exams). After the presentation, women were given take-home booklets on breast and cervical cancer that were available in both English and Vietnamese.

At the end of the intervention session, women were given contact information of local providers. I found in a previous study (Nguyen, Belgrave, & Sholley, 2010) that an effective intervention should connect Vietnamese women to providers that catered to low-income or non-insured local populations. Governmental and other local health organizations (e.g., Social Services, Department of Health, Planned Parenthood, and Fan Free Clinic) were contacted for information regarding low-cost mammograms, CBEs, and Pap tests. These health clinics were identified through key community informants (e.g., REACH providers and Every Woman’s Life). Participants were given a list of contact information for the organizations, clinics, and programs that offered Pap testing and clinical breast examinations to a non-insured and low-income population.

All intervention materials were previously used in a piloted study (Nguyen, Belgrave, & Sholley, 2010) and reviewed by local community leaders and members to ensure that all materials were culturally appropriate and valid, easy to understand, and respectful. The intervention materials were available in both the English and Vietnamese language. In addition, the materials included pictures of Vietnamese women, heritage and cultural symbols, and Vietnamese expressions to make them as culture-specific as possible.

**Training of facilitators.** The intervention session was offered in both Vietnamese and
English. The intervention was delivered by either the investigator or a community member (also called a facilitator). The community member was trained to facilitate the sessions by the investigator. Facilitators were provided scripts to standardize intervention sessions. This ensured that participants in different sessions received similar information in a similar format. I was present at ALL intervention sessions to assess fidelity and to provide support as needed.

Training covered the content of the breast and cervical cancer screening curriculum (e.g., clinical definitions, symptoms, treatment, cancer screening guidelines, and detection methods) as well as the methods by which the curriculum was to be delivered. Training sessions lasted approximately three-four hours. Trainees became familiarized with the topics of breast and cervical cancer. The facilitator was also and trained in how to effectively deliver the information to participants. This included participant engagement and management.

Control group session. Participants in the control group were convened and asked to complete the same pretest measures as those in the treatment group. After completing the questionnaire, they were thanked and provided with printed materials of health-related information that was not related to breast or cervical cancer topics. This information focused on topics such as good nutrition, high blood pressure, smoking, and exercise (EthnoMED, 2010). Materials were in both English and Vietnamese.

Follow-up session. Follow-up data were collected from women in both groups to determine whether or not there were longer-term gains in cancer-related knowledge, attitudes, intention, self-efficacy, and behavior. These sessions were conducted six months after convening the first session. Participants were asked whether they obtained a CBE or
Pap since participation in the intervention/control sessions. They were also asked whether they scheduled a CBE or Pap test appointment during the same period. Women in the intervention-only group were asked to report whether they shared the information that they had learned in the intervention sessions with other Vietnamese women in the community. This allowed me to assess the spread of health information within informal networks.

In addition, women in the intervention group participated in focus groups that examined their experiences regarding cancer screening and the intervention session. To keep true to the methods of CBPR, this helpful feedback and insight from participants may lead to revisions to strengthen future interventions. In addition, women were asked if they discussed their experience or what they learned with other members of the community in order to examine the processes of informal communication. Women who did receive or schedule a Pap test and/or clinical breast examination were asked what types of motivators influenced their decisions to shed light on what influences collectivistic female members in health decision making. Women were provided with a $20 incentive at the end of the follow-up session.

Measures

Demographic measures. Participants provided information on age, education, marital status, income, employment, health insurance, whether or not they have a regular physician, history of sexual intercourse, and previous receipt of a hysterectomy. See Appendix A.

Primary outcome measures. The study’s primary goals were to test the effectiveness of the intervention on cancer screening knowledge, attitudes, self-efficacy, intention to screen, and actual screening behavior. These measures and the rationale for their use are
described next.

*Measuring changes in cancer screening awareness and knowledge.* Participants completed measures that assessed knowledge about the symptoms, treatment, cancer screening guidelines, and detection methods of breast and cervical cancer. The 19-item multiple-choice measure included information covered in the curriculum (e.g., *Cervical cancer is caused by____*). See Appendix B. The method to measure changes in cancer knowledge using a pre- and post-test design followed a similar strategy by a previous breast and cervical cancer screening intervention study with a Vietnamese female population (Bird et al., 1998).

*Measuring changes in cancer screening attitude.* Participants completed a measure of attitudes towards breast and cervical cancer screening based on a similar measure by Marteau, Hankins, and Collins (2002). This measure assessed attitudes towards Pap testing among a sample of smokers and non-smokers. Participants responded to the 4-item measure (e.g., *How important are regular Pap smears for women to remain healthy? How important are regular clinical breast exams for women to remain healthy?*) using a Likert-response format (1 = *not at all important* and 7 = *extremely important*). See Appendix C. Cronbach’s $\alpha$ for the overall scale was .79. Cronbach’s $\alpha$ for the attitudes towards Pap testing subscale scale was .73. Cronbach’s $\alpha$ for the attitudes towards clinical breast examination subscale scale was .82.

*Measuring changes in cancer screening self-efficacy.* This scale measured self-efficacy for obtaining Pap tests and clinical breast exams. The questionnaire was based on a measure used by Champion, Skinner, and Menon (2005) that assessed self-efficacy for obtaining a mammogram. Participants responded to 20 items (e.g., *You can make an appointment for a*
Pap test) using a Likert-response format (1 = *Strongly Disagree* and 5 = *Strongly Agree*). See Appendix D. Cronbach’s α for the Pap testing self-efficacy scale was .84. Cronbach’s α for the clinical breast examination self-efficacy scale was .91.

**Measuring changes in cancer screening intent.** In order to change actual behavior, it is important to increase the intent to engage in the behavior (Ajzen & Fishbein, 1980). Increasing intention to engage in cancer screening can promote actual cancer-screening behaviors with longer lasting effects (Forsyth et al, 1992; Rutter, 2000; Drossaert et al., 2005). Participants completed pre- and posttest items that measured intent to engage in either Pap tests or CBEs (e.g., *Do you intend on getting a Pap test in the future?* Yes = 1 and No = 0). At follow-up, participants were asked whether they intend to receive a Pap test or CBE. See Appendix E.

**Measuring changes in cancer screening-related behavior.** Baseline rates of cancer screening behavior were obtained by asking participants if they have ever received a Pap test or CBE (e.g., *Have you ever had a Pap test?* Yes = 1 and No = 0) and whether they were up to date with their Pap tests or CBEs (e.g., *Have you had a Pap test within the past year?* Yes = 1 and No = 0). At follow-up, participants were asked if they received a CBE or Pap test since the initial intervention session). See Appendix E.

In addition, participants responded to items that assessed health behaviors related to cancer risk reduction. These items were taken from the Behavioral Risk Factor Surveillance System (CDC, 2010). Items asked about fruit and vegetable intake, amount of physical activity, and smoking and alcohol use. These items were dropped from the study due to ceiling effects and restriction of range in responses. For example, none of the women reported smoking behaviors and only two participants reported alcohol consumption in the
past 30 days.

Summary of Primary outcome measures: The current study examined the effects of the intervention on breast and cervical cancer knowledge, attitudes towards cancer-screening, intention to screen, self-efficacy in screening, and actual cancer-screening behavior. The short-term effects of the intervention were assessed on knowledge, attitude, and intent. The longer-term effects of the intervention were assessed on knowledge, attitude, intent, self-efficacy for screening, and actual changes in cancer screening behavior.

Other measures. Cultural factors were also examined as potential predictors of outcomes (e.g., cancer screening knowledge, intent, attitudes, self-efficacy, and behavior). These cultural factors included acculturation, ethnic identity, religiosity, sources of health information, and interdependency. In addition at follow-up, women were asked whether they shared the information they learned in the intervention session with anyone else (e.g., mother, father, daughters, friends etc.). This question examined whether health information is transmitted via informal networks.

Acculturation. The Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA; Suinn et al., 1987) was used to measure acculturation and ethnic identity. The SL-ASIA is a widely used acculturation measure for people from Asian or with an Asian American background. It is commonly acknowledged that acculturation is a multidimensional construct and that acculturation and ethnic identity are independent constructs; however, common usage of the SL-ASIA reflects a unidimensional and polarized conceptualization of acculturation and ethnic identity (Felix-Ortiz, Newcomb, & Meyers, 1994). For example, the SL-ASIA scale assesses acculturation and ethnic identity simultaneously, recognizing the existence of integrative attitudes and biculturalism. However, common use of the SL-ASIA
results in a single summary score that places Asian-identified individuals at the lower end of the continuum and Western-identified individuals at higher end, masking potential biculturnalism.

The modified SL-ASIA has 18 items that measure language, ethnic identity, friendship choices, behaviors, generational and geographic history, and attitudes. See Appendix F. This scale was normed with college students and has demonstrated good reliability with different Asian American groups including Chinese, Japanese, Korean, and Vietnamese Americans. Cronbach’s $\alpha$ for the current study was .85.

The items are rated on a five-point Likert-type scale from 1 (low acculturation) to 5 (high acculturation). Suinn and colleagues (1987) suggest that the scale can be scored in two ways. In the first method, a total value is obtained by summing all responses across 18 items then dividing the total value by 18. This strategy examines acculturation as a unidimensional construct. A score of 1 denotes high identification with Vietnamese culture while a score of 5 denotes high identification with Western culture. A second method of scoring the SL-ASIA assumes that acculturation is not dichotomous. This strategy argues for the recognition of biculturalism. Using this strategy, 1 denotes low acculturation, 5 denotes high acculturation, and 3 denotes integration (biculturalism). Using the scoring recommendations of Tata and Leong (1994), acculturation status of each participant was categorized as follows: low acculturation = 1 (range, 1.0 to 2.33); bicultural = 2 (range, 2.33 to 3.66); high acculturated = 3 (range, 3.66 to 5.00). The present study utilized both strategies of scoring.

*Ethnic identity.* Ethnic identity was measured using the East Asian Ethnic Identity Scale (Barry, 2002). The original measure has 41 items. Items are offered in a 7-point Likert scale format where 1 = (strongly disagree), 4 = (neutral), and 7 = (strongly agree).
measure is comprised of three subscales: family values, ethnic pride, and interpersonal distance. The family values subscale has 14 items that deal with the importance of having a male heir to continue the family lineage, elevated position of the oldest son, and maintaining the reputation of the family. The 13-item ethnic pride subscale measures ethnic pride, the perceived importance of maintaining one’s native language, and a sense of belonging. The interpersonal distance subscale has 14 items reflecting the relative interpersonal distance between the self and others such as difficulty in relaxing with other people and the length of time required to make friends. See Appendix G. Because I was mostly interested in conscious ethnic identification, I only used the ethnic pride subscale in this study (e.g., Being Vietnamese is an important part of who I am). Cronbach’s $\alpha$ for the current study was .71.

Religiosity. Religiosity was measured using a 20-item Religious Orientation Scale. Responses are on a 5-point Likert scale with 1 = strongly disagree to 5 = strongly agree. Developed by Allport and Ross (1967), the measure assesses intrinsic and extrinsic religiosity. Individuals who score high on levels of extrinsic religiosity are more apt to use religion for instrumental or utilitarian purposes: religion may be used to provide the individual security, social networking, self-justification, and/or distraction. In this sense, faith may be thought of as a means to a non-religious end. Individuals who score high on intrinsic religiosity are more likely to internalize religious values and are motivated to live their religion whether publicly or privately (e.g., My religious beliefs lie behind my whole approach to life).

In a later validation study of the Religious Orientation Scale, Leong and Zachar (1994) ran a factor analysis and found three factors: intrinsic, social extrinsic, and personal extrinsic. While the intrinsic subscale was similar to the one found by Allport and Ross
(1967), the extrinsic subscale was further divided into two components: social and personal. Personal extrinsic religiosity captures whether the individual uses his or her religion to gain personal comfort or security (e.g., *Religion offers me comfort when sorrow and misfortune strike*) while social extrinsic religiosity examines whether individuals uses his or her religion for social purposes (e.g., *Church membership helps establish a person in the community*). See Appendix H. Cronbach’s $\alpha$ for the intrinsic subscale was .81. Cronbach’s $\alpha$ for the social extrinsic subscale was .69. Cronbach’s $\alpha$ for the personal extrinsic subscale was .82.

*Sources of health information.* Respondents were asked about their sources of health information using items from Woodall and colleagues’ (2006) study of health information sources with a Vietnamese population. Participants were asked to rate on a scale of 1 (*not used at all*) to 5 (*used very often*) how often they use specific sources for obtaining health information. Examples of sources include Vietnamese newspapers, friends, or family members. See Appendix I.

*Interdependency.* Interdependency was measured using an adapted version of the Self-Construal Scale (Singelis, 1994). The Self-Construal Scale is broken down into two subscales: an interdependent subscale and an independent subscale. Responses are made to a 7-point Likert scale format where 1 = (*strongly disagree*) and 7 = (*strongly agree*). Only the 11-item interdependent subscale was used in the current study. See Appendix J. An example of an item is “It is important for me to maintain harmony within my group.” Cronbach’s $\alpha$ for the current study was .75.

*Informal communication in faith-based communities.* Women in the intervention group were asked about informal communication at follow-up. To measure the spread of health information in spiritual and religious communities, women were asked to indicate
whether they discussed any of the information that they learned in the intervention with others. They were asked to indicate whether they talked to the following people: friends, their mother, their father, their husband, their sister(s), their brother(s), their aunt(s), uncle(s), nieces/nephew(s), their grandmother(s), their neighbor(s), co-worker(s), other parishioners/worshipper(s). See Appendix K.

**Timeline of measures.** This section provides the sequence in which measures were administered to women in the intervention and control group. The sequence is the same for both groups with the exception of post-test measures. Because women in the print material control group did not participate in an intervention session or an activity control session, data was collected at two time points: pretest and follow-up. Posttest measures were not administered to the control group.

1. **Intervention group at pretest:** women were asked to complete contact information, demographic measures, baseline measures of breast and cervical cancer screening variables (knowledge, attitude, behavior, self-efficacy, and intention). Women completed measures of cultural variables (acculturation, religiosity, ethnic identity, and interdependency). Women also provided sources of health of information.

2. **A posttest was administered immediately after the intervention session for women in the intervention group.** They completed measures of breast and cervical cancer screening variables (knowledge, attitudes, self-efficacy, and intention.) Behavior was not assessed at this time because it was assessed at pretest.

3. **Intervention group at follow-up:** women completed measures of breast and cervical cancer screening (knowledge, attitudes, behavior, self-efficacy, and intention). Questions also asked whether information was shared with other family or community members. If
information was shared, the women were asked to provide their relationships with the person they talked to. After completing the follow-up questionnaires, focus groups questions were asked. These questions examined thoughts, feelings, and beliefs about breast and cervical cancer topics. The women also provided feedback about the intervention. Additional questions assessed how cultural values (e.g. being a mother or caretaker) might influence women’s motivation to stay healthy during the focus group sessions.

4. Control group at pretest: women provided contact information, demographic measures, baseline measures of breast and cervical cancer screening variables (knowledge, attitude, behavior, self-efficacy, and intention). Women completed measures of cultural variables (acculturation, religiosity, ethnic identity, and interdependency). Women also provided information on sources of health information.

5. Control group at follow-up: Women completed measures of breast and cervical cancer screening (knowledge, attitudes, behaviors, self-efficacy, and intention) at the follow-up session. The women also answered questions to indicate whether they shared information from print control materials with other family and community members.
**Procedure**

The study obtained IRB approval before initiation. After approval, participants were recruited with the help of community liaisons through service announcements, church bulletins, and referrals made by the Vietnamese Church of Martyrs. Intervention sessions were facilitated by either the investigator or by community members. Community members were properly trained by the investigator to facilitate the sessions.

Women in the intervention group were asked to meet in a conference room at either the temple or church on the scheduled day. They were greeted upon arrival and were asked to complete consent forms and then pre-test measures. Afterwards, they were invited to serve themselves dinner which consisted of a Vietnamese meal ordered from a local Vietnamese restaurant. When the women served themselves and were seated comfortably, facilitators and co-facilitators presented educational materials on breast and cervical cancer for 30-35 minutes using a PowerPoint presentation (see Appendix L). Afterwards, the women were encouraged to offer concerns, ask questions, and discuss topics of interest based on the presentations. Women were also asked to discuss the perceived effectiveness and relevance of the intervention. Following this, the participants completed post-test measures. The women were then thanked, given a $20 incentive, and print materials on breast and cervical cancer to take home. In addition, participants were presented with information on local providers who serve low-income and non-insured members.

To evaluate whether or not the gains in knowledge are longer-term, follow-up sessions were conducted six months later for women in the intervention condition and control condition. Women completed follow-up measures. In addition, participants were asked
whether they received a CBE or Pap test after the completion of the initial sessions to measure behavioral changes in cancer screening. They were also asked if they scheduled a CBE or Pap test appointment.

Women in the intervention group participated in a focus group after completing follow-up measures. These women were interviewed about their experiences with the intervention as well as other experiences regarding cancer screening (see Appendix L). Interviews and focus groups were taped and transcribed for further review. Overall, the follow-up sessions lasted approximately 2.5 hours for the participants in the treatment group. Women were thanked and provided a $30 incentive for participation in the follow-up sessions.

Women in the control condition were asked to meet in a conference room provided by the church or temple on the scheduled meeting days. After completing consent forms, they were asked to complete pre-test forms. Women in the control condition were not exposed to an educational presentation about breast and cervical cancer. Instead, they were provided with print materials about other health topics such as high blood pressure, diet, smoking, and exercise. Materials were offered in both English and Vietnamese. After the women completed the survey, they were thanked and provided a $20 incentive.

Follow-up sessions were conducted approximately six months later for women in the control condition. The women completed follow-up measures. In addition, participants were asked whether they received a CBE or Pap since they had participated in the initial pretest session. They were also asked if they had scheduled a CBE or Pap test appointment. After the women completed the follow-up survey, they were thanked and given a $20 incentive.

**Informed consent procedures.** To recruit potential participants and with the help of community liaisons, information about the study was posted in fliers and bulletin
announcements and announced during service. In addition, interested individuals were referred by community liaisons and leaders. Interested individuals contacted the investigator and were notified of the time and place of the intervention or control sessions. On the day of the sessions, participants were asked to sign an informed consent form (see Appendix M) that was available in both English and Vietnamese. The principle investigator was on site for all sessions to answer any questions and to ensure that individuals understood their rights as participants. In addition, participants were asked to provide contact information for follow-up.

**Retention plan.** At pretest, I asked participants for permission to keep in contact with them. Women were asked to provide their contact information on a form that was kept separate from the questionnaire. Women were asked to provide their names, home phone number, cell phone number, mailing address, and email address. The contact information was stored in a secured and locked cabinet in my office. I contacted the women once or twice in the intervening months by doing a telephone or email check-in to remind them of the study. Two weeks prior to the follow-up, I called to schedule the follow-up sessions. If I did not make contact on the initial call, I waited one-two days until contacting the women again.

**Data Analytic Plan**

Descriptive statistics, including means, standard deviations, and ranges, were calculated for continuous predictor and outcome variables. Frequencies were calculated for discrete/categorical variables. In order to test preliminary bivariate associations between cultural variables and breast and cervical cancer-related outcomes, I conducted correlational analyses.

To test for initial group non-equivalence and to examine whether women in the
intervention group differed significantly from women in the control group on key attributes and outcomes, I conducted a series of t-tests and chi-square analyses. If the groups differed on any relevant variables, these variables served as covariates in subsequent analyses that tested the effect of the intervention on cancer screening outcomes. These covariates were used to control for initial non-equivalence.

I tested for short-term changes from pretest to posttest measures of cancer-screening knowledge, attitudes, and self-efficacy in the intervention group. Changes in these outcomes were assessed using a paired samples t-test as this was a within-subject (pretest vs. posttest) design. The outcomes measures were changes in breast and cervical knowledge, attitudes, and self-efficacy in screening. Change in intent was analyzed using chi-square goodness-of-fit tests with McNemar’s statistic for within-participant design using pre-and posttest intervention measures of intent. Short-term changes were not calculated for the control group as they did not complete measures at posttest.

Longer-term changes (changes from pretest to follow-up session) in cancer-screening attitudes, knowledge, and self-efficacy were assessed by conducting hierarchical multiple regression. Initial differences found between the treatment and control groups on key demographic and cultural variables were noted and controlled for in the regression equations. These predictors were used as covariates in the first step of the regression equation. Assignment into intervention conditions (intervention vs. control) was entered into the second step of the regression. My outcome variables were follow-up measures of breast and cervical cancer knowledge, attitudes, and self-efficacy. In order to test categorical outcome variables (intention to screen and actual screening behavior), I employed hierarchical logistic regression and followed similar procedures with blocking as listed for the hierarchical
Multiple regression.

Multiple linear regression and logistic regression analyses were conducted to assess relationships among demographic variables and cancer screening-related outcomes. Significant demographic predictors were identified and were used as covariates for later subsequent regression analyses involving cultural predictor variables (i.e., acculturation, ethnic identity, religiosity, and collectivism). These subsequent analyses were performed using hierarchical linear and logistic regression with cancer screening-related outcomes.

To determine whether the source of health information was associated with women’s attitudes and knowledge of breast and cervical cancer, I conducted a factor analysis to examine whether meaningful domains and factors emerged from items assessing source of health information. I then tested the factor scores to examine whether they were associated with attitudes and knowledge of breast and cervical cancer by running bivariate correlational analyses.

Women participated in focus groups at follow-up sessions. There were a total of four focus groups. A total of 47 women participated in the focus group discussions. Focus groups ranged in size from 9 to 13 participants per group. The focus group discussion lasted from 40 minutes to 1.5 hours. One focus group was conducted in the English language. Three of the focus groups were conducted in the Vietnamese language. The transcriptions for these focus groups in the Vietnamese language were translated by a Vietnamese interpreter into English and then back-translated to ensure accuracy.

I developed a semistructured interview guide for the focus groups. Questions were developed to examine participants’ experiences, opinions, thoughts, and feelings about the intervention and their experiences with physicians and health care providers if they attempted
to get a Pap test or CBE. They were also asked to share any discussions or conversations that they have had with other members of the community in regards to knowledge they gained from the breast and cervical cancer sessions in order to examine the role of informal networks in the faith-based community. The interview guide was informed by and developed with respect to my previous studies and pilot intervention. The theoretical framework comes from a ground theoretical approach (Corbin, 2008).

In order to conduct data analysis with focus group data, I read through each transcript at least twice to gain a sense of the participants’ experience with the intervention and their thoughts, feelings, and attitudes in regards to cancer screening. Transcripts were then analyzed using open thematic coding. Accounts of participants’ motivation to engage in cancer screening constituted one unit of analysis. Accounts of whether or not participants shared the information learned in the intervention session with outside individuals constituted another unit of analysis. All transcriptions were reviewed and similar ideas were grouped together. After the ideas were grouped, themes that emerged from the clustered ideas were compiled.

Inter-rater reliability was established regarding themes by having another independent review of the transcripts. An advanced graduate student in psychology with experience in qualitative data analysis also reviewed the transcripts and independently generated her own themes. We discussed the themes and retained the ones that we agreed upon. This was to ensure interrater reliability.

**Missing data.** The data were screened to ensure that items with missing data did not exceed 5% of the total data. Less than 5% of the data were missing and were missing at random. To be conservative, missing values for continuous variables were computed using
mean substitution. Missing values for categorical variables were computed using multiple imputation. Missing values for categorical data also numbered less than 5% of the data and were considered to be missing at random.

**Outliers.** Outliers were screened as well. A case was considered an outlier if it had scores that were 3 or more standard deviations away from the mean and was considered to be a non-plausible. Mahalanobis distance values were computed in order to screen multivariate outliers using chi-square critical values with $p = .001$ value. Upon inspection, two of the cases had Mahalanobis distance values that exceeded the critical value for several of the analyses, indicating the presence of multivariate outliers. These cases were eliminated, reducing the sample to 100 for analyses involving regression.

**Multicollinearity.** Collinearity statistics were conducted for multiple regression analyses. Tolerance values were greater than .10, and variance inflation factors (VIF) values were less than 10, suggesting a lack of multicollinearity among the predictors. In addition, there were no bivariate associations that were equal to greater than .90, providing more evidence for lack of multicollinearity of predictors.

**Results**

**Overview**

The section begins with a review of descriptive statistics on the study’s variables, followed by a discussion of bivariate associations among variables of interest. The results of non-equivalence between the intervention and control groups using a series of t-tests are then presented. Variables for which there were significant differences are identified and then used as covariates for the subsequent multiple regression analyses that involve study variables. Next, I examine whether demographic variables are associated with cancer screening
variables in multiple regression. Demographic variables that have significant relationships with the study variables are then used as covariates for subsequent regression analyses that include cultural variables. Next, I conduct factor analysis to examine different types of sources of health information that Vietnamese women use. Lastly, I conduct thematic coding on focus group discussions to find emergent themes related to the spread of health information and motivations for cancer screening.

**Preliminary Analyses**

Preliminary analyses on cancer screening behaviors and intention to screen were conducted. Eight women responded that they had a previous hysterectomy. These women were excluded from analyses involving Pap test screening. None of the women indicated previous diagnosis of breast or cervical cancer.

**Prevalence of Pap testing at pretest.** Thirty-five (38%) women had never had a Pap test while 58 (62%) women had received at least one Pap test in their lifetime. Out of the 58 that had received at least one Pap test, 46 (81%) indicated that a Pap test had been done within the past year while 11 (19%) indicated that they were not up-to-date with their Pap test. In addition, 87 (95%) women reported intentions to get a Pap test in the future. Refer to Table 3.

**Prevalence of clinical breast examination at pretest.** Results indicated that 43 (42%) of the participants had never had a clinical breast examination (CBE) while 59 (58%) women had received at least one CBE in their lifetime. Out of the 59 that had received at least one CBE, 47 (84%) indicated that they were up-to-date with their CBE within the past year while 9 (16%) indicated that they were not up-to-date with their CBE. In order to be up-to-date with a CBE, women ages 40 and older must have received a CBE within the last year.
Women ages 39 and younger must have received a CBE within the past three years. Refer to Table 3.

Table 3.

<table>
<thead>
<tr>
<th>Cancer Screening Rates</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you ever received a CBE?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>59</td>
<td>58</td>
</tr>
<tr>
<td>No</td>
<td>43</td>
<td>42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Up-to-date with CBE?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>47</td>
<td>84</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Up-to-date with CBE (ages 39 and younger)?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>19</td>
<td>90</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Up-to-date with CBE (ages 40 and older)?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>28</td>
<td>80</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you intend on getting a CBE in the future?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever received a Pap test?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>58</td>
<td>62</td>
</tr>
<tr>
<td>No</td>
<td>35</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Up to date with Pap test?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46</td>
<td>81</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you intend on getting a Pap test in the future?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>87</td>
<td>95</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

*Note.* Sample size may differ between items due to missing responses.
Other cancer screening-related variables at pretest. Refer to Tables 4 and 5 for descriptive statistics for pretest scores on cancer screening knowledge, attitudes, and self-efficacy. Descriptive statistics are also provided for the following cultural variables: acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism. Because scores in knowledge of breast and cervical cancer reflect the number of items that participants answered correctly, only the total sum score is computed for this variable.

Overall, participants had low to moderate knowledge of breast and cervical cancer. The sample also had very positive attitudes towards breast and cervical cancer screening and moderately high levels of self-efficacy in screening. In regards to cultural variables, the participants had scores in the low range of acculturation and in the high range of ethnic identity. They also scored in the high range of collectivism. Refer to Table 4 for descriptives on total summed scores. Refer to Table 5 for descriptives on mean sum scores.

Table 4.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Cancer Knowledge (Pre-Test)</td>
<td>5.87</td>
<td>1.57</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Cervical Cancer Knowledge (Pre-Test)</td>
<td>6.29</td>
<td>1.64</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Attitudes towards Breast Cancer Screening (Pre-Test)</td>
<td>13.23</td>
<td>1.11</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Attitudes towards Cervical Cancer Screening (Pre-Test)</td>
<td>12.98</td>
<td>1.80</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Self-Efficacy for Breast Cancer Screening (Pre-Test)</td>
<td>45.13</td>
<td>5.67</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Self-Efficacy for Cervical Cancer Screening (Pre-Test)</td>
<td>44.31</td>
<td>7.12</td>
<td>21</td>
<td>50</td>
</tr>
<tr>
<td>Acculturation</td>
<td>43.01</td>
<td>8.75</td>
<td>26</td>
<td>71</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>80.06</td>
<td>8.00</td>
<td>61</td>
<td>91</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>37.58</td>
<td>6.10</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>12.48</td>
<td>2.52</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>13.80</td>
<td>2.00</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Collectivism</td>
<td>66.49</td>
<td>6.87</td>
<td>49</td>
<td>77</td>
</tr>
</tbody>
</table>

*Note. N = 102*
Bivariate associations among pretest variables. Bivariate associations were conducted to examine preliminary relationships among continuous variables of interest measured at pretest. Refer to Table 6 for all bivariate associations in the correlation matrix.

Bivariate associations among predictors. Acculturation was negatively correlated with social extrinsic religiosity, $r(100) = -.21, p \leq .05$. Ethnic identity was positively associated with intrinsic religiosity, $r(100) = .22, p \leq .05$. Ethnic identity was positively associated with collectivism, $r(100) = .20, p \leq .05$. Intrinsic religiosity was positively correlated with social extrinsic religiosity, $r(100) = .58, p \leq .01$. Intrinsic religiosity was positively correlated with personal extrinsic religiosity, $r(100) = .73, p \leq .01$, and intrinsic religiosity was positively correlated with collectivism, $r(100) = .35, p \leq .01$. Social extrinsic religiosity was positively associated with personal extrinsic religiosity, $r(100) = .49, p \leq .01$, and social extrinsic religiosity was positively associated with collectivism, $r(100) = .43, p \leq .01$. Personal extrinsic religiosity was positively correlated with collectivism, $r(100) = .22, p \leq .05$. It is important to note that none of the coefficients among the cultural variables were above .80, indicating that there are no initial concerns with multicollinearity among the cultural variables.
cultural measures for later regression analyses.

**Bivariate associations among outcome variables.** Knowledge of cervical cancer was positively associated with knowledge of breast cancer, \( r(100) = .39, p \leq .01 \). Attitude towards cervical cancer screening was positively correlated with attitude towards breast cancer screening, \( r(100) = .59, p \leq .01 \). Attitude towards cervical cancer screening was positively correlated with self-efficacy for cervical cancer screening, \( r(100) = .28, p \leq .01 \). Attitude towards cervical cancer screening was positively correlated with self-efficacy for breast cancer screening, \( r(100) = .29, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with self-efficacy for cervical cancer screening, \( r(100) = .45, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with self-efficacy for breast cancer screening, \( r(100) = .45, p \leq .01 \). Self-efficacy for cervical cancer screening was positively associated with self-efficacy for breast cancer screening, \( r(100) = .91, p \leq .01 \).

**Bivariate associations among predictor and outcome variables.** Participants’ knowledge of breast cancer was positively related to ethnic identity, \( r(100) = .22, p \leq .05 \). Attitude towards cervical cancer screening was positively correlated with ethnic identity, \( r(100) = .23, p \leq .05 \). Attitude towards cervical cancer screening was positively correlated with collectivism, \( r(100) = .26, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with ethnic identity, \( r(100) = .23, p \leq .05 \). Attitude towards breast cancer screening was positively correlated with intrinsic religiosity, \( r(100) = .32, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with social extrinsic religiosity, \( r(100) = .26, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with personal extrinsic religiosity, \( r(100) = .31, p \leq .01 \). Attitude towards breast cancer screening was positively correlated with collectivism, \( r(100) = .37, p \leq .01 \).
Self-efficacy for cervical cancer screening was positively associated with acculturation, $r(100) = .24, p \leq .05$. Self-efficacy for cervical cancer screening was positively associated with collectivism, $r(100) = .30, p \leq .01$. Self-efficacy for breast cancer screening was positively associated with acculturation, $r(100) = .23, p \leq .05$. Self-efficacy for breast cancer screening was positively associated with intrinsic religiosity, $r(100) = .20, p \leq .05$. Self-efficacy for breast cancer screening was positively associated with collectivism, $r(100) = .33, p \leq .01$. These findings provide some preliminary support for the potential promotive role of cultural variables (specifically, acculturation, religiosity, and collectivism) in self-efficacy for cancer screening. These findings also provide some initial support for the link between cultural variables (specifically, ethnic identity and religiosity) and attitudes towards cancer screening for Vietnamese women.

**Was There Equivalency between the Intervention and Control Groups?**

There were no significant differences between the intervention and control group on most of the demographic variables with the exception of age, marital status, and child status.

**Demographic variables.** There were significant differences between the intervention and control group in age measured in age, $t(100) = 2.95, p = .004$. An independent samples t-test indicated that participants in the control group ($M = 35.02$, $SD = 14.70$) were younger than those in the intervention group ($M = 42.75$, $SD = 11.59$) at pretest.

Chi-square analyses indicated that there were no significant differences between the intervention and control groups in educational level, $\chi^2 (4, N = 100) = 4.19, p = .38$, having a regular physician, $\chi^2 (1, N = 100) = .00, p = .96$, having health insurance, $\chi^2 (1, N = 100) = .72, p = .38$, or employment status, $\chi^2 (1, N = 100) = .02, p = .90$. 
Table 6.

Bivariate Associations among Variables of Interests

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cervical Cancer Knowledge (Pre-Test)</td>
<td>1</td>
<td>.39**</td>
<td>-.08</td>
<td>-.06</td>
<td>-.07</td>
<td>-.13</td>
<td>.10</td>
<td>-.01</td>
<td>-.16</td>
<td>-.04</td>
<td>-.04</td>
<td>-.01</td>
</tr>
<tr>
<td>2. Breast Cancer Knowledge (Pre-Test)</td>
<td>1</td>
<td>.01</td>
<td>.00</td>
<td>.17</td>
<td>.14</td>
<td>.19</td>
<td>.22*</td>
<td>-.06</td>
<td>-.15</td>
<td>.06</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>3. Attitudes towards Cervical Cancer Screening (Pre-Test)</td>
<td>1</td>
<td>.59**</td>
<td>.28**</td>
<td>.29**</td>
<td>-.05</td>
<td>.23*</td>
<td>.15</td>
<td>.05</td>
<td>.15</td>
<td>.26**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Attitudes towards Breast Cancer Screening (Pre-Test)</td>
<td>1</td>
<td>.45**</td>
<td>.45**</td>
<td>-.17</td>
<td>.23*</td>
<td>.32**</td>
<td>.26**</td>
<td>.31**</td>
<td>.37**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self-Efficacy for Cervical Cancer Screening (Pre-Test)</td>
<td>1</td>
<td>.91**</td>
<td>.24*</td>
<td>.07</td>
<td>.12</td>
<td>.09</td>
<td>.06</td>
<td>.30**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Self-Efficacy for Breast Cancer Screening (Pre-Test)</td>
<td>1</td>
<td>.23*</td>
<td>.08</td>
<td>.20*</td>
<td>.14</td>
<td>.16</td>
<td>.33**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Acculturation</td>
<td>1</td>
<td>-.06</td>
<td>-.15</td>
<td>-.21*</td>
<td>.06</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Ethnic Identity</td>
<td>1</td>
<td>.22*</td>
<td>.19</td>
<td>.18</td>
<td>.20*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Intrinsic Religiosity</td>
<td>1</td>
<td>.58**</td>
<td>.73**</td>
<td>.35**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Social Extrinsic Religiosity</td>
<td>1</td>
<td>.49**</td>
<td>.43**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Personal Extrinsic Religiosity</td>
<td>1</td>
<td>.22*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Collectivism</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *significant at p < .05, **significant at p < .01; N = 102
A chi-square analysis indicated that there were significant differences between the intervention and control group in marital status, $\chi^2 (3, N = 101) = 12.51, p = .006$. Forty (78%) of the 51 women in the intervention group were married compared to the 27 (54%) of the 50 women in the control group.

A chi-square analysis indicated that there were significant differences between the intervention and control group in having had children, $\chi^2 (1, N = 101) = 5.30, p = .02$. Forty one (79%) of the 52 women in the intervention group had children compared to the 30 (60%) of the 50 women in the control group.

**Breast and cervical cancer screening variables.**

Chi-square analyses revealed significant differences between the intervention and control group in previous receipt of a CBE, $\chi^2 (1, N = 102) = 10.10, p = .001$. Out of the 52 women in the intervention group, 38 (73%) had previously received a CBE indicating a higher rate of screening than the control group. Out of the 50 women in the control group, 21 (42%) had a CBE.

Chi-square analyses indicated that there were no significant differences between the intervention and control groups in having had a Pap test, $\chi^2 (1, N = 91) = 2.73, p = .10$, intention to get a Pap test, $\chi^2 (1, N = 91) = .28, p = .60$, or intention to get a CBE, $\chi^2 (1, N = 100) = .00, p = .95$.

**Breast and cervical cancer knowledge.** There were significant group differences in scores of cervical cancer knowledge at pretest, $t(98) = -2.91, p = .00$. The control group (M = 6.76, SD = 1.45) had greater knowledge of cervical cancer topics than the intervention group (M = 5.85, SD = 1.71) at pretest. There were no significant differences in scores of breast cancer knowledge at pretest, $t(98) = -.93, p = .36$. 

109
Attitude towards breast and cervical cancer screening. There were no significant group differences between the intervention and control group in attitudes towards breast cancer screening, $t(100) = .06, p = .95$. There were no significant differences between the groups in baseline scores of attitudes towards cervical cancer screening, $t(100) = .55, p = .58$.

Self-efficacy for breast and cervical cancer screening. There were no significant group differences between the intervention and control group in baseline scores of self-efficacy for breast cancer screening, $t(100) = 1.11, p = .27$ or self-efficacy for cervical cancer screening at pretesting, $t(100) = .85, p = .40$.

Cultural Variables. There were no significant differences between the intervention and control condition in baseline scores of acculturation, $t(100) = -1.20, p = .23$, ethnic identity, $t(100) = .51, p = .61$, or collectivism, $t(100) = .82, p = .41$.

However, there were initial group differences for measures of religiosity. There were significant differences between the intervention and control group in baseline scores of intrinsic religiosity, $t(100) = 3.15, p = .002$. The intervention group ($M = 39.37$, $SD = 5.24$) was higher in intrinsic religiosity than the control group ($M = 35.71$, $SD = 6.42$). There were significant differences between the intervention and control group in baseline scores of social extrinsic religiosity, $t(100) = 2.02, p = .05$ with the intervention group ($M = 12.96$, $SD = 2.17$) scoring higher than the control group ($M = 11.97$, $SD = 2.77$). There were no significant differences between the intervention and control group in baseline scores of personal extrinsic religiosity, $t(100) = 1.93, p = .06$. These findings indicate that scores on intrinsic and social extrinsic religiosity should be used as covariates in further analyses.

Summary. The intervention and control groups differed in age, having had children, marital status, previous receipt of a CBE, intrinsic religiosity, and social extrinsic religiosity.
at pretest. Therefore, it will be important to enter in these variables as covariates and to control for them in subsequent analyses when assessing longer-term effects of the intervention on outcomes.

Addressing the Study’s Hypotheses

Hypothesis 1. Women in the intervention group will show increases in breast and cervical cancer-screening variables (e.g., knowledge, attitudes, intention to screen, self-efficacy, and actual screening behavior) from pretest to posttest and from posttest to follow-up. Women in the intervention group will show higher increases in outcomes than women in the control group. Posttest data was not collected for the control group. Therefore, analyses for immediate changes occurring at posttest in cancer screening variables were conducted for the intervention group and not the control group.

In addition, equivalency analyses uncovered baseline differences between the intervention and control group in age, child status, marital status, previous receipt of a CBE, intrinsic religiosity, and social extrinsic religiosity. These variables were used as covariates in analyses that assess longer-term changes in cancer screening variables.

Immediate changes in breast and cervical cancer knowledge for the intervention group.

The result of a paired sample t-test indicated that participants’ scores on breast cancer knowledge significantly increased from pretest to posttest, t(51) = -13.16, p = .00. Participant breast cancer scores at pretest (M = 5.75, SD = 1.64) were significantly lower than scores at posttest (M = 8.90, SD = 1.39). Refer to Figure 1.

The result of a paired sample t-test indicated that participants’ scores on cervical cancer knowledge significantly increased from pretest to posttest, t(51) = -11.15, p = .00.
Participant cervical cancer scores at pretest (M = 5.80, SD = 1.70) were lower than scores at posttest (M = 8.45, SD = 1.05). Refer to Figure 1.

![Figure 1. Changes in Breast and Cervical Cancer Knowledge (Pretest to Posttest)](image)

**Immediate changes in attitudes towards breast and cervical cancer screening for the intervention group.** The result of a paired sample t-test indicated that participants’ scores in attitudes toward breast cancer screening significantly increased from pretest to posttest, \( t(51) = -3.90, p = .00 \). Participant attitudes towards breast cancer screening at pretest (M = 13.33, SD = 1.11) were significantly lower than scores at posttest (M = 13.86, SD = .44). Refer to Figure 2.

The result of a paired sample t-test indicated that participants’ scores in attitudes toward cervical cancer screening significantly increased from pretest to posttest, \( t(51) = -3.25, p = .00 \). Participant attitudes towards cervical cancer screening at pretest (M = 13.07, SD = 1.74) were significantly lower than scores at posttest (M = 13.84, SD = .54). Refer to Figure 2.
Immediate changes in intention to get breast and cervical cancer screening for the intervention group. The results of a chi-square analysis using McNemar’s statistic for within-participant designs indicated no statistically significant difference. The proportion of participants who reported that they intended to get a CBE at pre-test did not differ from the proportion of respondents who intended to get a CBE test at posttest, $\chi^2 (1, N = 52) = .00, p = 1.00$. At both pretest and posttest, 51 (98%) reported that they intended to get a future CBE test. These large percentages contributed to a restriction of range in scores. Refer to Figure 3.

The results of a chi-square analysis using McNemar’s statistic for within-participant designs indicated no statistically significant difference in intention to get a Pap test at pretest and posttest. The proportion of participants who reported that they intended to get a Pap test at pretest did not differ from the proportion of respondents who intended to get a Pap test at posttest, $\chi^2 (1, N = 45) = .00, p = 1.00$. Forty-three (96%) out of 45 women intended to get a future Pap test at pretest. Forty-five (100%) out of 45 intended to get a future Pap test at posttest. These high percentages contributed to a restriction of range in answers. Refer to Figure 3.
Immediate changes in self-efficacy for breast and cervical cancer screening for the intervention group. The result of a paired sample t-test indicated that participants’ scores in self-efficacy for breast cancer screening significantly increased from pretest (M = 45.75, SD = 5.33) to posttest (M = 48.15, SD = 3.12), t(51) = -4.40, p = .00. Refer to Figure 4.

The result of a paired sample t-test indicated that participants’ scores in self-efficacy for cervical cancer screening significantly increased from pretest (M = 44.74, SD = 7.15) to posttest (M = 48.19, SD = 3.65), t(43) = -4.17, p = .00. Refer to Figure 4.
**Longer-term changes in breast cancer knowledge (pretest to follow-up).** A multiple regression analysis was conducted to assess longer-term changes in breast cancer knowledge at follow-up. Because there were initial differences between the intervention and control group in age, child status, marital status, previous receipt of a CBE, intrinsic religiosity, and social extrinsic religiosity, these variables were used as covariates and entered in the first step of the regression equation. Breast cancer knowledge scores at pretest were also entered into the first step. Assignment into group condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in breast cancer knowledge scores at follow-up, \( F(8, 84) = 3.43, p = .00; R^2 = .25 \). The addition of assignment into the intervention condition in model 2 significantly improved prediction (\( R^2 \) change = .07; \( F = 7.37, p = .01 \)). The intervention increased knowledge of breast cancer, \( \beta = .29, t(98) = 2.71 \) \( p = .01 \). By squaring the semipartial correlation, \( (r^2) = (.28)^2 \), results indicate that 8% of the variance in breast cancer knowledge at follow-up was uniquely accounted by the intervention. Refer to Table 7 for predictor contributions.

**Table 7.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \beta )</th>
<th>( B )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.08</td>
<td>-.01</td>
<td>[-.05, .03]</td>
</tr>
<tr>
<td>Children</td>
<td>-.13</td>
<td>-.56</td>
<td>[-1.75, .63]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.11</td>
<td>.42</td>
<td>[-.54, 1.37]</td>
</tr>
<tr>
<td>Previous Receipt of CBE</td>
<td>.01</td>
<td>.03</td>
<td>[-.88, .94]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>.08</td>
<td>.02</td>
<td>[-.05, .10]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.04</td>
<td>.03</td>
<td>[-.15, .20]</td>
</tr>
<tr>
<td>Breast Cancer Knowledge (pretest)</td>
<td>.40**</td>
<td>.48**</td>
<td>[.24, .71]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>.29**</td>
<td>1.08**</td>
<td>[.29, 1.88]</td>
</tr>
</tbody>
</table>

**\( R^2 \)** .25

**\( F \)** 3.43**

*Note. \( N = 100. \) CI = confidence interval.*

*\( *p < .05. \) **\( p < .01. \)
**Longer-term changes in cervical cancer knowledge (pretest to follow-up).** A multiple regression analysis was conducted to assess longer-term changes in cervical cancer knowledge at follow-up. The same covariates used in the previous analysis were entered into the first step. Cervical cancer knowledge scores at pretest were also entered into the first step. Condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in cervical cancer knowledge scores at follow-up, $F(8, 84) = 3.75, p = .00; R^2 = .26$. Assignment into the intervention condition significantly improved prediction ($R^2$ change $= .15; F = 17.26, p = .00$) and predicted increasing knowledge of cervical cancer for participants, $\beta = .45, t(98) = 4.16 \ p = .00$. A square of the semipartial correlation, $(r^2) = (.41)^2$, indicated that 17% of the variance in cervical cancer knowledge at follow-up was uniquely accounted by the intervention. Refer to Table 8 for predictor contributions.

**Table 8.**

<table>
<thead>
<tr>
<th>Effect of Intervention on Cervical Cancer Knowledge</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.10</td>
<td>-.01</td>
<td>[-.04, .02]</td>
</tr>
<tr>
<td>Children</td>
<td>-.24</td>
<td>-.70</td>
<td>[-1.54, .14]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.27</td>
<td>.78</td>
<td>[.11, 1.44]</td>
</tr>
<tr>
<td>Previous Receipt of CBE</td>
<td>.02</td>
<td>.07</td>
<td>[-.57, .70]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.10</td>
<td>-.02</td>
<td>[-.08, .03]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.05</td>
<td>.03</td>
<td>[-.10, .15]</td>
</tr>
<tr>
<td>Cervical Cancer Knowledge (pretest)</td>
<td>.19</td>
<td>.16</td>
<td>[-.01, .32]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>.45**</td>
<td>1.20**</td>
<td>[.62, 1.77]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>3.75**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.

*p < .05. **p < .01.
Longer-term changes in attitudes towards breast cancer screening (pretest to follow-up). A multiple regression analysis was conducted to assess longer-term changes in attitudes towards breast cancer screening at follow-up. The same covariates from the previous analyses were entered into the first step. Attitude towards breast cancer screening scores at pretest was also entered into the first step. Condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in attitudes towards breast cancer screening scores at follow-up, $F(8, 84) = 3.40, p = .00; R^2 = .25$. Assignment into intervention condition did not significantly improve prediction ($R^2$ change = .02; $F = 1.64, p = .20$). Social extrinsic religiosity predicted attitudes towards breast cancer screening for participants, $\beta = .33, t(98) = 2.69, p = .00$. Women with higher levels of social extrinsic religiosity had increasing positive attitudes towards breast cancer screening. A square of the semipartial correlation, $(r^2) = (.32)^2$, indicated that 10% of the variance in attitudes towards breast cancer screening at follow-up was uniquely accounted by social extrinsic religiosity. Refer to Table 9 for predictor contributions.

Table 9.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.05</td>
<td>.00</td>
<td>[-.03, .02]</td>
</tr>
<tr>
<td>Children</td>
<td>-.12</td>
<td>-.29</td>
<td>[-1.02, .44]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.12</td>
<td>.29</td>
<td>[.28, .85]</td>
</tr>
<tr>
<td>Previous Receipt of CBE</td>
<td>.18</td>
<td>.41</td>
<td>[-.13, .94]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.15</td>
<td>.03</td>
<td>[-.07, .02]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.32**</td>
<td>.14**</td>
<td>[.04, .25]</td>
</tr>
<tr>
<td>Attitude towards Breast Cancer Screening (pretest)</td>
<td>.33**</td>
<td>.38**</td>
<td>[.13, .62]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>.14</td>
<td>.31</td>
<td>[-.17, .80]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>3.40**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.  
*p < .05. **p < .01.
Longer-term changes in attitudes towards cervical cancer screening (pretest to follow-up). A multiple regression analysis was conducted to assess longer-term changes in attitudes towards cervical cancer screening at follow-up. The same covariates used in the previous analyses were entered into the first step. Attitude towards cervical cancer screening scores at pretest were also entered into the first step. Condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in attitudes towards cervical cancer screening scores at follow-up, \( F(8, 84) = 3.03, p = .00; R^2 = .22 \). Assignment to condition did not significantly improve prediction (\( R^2 \) change = .01; \( F = .92, p = .34 \)). However, social extrinsic religiosity predicted attitudes towards cervical cancer screening for participants, \( \beta = .26, t(98) = 2.18 \)  \( p = .03 \). Women with increasing levels of social extrinsic religiosity had increasing positive attitudes towards cervical cancer screening. Squaring the semipartial correlation, \( (r^2) = (.23)^2 \), indicates that 5% of the variance in attitudes towards cervical cancer screening at follow-up is uniquely accounted by social extrinsic religiosity. Refer to Table 10 for predictor contributions.

Table 10.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \beta )</th>
<th>( B )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.09</td>
<td>.00</td>
<td>[-.02, .01]</td>
</tr>
<tr>
<td>Children</td>
<td>-.17</td>
<td>.39</td>
<td>[-1.07, .30]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.17</td>
<td>.39</td>
<td>[.15, .92]</td>
</tr>
<tr>
<td>Previous Receipt of CBE</td>
<td>.21</td>
<td>.44</td>
<td>[.07, .96]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.07</td>
<td>-.01</td>
<td>[-.06, .03]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.26*</td>
<td>.11*</td>
<td>.01, .21</td>
</tr>
<tr>
<td>Attitude towards Cervical Cancer Screening (pretest)</td>
<td>.33**</td>
<td>.21**</td>
<td>[.08, .34]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>.10</td>
<td>.22</td>
<td>[-.23, .66]</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>3.03**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 100. \) CI = confidence interval.
*\( p < .05. \) **\( p < .01. \)
Longer-term changes in intention to get a clinical breast examination (pretest to follow-up). A logistic regression analysis was conducted to predict whether or not participants had intention to get future CBEs at follow-up (0 = no, 1 = yes). The same covariates from the previous analyses were entered into the first step. Intention to get a CBE (pretest) was entered into the first step as well. Assignment into condition (intervention or control) was entered into the second step. The results of the analysis indicated that the model provided poor fit in predicting the number of participants who intended to get a CBE at pretest. The covariance matrix was not computed due to the restriction of range in responses of intent as almost all of the participants (97%) responded that they intended to get a CBE in the future.

Longer-term changes in intention to get a Pap test (pretest to follow-up). A logistic regression analysis was conducted to predict whether or not participants had intention to get future Pap tests at follow-up (0 = no, 1 = yes). The same covariates from the previous analyses were entered into the first step. Intention to get a Pap test (pretest) was entered into the first step as well. Assignment into condition (intervention or control) was entered into the second step. The results of the analysis indicated that the model provided poor fit in predicting the number of participants who intended to get a Pap test. The covariance matrix was not computed due to the restriction of range in responses of intent as almost all of the participants (96%) responded that they intended to get a Pap test in the future.

Longer-term changes in self-efficacy for breast cancer screening (pretest to follow-up). A multiple regression analysis was conducted to assess longer-term changes in self-efficacy for breast cancer screening at follow-up. The same covariates from the previous analyses were entered into the first step. Self-efficacy in breast cancer screening scores at
pretest was also entered into the first step. Condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in self-efficacy for breast cancer screening scores at follow-up, $F (8, 84) = 9.65, p = .00; R^2 = .48$. Assignment into the intervention condition approached significance ($R^2$ change = .03, $F = 2.90, p = .08$). The intervention was marginally significant in improving self-efficacy for breast cancer screening, $\beta = .19, t(98) = 1.82, p = .08$.

In addition, age predicted self-efficacy for breast cancer screening, $\beta = -.32, t(98) = -2.90, p = .01$. Older women had lower self-efficacy for breast cancer screening in comparison to younger women. Squaring the semipartial correlation, $(r^2) = (-.30)^2$ indicated that 9% of the variance for self-efficacy in breast cancer screening at follow-up was uniquely accounted by age.

Previous receipt of a CBE also predicted self-efficacy for breast cancer screening, $\beta = .32, t(98) = 3.14, p = .00$, indicating that women who had previously received a CBE had higher self-efficacy in breast cancer screening than women who had not. Squaring the semipartial correlation, $(r^2) = (.32)^2$, indicated that 10% of the variance in self-efficacy for breast cancer screening at follow-up was uniquely accounted by previous receipt of a CBE.

Intrinsic religiosity predicted self-efficacy for breast cancer screening, $\beta = -.20, t(98) = -1.95, p = .05$, indicating that increasing levels of intrinsic religiosity predicted lower scores of self-efficacy. A square of the semipartial correlation, $(r^2) = (-.21)^2$, indicated that 4% of the variance in self-efficacy for breast cancer screening at follow-up was uniquely accounted by intrinsic religiosity.
Social extrinsic religiosity predicted self-efficacy for breast cancer screening, $\beta = .21$, $t(98) = 3.20$, $p = .00$. Increasing levels of social extrinsic religiosity predicted higher scores of self-efficacy. A square of the semipartial correlation, $(r^2) = (.33)^2$, indicated that 11% of the variance in self-efficacy for breast cancer screening at follow-up was uniquely accounted by social extrinsic religiosity. Refer to Table 11 for predictor contributions.

Table 11.

**Effect of Intervention on Self-Efficacy for Breast Cancer Screening**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.32**</td>
<td>-.15**</td>
<td>[-.25, -.05]</td>
</tr>
<tr>
<td>Children</td>
<td>.01</td>
<td>.17</td>
<td>[-3.01, 3.45]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.02</td>
<td>-.31</td>
<td>[-2.90, 2.28]</td>
</tr>
<tr>
<td>Previous Receipt of CBE</td>
<td>.32**</td>
<td>3.98**</td>
<td>[1.46, 6.50]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.20*</td>
<td>-.20*</td>
<td>[-.41, .00]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.31**</td>
<td>.77**</td>
<td>[.29, 1.24]</td>
</tr>
<tr>
<td>Self-Efficacy in Breast Cancer Screening (pretest)</td>
<td>.54**</td>
<td>.60**</td>
<td>[.41, .79]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>.19</td>
<td>1.80</td>
<td>[-.33, 1.90]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>9.65**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.  
* $p < .05$. ** $p < .01$.

**Longer-term changes for self-efficacy for cervical cancer screening (pretest to follow-up).** A multiple regression analysis was conducted to assess longer-term changes in self-efficacy for cervical cancer screening at follow-up. The same covariates from the previous analysis were entered into the first step. Self-efficacy for cervical cancer screening scores at pretest was also entered into the first step. Condition (intervention or control) was entered into the second step.

The results of the analysis indicated that the model accounted for a significant amount of variance in self-efficacy for cervical cancer screening scores at follow-up, $F (8, 76) = 11.10$, $p = .00$; $R^2 = .54$. Assignment into condition was significant ($R^2$ change = .03; $F =$
3.70, \( p = .05 \). The intervention was significant in increasing self-efficacy for cervical cancer screening, \( \beta = .20, t(89) = 1.90 \ p = .05 \). Squaring the semipartial correlation, \( (r^2) = (.25)^2 \), indicated that 6% of the variance in self-efficacy for cervical cancer screening at follow-up is uniquely accounted by the intervention.

In addition, age predicted self-efficacy for cervical cancer screening, \( \beta = -.33, t(89) = -2.97 \ p = .01 \), indicating that older women had lower self-efficacy for cervical cancer screening than younger women. A square of the semipartial correlation, \( (r^2) = (-.32)^2 \), indicated that 10% of the variance in self-efficacy for cervical cancer screening at follow-up was uniquely accounted by age.

Social extrinsic religiosity also predicted self-efficacy for cervical cancer screening, \( \beta = .27, t(89) = 2.65 \ p = .01 \), indicating that increasing levels of social extrinsic religiosity predicted higher scores of self-efficacy. A square of the semipartial correlation, \( (r^2) = (.29)^2 \), indicated that 8% of the variance in self-efficacy for cervical cancer screening at follow-up was uniquely accounted by social extrinsic religiosity. Refer to Table 12 for predictor contributions.

Table 12.

| Effect of Intervention on Self-Efficacy for Cervical Cancer Screening |
|--------------------------|---------|---|-----------------|
| Variable                 | \( \beta \) | \( B \) | 95% CI           |
| Age                      | -.33**  | -.16** | [.26, -.05]      |
| Children                 | .00     | -.03   | [-3.29, 3.24]    |
| Marital Status           | .05     | .71    | [-1.98, 3.40]    |
| Previous Receipt of CBE  | .18     | 2.35   | [.27, 4.98]      |
| Intrinsic Religiosity    | -.16    | -.17   | [-.38, .04]      |
| Social Extrinsic Religiosity | .27**  | .70**  | [.17, 1.22]      |
| Self-Efficacy in Cervical Cancer Screening (pretest) | .61**  | .53**  | [.39, .68]      |
| Intervention Group       | .20*    | 2.20*  | [-.14, 3.48]     |
| \( R^2 \)                | .54     |       |                  |
| \( F \)                  | 11.10** |       |                  |

Note. \( N = 91 \). CI = confidence interval.  
*\( p < .05 \).  **\( p < .01 \).
**Longer-term changes in breast cancer screening (pretest to follow-up).** A logistic regression analysis was conducted to predict whether or not participants had received a CBE at follow-up (0 = no, 1 = yes). Using receipt of a CBE at follow-up as the outcome, the same covariates from the previous analysis were entered into the first step. Previous receipt of a CBE was also entered into the first step. Condition (intervention or control) was entered into the second step. The model was significant $\chi^2(7) = 21.94, p = .00$, indicating that the model fit improved with the addition of condition. The Nagelkerke R-square value = .29, and the Cox and Snell R-square value = .21. The variables correctly predicted 77% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 8.31, p = .42$, indicating that the model did not differ from the observed data and was a good fit.

Condition significantly predicted receipt of a CBE, $\beta = 1.19, \chi^2(1) = 4.33, p = .04$ The change in odds associated with a one-unit change in intervention condition was 3.28, indicating that being in the intervention condition resulted in a participant being 3.28 times more likely to have received a CBE at follow-up. Out of 45 women in the control condition, 8 (18%) reported getting a CBE. Out of 48 women in the intervention condition, 22 (46%) reported getting a CBE.

Social extrinsic religiosity also significantly predicted receipt of a CBE, $\beta = .41, \chi^2(1) = 5.89, p = .01$. The change in odds associated with a one-unit change in social extrinsic religiosity was 1.51, indicating that a one-unit change in social extrinsic religiosity was associated with a participant being 1.51 times more likely to have received a CBE at follow-up. Refer to Table 13 for predictor contributions.
Longer-term changes in cervical cancer screening (pretest to follow-up). A logistic regression analysis was conducted to predict whether or not participants had received a Pap test at follow-up (0 = no, 1 = yes). Using receipt of a Pap at follow-up as the outcome, the same covariates from the previous analysis were entered into the first step. Previous receipt of Pap test was also entered in the first step. Condition (intervention or control) was entered into the second step. The model was significant $\chi^2(8) = 17.75, p = .02$, indicating that the model fit improved with the addition of intervention condition. The Nagelkerke R-square value = .24, and the Cox and Snell R-square value = .17. The variables correctly predicted 79% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 14.32, p = .07$, indicating that the model did not differ from the observed data and was a good fit.

Condition approached significance in predicting receipt of a Pap test, $\beta = 1.00, \chi^2(1) = 3.44, p = .06$ indicating that assignment into the intervention condition was marginally significant in predicting receipt of a Pap test. The change in odds associated with a one-unit change in intervention condition was 2.69, indicating that being in the intervention condition resulted in a participant being 2.69 times more likely to have received a Pap at follow-up.

Table 13.

<p>| Effect of Intervention on Receipt of CBE |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.02</td>
<td>.99</td>
<td>[.95, 1.05]</td>
</tr>
<tr>
<td>Children</td>
<td>.07</td>
<td>1.24</td>
<td>[.25, 6.17]</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.95</td>
<td>.52</td>
<td>[.14, 1.93]</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>.67</td>
<td>.95</td>
<td>[.84, 1.07]</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>5.89**</td>
<td>1.51</td>
<td>[1.08, 2.10]</td>
</tr>
<tr>
<td>Previous Receipt of a CBE (pretest)</td>
<td>3.77*</td>
<td>3.51</td>
<td>[.99, 12.47]</td>
</tr>
<tr>
<td>Intervention Group</td>
<td>4.33*</td>
<td>3.28</td>
<td>[1.07, 10.03]</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox and Snell R²</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 93$. CI = confidence interval.
* $p < .05$. ** $p < .01$. 

- Longer-term changes in cervical cancer screening (pretest to follow-up). A logistic regression analysis was conducted to predict whether or not participants had received a Pap test at follow-up (0 = no, 1 = yes). Using receipt of a Pap at follow-up as the outcome, the same covariates from the previous analysis were entered into the first step. Previous receipt of Pap test was also entered in the first step. Condition (intervention or control) was entered into the second step. The model was significant $\chi^2(8) = 17.75, p = .02$, indicating that the model fit improved with the addition of intervention condition. The Nagelkerke R-square value = .24, and the Cox and Snell R-square value = .17. The variables correctly predicted 79% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 14.32, p = .07$, indicating that the model did not differ from the observed data and was a good fit.

Condition approached significance in predicting receipt of a Pap test, $\beta = 1.00, \chi^2(1) = 3.44, p = .06$ indicating that assignment into the intervention condition was marginally significant in predicting receipt of a Pap test. The change in odds associated with a one-unit change in intervention condition was 2.69, indicating that being in the intervention condition resulted in a participant being 2.69 times more likely to have received a Pap at follow-up.
Out of 44 women in the control condition, 12 (27%) reported getting a Pap test. Out of 47 women in intervention condition, 22 (47%) reported getting a Pap test. Refer to Table 14 for predictor contributions.

Table 14.

<table>
<thead>
<tr>
<th>Effect of Intervention on Receipt of Pap Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Children</td>
</tr>
<tr>
<td>Marital Status</td>
</tr>
<tr>
<td>Previous Receipt of a CBE (pretest)</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
</tr>
<tr>
<td>Previous Receipt of a Pap (pretest)</td>
</tr>
<tr>
<td>Intervention Group</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
</tr>
<tr>
<td>Cox and Snell R²</td>
</tr>
<tr>
<td>$\chi^2$</td>
</tr>
</tbody>
</table>

Note. $N = 91$. CI = confidence interval.
*p < .05. **p < .01.

Hypothesis 2. Demographic variables (such as marital status, children status, educational attainment, employment status, household income, health insurance status, and regular physician status) will be positively associated with breast and cervical cancer screening-related outcomes. It was predicted that being married, having children, having higher levels of educational attainment, being employed, having higher levels of household income, having health insurance, and having a regular physician would be positively associated with cancer screening variables. Predictor variables that were found to be significant in these analyses were used as covariates in analyses for hypothesis 3. Since the study’s sample was relatively small, the inclusion of all possible demographic variables as covariates would have decreased the study’s power. Therefore, only demographic
variables that significantly contributed to the cancer screening variables were used as covariates for subsequent analyses.

**Breast cancer knowledge at pretest.** A multiple regression analysis was conducted to predict breast cancer knowledge using demographic variables. These items included marital status, children status, educational attainment, employment status, household income, health insurance status, and regular physician status. The results indicated that the model accounted for a significant amount of variance in breast cancer knowledge scores, $F(7, 92) = 2.36, p = .03; R^2 = .15$. Educational attainment was the only significant predictor of breast cancer knowledge at pretest, $\beta = .22, t(98) = 1.95, p = .05$. Higher levels of education predicted increasing levels of breast cancer knowledge. Squaring the semipartial correlation, $(r^2) = .20^2$, indicated that 4% of the variance in breast cancer knowledge was uniquely accounted by educational attainment.

Educational attainment was significant, and therefore was used as a covariate in subsequent regression analyses involving breast cancer knowledge scores. Refer to Table 15 for predictor variables and their contributions.

**Table 15**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.10</td>
<td>.32</td>
<td>[-.48, 1.13]</td>
</tr>
<tr>
<td>Children Status</td>
<td>-.08</td>
<td>-.27</td>
<td>[-1.20, .66]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.22**</td>
<td>.29**</td>
<td>[-.01, .58]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.16</td>
<td>.58</td>
<td>[-.18, 1.27]</td>
</tr>
<tr>
<td>Household Income</td>
<td>.03</td>
<td>.03</td>
<td>[-.23, .28]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.04</td>
<td>.14</td>
<td>[-.68, .96]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.14</td>
<td>.43</td>
<td>[-.33, 1.19]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>2.36*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.

*p < .05. **p < .01.
**Cervical cancer knowledge at pretest.** A multiple regression analysis was conducted to predict pretest scores in cervical cancer knowledge using the demographic variables identified in the previous analysis. The results indicated that the model did not account for a significant amount of variance in cervical cancer knowledge scores at pretest, \( F(7, 92) = 1.74, p = .11; R^2 = .12. \)

Though the omnibus F test was non-significant, educational attainment significantly predicted cervical cancer knowledge. Therefore, it was used as a covariate in subsequent analyses with cervical cancer knowledge as the outcome. Refer to Table 16 for predictor variables and their contributions.

**Table 16.**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>( \beta )</th>
<th>( B )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.03</td>
<td>.09</td>
<td>[-.77, .95]</td>
</tr>
<tr>
<td>Children Status</td>
<td>-.17</td>
<td>-.62</td>
<td>[-1.61, .38]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.24**</td>
<td>.32**</td>
<td>[.01, .63]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.15</td>
<td>.55</td>
<td>[-.19, 1.29]</td>
</tr>
<tr>
<td>Household Income</td>
<td>-.08</td>
<td>-.08</td>
<td>[-.35, .20]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>-.12</td>
<td>-.41</td>
<td>[-1.28, .46]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.06</td>
<td>.20</td>
<td>[-.61, 1.01]</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>1.74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 10. \) CI = confidence interval.  
*\( p < .05. \) **\( p < .01. \)

**Attitude towards breast cancer screening at pretest.** A multiple regression analysis was conducted to predict scores in attitudes towards breast cancer screening at pretest using demographic variables as predictors. The results indicated that the model accounted for a significant amount of variance in attitudes towards breast cancer screening scores at pretest, \( F(7, 92) = 3.46, p = .00; R^2 = .21. \) Having children was a significant predictor of positive
attitudes towards breast cancer screening at pretest, $\beta = .30$, $t(98) = 2.25$, $p = .03$. Squaring the semipartial correlation, $(r^2) = .23^2$, indicated that 5% of the variance in attitudes towards breast cancer screening was uniquely accounted for by having children. Having a regular physician was also a significant predictor with having a regular physician associated with increasing positive attitudes towards breast cancer screening, $\beta = .36$, $t(98) = 2.43$, $p = .03$. Squaring the semipartial correlation, $(r^2) = .24^2$, indicated that 6% of the variance in attitude toward breast cancer screening was accounted for by having a regular physician.

These results indicated that children status and having a regular physician should be used as covariates in subsequent regression analyses involving attitudes towards breast cancer. Refer to Table 17 for predictor variables and their contributions.

Table 17.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>-.06</td>
<td>-.14</td>
<td>[-.69, .41]</td>
</tr>
<tr>
<td>Children Status</td>
<td>.30**</td>
<td>.72**</td>
<td>[.09, 1.35]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.07</td>
<td>-.07</td>
<td>[-.27, .13]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>-.08</td>
<td>-.19</td>
<td>[-.66, .29]</td>
</tr>
<tr>
<td>Household Income</td>
<td>.15</td>
<td>.10</td>
<td>[-.08, .28]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>-.13</td>
<td>-.32</td>
<td>[-.87, .24]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.28*</td>
<td>.63*</td>
<td>[.17, 1.15]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>3.46**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.
* $p < .05$. ** $p < .01$.

Attitude towards cervical cancer screening at pretest. A multiple regression analysis was conducted to predict scores in attitudes towards cervical cancer screening at pretest using demographic variables. The results indicated that the model accounted for a significant amount of variance in attitudes towards cervical cancer scores at pretest, $F (7, 92) = 2.66$, $p =$
Having a regular physician was significantly associated with more positive attitudes towards cervical cancer screening at pretest, $\beta = .32$, $t(98) = 2.71$, $p = .01$. Squaring the semipartial correlation, $(r^2) = .27^2$, indicated that 7% of the variance in attitudes towards cervical cancer screening was uniquely accounted for by having a regular physician.

These results indicated that it will be necessary to use having a regular physician as a covariate in subsequent regression analyses involving attitudes towards cervical cancer.

Refer to Table 18 for predictor variables and their contributions.

Table 18.

<table>
<thead>
<tr>
<th>Predictors of Attitudes towards Cervical Cancer Screening</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.03</td>
<td>.13</td>
<td>[−.78, 1.04]</td>
</tr>
<tr>
<td>Children Status</td>
<td>.17</td>
<td>.65</td>
<td>[−.41, 1.71]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>−.01</td>
<td>−.01</td>
<td>[−.34, .32]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.01</td>
<td>.05</td>
<td>[−.73, .84]</td>
</tr>
<tr>
<td>Household Income</td>
<td>.12</td>
<td>.13</td>
<td>[−.16, .42]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>−.18</td>
<td>−.71</td>
<td>[−1.64, .22]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.32**</td>
<td>1.17**</td>
<td>[.31, 2.30]</td>
</tr>
</tbody>
</table>

Note. $N = 100$. CI = confidence interval.

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

Self-efficacy for breast cancer screening at pretest. A multiple regression analysis was conducted to predict scores in self-efficacy for breast cancer screening at pretest following identical procedures in the previous analysis. The results indicated that the model accounted for a significant amount of variance in self-efficacy for breast cancer screening at pretest, $F (7, 92) = 7.49$, $p = .00$; $R^2 = .36$.

Having children was a significant predictor of self-efficacy for breast cancer screening at pretest, $\beta = .23$, $t(98) = 1.96$, $p = .05$. Having children predicted increases in
self-efficacy in breast cancer screening. Squaring the semipartial correlation, \( r^2 = .20^2 \), indicated that 4% of the variance in self-efficacy in breast cancer screening was uniquely accounted for by having children. Having health insurance was also a significant predictor of self-efficacy for breast cancer screening at pretest, \( \beta = .28, t(98) = 2.65, p = .01 \). Having health insurance was associated with higher self-efficacy for breast cancer screening. Squaring the semipartial correlation, \( r^2 = .26^2 \), indicated that 7% of the variance in self-efficacy for breast cancer screening was uniquely accounted for by having health insurance. Having a regular physician was also a significant predictor of self-efficacy for breast cancer screening at pretest, \( \beta = .25, t(98) = 2.43, p = .02 \). Having a regular physician was associated with higher self-efficacy for breast cancer screening. Squaring the semipartial correlation, \( r^2 = .24^2 \), indicated that 6% of the variance in self-efficacy for breast cancer screening was uniquely accounted for by possession of a regular physician.

These results indicate that it will be necessary to use children status, health insurance status, and regular physician status as covariates in subsequent regression analyses involving self-efficacy for breast cancer screening. Refer to Table 19 for predictor variables and their contributions.

Table 19.

<table>
<thead>
<tr>
<th>Predictors of Self-Efficacy for Breast Cancer Screening</th>
<th>( \beta )</th>
<th>( B )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>-.10</td>
<td>-1.21</td>
<td>[-3.73, 1.31]</td>
</tr>
<tr>
<td>Children</td>
<td>.23*</td>
<td>2.88*</td>
<td>[-.04, 5.80]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.14</td>
<td>.63</td>
<td>[-.28, 1.55]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.06</td>
<td>.80</td>
<td>[-1.38, 2.97]</td>
</tr>
<tr>
<td>Household Income</td>
<td>.01</td>
<td>.05</td>
<td>[-.76, .86]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.28**</td>
<td>3.41**</td>
<td>[.85, 5.98]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.25*</td>
<td>2.90*</td>
<td>[.53, 5.27]</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>7.49**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 100. \) CI = confidence interval.
*\( p < .05. \) **\( p < .01. \)
Self-efficacy for cervical cancer screening at pretest. Multiple regression analysis was conducted to predict scores in self-efficacy in cervical cancer screening at pretest following identical procedures in the previous analysis. The results indicated that the model accounted for a significant amount of variance in self-efficacy for cervical cancer screening at pretest, $F(7, 83) = 6.51, p = .00; R^2 = .35$.

Educational attainment was a significant predictor of self-efficacy for cervical cancer screening at pretest, $\beta = .22, t(89) = 2.12, p = .04$. Higher levels of educational attainment were associated with higher self-efficacy for cervical cancer screening. Squaring the semipartial correlation, $(r^2)^2 = .22^2$, indicated that 5% of the variance in self-efficacy for cervical cancer screening was uniquely accounted for by educational attainment. Having children was also a significant predictor of self-efficacy for cervical cancer screening at pretest, $\beta = .27, t(89) = 2.10, p = .04$. Having children was associated with increases in self-efficacy for cervical cancer screening. Squaring the semipartial correlation, $(r^2)^2 = .22^2$, indicated that 5% of the variance in self-efficacy for cervical cancer screening was uniquely accounted for by having children.

Having health insurance was also a significant predictor of self-efficacy for cervical cancer screening at pretest, $\beta = .33, t(89) = 2.87, p = .01$. Having health insurance was associated with higher self-efficacy for cervical cancer screening. Squaring the semipartial correlation, $(r^2)^2 = .30^2$, indicated that 9% of the variance in self-efficacy for cervical cancer screening was uniquely accounted for by having health insurance.

These results indicate that it will be necessary to use educational attainment, children status, and health insurance status as covariates in subsequent regression analyses involving
self-efficacy for cervical cancer screening. Refer to Table 20 for predictor variables and their contributions.

### Table 20.

**Predictors of Self-Efficacy for Cervical Cancer Screening**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>$B$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>-.19</td>
<td>-2.83</td>
<td>[-6.39, .72]</td>
</tr>
<tr>
<td>Children</td>
<td>.27*</td>
<td>4.23*</td>
<td>[.23, 8.23]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.22*</td>
<td>1.35*</td>
<td>[.08, 2.61]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.07</td>
<td>1.18</td>
<td>[-1.99, 4.25]</td>
</tr>
<tr>
<td>Household Income</td>
<td>.00</td>
<td>.01</td>
<td>[-1.12, 1.15]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.33**</td>
<td>5.22**</td>
<td>[1.59, 8.85]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.16*</td>
<td>2.44*</td>
<td>[−.93, 5.80]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>6.51**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 91$. CI = confidence interval.

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

**Intention to get a clinical breast examination (CBE) at pretest.** A logistic regression analysis was conducted to predict whether or not participants had intention to get a CBE at pretest (0 = no, 1 = yes). Demographic variables discussed previously were used as covariates in the model. The results indicated that the model provided poor fit in predicting the number of participants who intended to get a CBE at pretest, $\chi^2(8) = 12.81, p = .12$. The Nagelkerke R-square value = .68, and the Cox and Snell R-square value = .12. Hosmer and Lemeshow Test was non-significant, $\chi^2(3) = .00, p = 1.00$, indicating that the model did not differ from the observed data and was a good fit. The variables correctly predicted 99% of the cases; however, this is attributed to the restriction of range in responses of intent as 99% of the participants responded that they intended to get a CBE in the future. Analyses involving intention to get a CBE as an outcome variable will no longer be conducted.
**Intention to get a Pap test at pretest.** A logistic regression analysis was conducted to predict whether or not participants had intention to get a Pap test at pretest (0 = no, 1 = yes). Demographic variables discussed previously were used as covariates for the model. The results of the analysis indicated that the model provided poor fit in predicting the number of participants who intended to get a Pap test at pretest, $\chi^2(8) = 6.25, p = .62$. The Nagelkerke R-square value = .18, and the Cox and Snell R-square value = .06. The variables correctly predicted 95% of the cases; however, this is attributed to the restriction of range in responses of intent as 100% of the participants responded that they intended to get a Pap test in the future. The Hosmer and Lemeshow Test was not provided as iterations exceeded defined limits. Analyses involving intention to get a Pap test as an outcome variable will no longer be conducted.

**Previous receipt of a clinical breast examination (CBE) at pretest.** A logistic regression analysis was conducted to predict whether or not participants had previously received a CBE in her lifetime (0 = no, 1 = yes). Demographic variables described previously were used as covariates for the model. The model was significant $\chi^2(8) = 40.65, p = .00$. The Nagelkerke R-square value = .45, and the Cox and Snell R-square value = .33. The variables correctly predicted 83% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 65.87, p = .66$, indicating that the model did not differ from the observed data and was a good fit.

According to the Wald criterion, there were two significant predictors of whether or not participants had received a previous CBE in her lifetime: having children and having health insurance. Having children predicted previous receipt of a CBE, $\chi^2(1) = 9.68, p = .00$. The change in odds associated with a one-unit change in having had children was 13.01,
indicating that having children was associated with the participant being 13.01 times as likely
to have received a previous CBE. Of the participants, 52 (73%) out of 71 women who have
children had received a CBE, while 6 (21%) out of 29 women who did not have children had
received a CBE. Having health insurance also predicted previous receipt of a CBE, \( \chi^2(1) = 
3.95, p = .05 \). The odds ratio was 3.72, indicating that having health insurance was associated
with participants being 3.72 more likely to have received a CBE. Of the participants, 49
(70%) out of 70 women who had health insurance had received a previous CBE while 9
(30%) out of 30 women who did not have health insurance had received a previous CBE.

The results indicate that it will be necessary to use health insurance status and
children status as covariates in subsequent regression analyses involving previous receipt of
CBE. Refer to Table 21 for predictor variables and their contributions.

Table 21

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.56</td>
<td>.61</td>
<td>[.16, 2.26]</td>
</tr>
<tr>
<td>Children</td>
<td>9.68**</td>
<td>13.01</td>
<td>[2.58, 65.47]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.41</td>
<td>1.18</td>
<td>[.71, 1.96]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>2.83</td>
<td>.33</td>
<td>[.09, 1.20]</td>
</tr>
<tr>
<td>Household Income</td>
<td>2.10</td>
<td>1.37</td>
<td>[.90, 2.11]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>3.95*</td>
<td>3.72</td>
<td>[1.02, 13.56]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.00</td>
<td>.00</td>
<td>[.27, 3.22]</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox and Snell R²</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \chi^2 )</td>
<td></td>
<td>40.65**</td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 100 \). CI = confidence interval.
*\( p < .05 \). **\( p < .01 \).

*Previous receipt of a Pap test at pretest.* A logistic regression analysis was conducted
to predict whether or not participants had received a Pap test in her lifetime (0 = no, 1 = yes).
Demographic variables described previously were used as covariates for the model. The model was significant $\chi^2(8) = 46.89, p = .00$. The Nagelkerke R-square value = .54, and the Cox and Snell R-square value = .40. The variables correctly predicted 82% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 3.62, p = .89$, indicating that the model did not differ from the observed data and was a good fit.

According to the Wald criterion, there were two significant predictors of whether or not participants had received a previous Pap test in her lifetime: having children and household income. Having children predicted previous receipt of a Pap test, $\chi^2(1) = 7.07, p = .00$. The change in odds associated with a one-unit change in having children was 11.94, indicating that having children resulted in a participant being 11.94 times more likely to have received a Pap test. Of the participants, 49 (79%) out of 62 women who had children had received a Pap test while 8 (28%) out of 29 women who did not have children had received a Pap test.

Household income also predicted previous receipt of a Pap test, $\chi^2(1) = 4.96, p = .03$. Higher household income predicted previous receipt of a Pap test. The change in odds associated with a one-unit change in household income was 1.73, indicating that a one-unit change in household income was associated with a participant being 1.73 times more likely to have received a Pap test.

The results indicate that it will be necessary to use children status and household income as covariates in subsequent regression analyses involving previous receipt of a Pap test. Refer to Table 22 for predictor variables and their contributions.
Table 22.

Predictors of Previous Receipt of a Pap Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.31</td>
<td>.66</td>
<td>[.15, 2.85]</td>
</tr>
<tr>
<td>Children</td>
<td>7.07**</td>
<td>11.94</td>
<td>[1.92, 74.27]</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>3.26</td>
<td>1.89</td>
<td>[.94, 3.76]</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.02</td>
<td>1.09</td>
<td>[.29, 3.96]</td>
</tr>
<tr>
<td>Household Income</td>
<td>4.96*</td>
<td>1.73</td>
<td>[1.07, 280]</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.12</td>
<td>1.29</td>
<td>[.30, 5.57]</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>1.03</td>
<td>2.09</td>
<td>[.51, 8.59]</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox and Snell R²</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>χ²</td>
<td>52.28**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 91. CI = confidence interval.
*p < .05. **p < .01.

Hypothesis 3. Acculturation will be linearly associated with favorable cancer-screening variables, but this relationship will be best understood using an integrated (bicultural) framework of acculturation. Hypothesis 4. Ethnic identity will be positively associated with favorable cancer-screening variable. Hypothesis 5. Religiosity, specifically social extrinsic religiosity and personal extrinsic religiosity, will be positively associated with favorable cancer-screening variables. I predicted that increasing levels of acculturation, ethnic identity, social extrinsic religiosity, and personal extrinsic religiosity would be associated with higher scores in breast and cervical cancer knowledge, positive attitudes, self-efficacy for cancer screening, and cancer screening behavior. I also predicted that having a bicultural orientation would be associated with increased cancer screening variables. These analyses involved using pre-test data.

Demographic covariates for the following hierarchical regression analyses were determined in the previous analyses. Those demographic variables were significant
predictors of specific cancer screening variables at pre-test and were used in the analyses found in this section involving specific cancer screening variables. Age was controlled for in all analyses.

**Breast cancer knowledge at pretest.** A hierarchical multiple regression analysis was conducted to predict knowledge of breast cancer. Using knowledge of breast cancer as the outcome, participants’ age and educational attainment were controlled for and entered in the first step. Items used to predict knowledge of breast cancer included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, and were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

The results indicated that the model accounted for a significant amount of variance in knowledge of breast cancer, $F(2, 97) = 5.31$, $p = .01$; $R^2 = .10$. However, the addition of cultural variables in model 2 did not significantly improve prediction ($R^2$ change = .08; $F = 1.47$, $p = .20$). The addition of the curvilinear effect of acculturation in model 3 also did not contribute unique variance above and beyond the simpler model ($R^2$ change = .01, $F = 1.13$, $p = .29$).

Educational attainment was the only significant predictor of breast cancer knowledge at pretest, $\beta = .32$, $t(98) = 3.19$ $p = .00$. Higher levels of education were associated with increasing levels of breast cancer knowledge. Squaring the semipartial correlation, ($r^2$) = .31², indicated that 10% of the variance in breast cancer knowledge was uniquely accounted by educational attainment. Refer to Table 23 for predictor variables and their contributions.
Cervical cancer knowledge at pretest. A hierarchical multiple regression analysis was conducted to predict knowledge of cervical cancer. Using knowledge of cervical cancer as the outcome, participants’ age and educational attainment were controlled for and entered in the first step. Items used to predict knowledge of cervical cancer included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, and were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

The results indicated that the model accounted for a significant amount of variance in knowledge of cervical cancer, $F(2, 97) = 6.11, p = .00; R^2 = .11$. The addition of cultural variables in model 2 did not significantly improve prediction ($R^2$ change = .02; $F = .30, p = .93$). The addition of the curvilinear effect of acculturation in model 3 also did not contribute unique variance above and beyond the simpler model ($R^2$ change = .00. $F = .27, p = .61$).

Age was the only significant predictor of cervical cancer knowledge at pretest, $\beta = -.26, t(98) = -2.57$  $p = .01$, indicating that older women had less knowledge of cervical cancer than younger women. Squaring the semipartial correlation, $(r^2) = (-.25)^2$, indicated that 6% of the variance in cervical cancer knowledge was uniquely accounted by age. Refer to Table 24.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.03</td>
<td>.05</td>
<td>.07</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.32**</td>
<td>.23*</td>
<td>.23*</td>
</tr>
<tr>
<td>Acculturation</td>
<td>.09</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>.21*</td>
<td>.20*</td>
<td>.20*</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.02</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>-.23</td>
<td>-.23</td>
<td>-.23</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>.07</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.07</td>
<td>.07</td>
<td>.08</td>
</tr>
<tr>
<td>Biculturalism (Acculturation²)</td>
<td>-.10</td>
<td>-.10</td>
<td>-.10</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.10</td>
<td>.18</td>
<td>.19</td>
</tr>
<tr>
<td>$F$(change in $R^2$)</td>
<td>5.31**</td>
<td>1.47</td>
<td>1.13</td>
</tr>
</tbody>
</table>

Table 23.

Predictors of Breast Cancer Knowledge

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.03</td>
<td>.05</td>
<td>.07</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.32**</td>
<td>.23*</td>
<td>.23*</td>
</tr>
<tr>
<td>Acculturation</td>
<td>.09</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>.21*</td>
<td>.20*</td>
<td>.20*</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.02</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>-.23</td>
<td>-.23</td>
<td>-.23</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>.07</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.07</td>
<td>.07</td>
<td>.08</td>
</tr>
<tr>
<td>Biculturalism (Acculturation²)</td>
<td>-.10</td>
<td>-.10</td>
<td>-.10</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.10</td>
<td>.18</td>
<td>.19</td>
</tr>
<tr>
<td>$F$(change in $R^2$)</td>
<td>5.31**</td>
<td>1.47</td>
<td>1.13</td>
</tr>
</tbody>
</table>

Note. N = 100.

*p < .05. **p < .01.
Attitude towards breast cancer screening at pretest. A hierarchical multiple regression analysis was conducted to predict attitudes towards breast cancer screening. Using attitudes towards breast cancer screening as the outcome, age, having children, and possession of a regular physician were controlled for and entered in the first step. Next, items used to predict attitudes towards breast cancer screening included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, and were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

The results indicated that the model accounted for a significant amount of variance in attitudes towards breast cancer screening, \( F (9,90) = 6.16, p = .00; R^2 = .38. \) The addition of cultural variables in model 2 significantly improved prediction (\( R^2 \) change = .20; \( F = 4.83, p = .00 \)). The addition of the curvilinear effect of acculturation in model 3 did not contribute unique variance above and beyond model 2 (\( R^2 \) change = .00. \( F = .31, p = .58 \)).

Table 24.
Predictors of Cervical Cancer Knowledge

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>( B )</td>
<td>( SE )</td>
<td>( \beta )</td>
<td>( B )</td>
<td>( SE )</td>
</tr>
<tr>
<td>Age</td>
<td>-.26**</td>
<td>-.03**</td>
<td>.01</td>
<td>-.23*</td>
<td>-.03*</td>
<td>.01</td>
</tr>
<tr>
<td>Acculturation</td>
<td>-.03</td>
<td>-.01</td>
<td>.02</td>
<td>-.03</td>
<td>-.01</td>
<td>.02</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>-.21</td>
<td>-.06</td>
<td>.05</td>
<td>-.21</td>
<td>-.06</td>
<td>.05</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>.08</td>
<td>.06</td>
<td>.08</td>
<td>.09</td>
<td>.06</td>
<td>.08</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.11</td>
<td>.10</td>
<td>.14</td>
<td>.11</td>
<td>.10</td>
<td>.14</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>.03</td>
<td>.01</td>
<td>.03</td>
<td>.03</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>Collectivism</td>
<td>-.05</td>
<td>.00</td>
<td>.00</td>
<td>-.05</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>R²</td>
<td>.11</td>
<td>.13</td>
<td>.13</td>
<td>.11</td>
<td>.13</td>
<td>.13</td>
</tr>
<tr>
<td>F(change in R²)</td>
<td>6.11**</td>
<td>.30</td>
<td>.27</td>
<td>6.11**</td>
<td>.30</td>
<td>.27</td>
</tr>
</tbody>
</table>

Note. \( N = 100. \)
*\( p < .05. \)**\( p < .01. \)
For model 2, having children was a significant predictor of attitudes towards breast cancer screening at pretest, \( \beta = .34, t(98) = 3.03 \quad p = .00 \). Having children was associated with more positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \( (r^2) = (.31)^2 \), indicated that 10% of the variance in attitudes towards breast cancer screening was uniquely accounted by having children.

Having a regular physician was also a significant predictor of attitudes towards breast cancer screening at pretest, \( \beta = .29, t(98) = 2.97 \quad p = .00 \). Having a regular physician was associated with more positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \( (r^2) = (.30)^2 \), indicated that 9% of the variance in attitudes towards breast cancer screening was uniquely accounted by having a regular physician.

Acculturation was a significant predictor of attitudes towards breast cancer screening at pretest, \( \beta = -.19, t(98) = -1.96 \quad p = .05 \). Higher levels of acculturation were associated with less positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \( (r^2) = (-.20)^2 \), indicated that 4% of the variance in attitudes towards breast cancer screening was uniquely accounted by acculturation.

Personal extrinsic religiosity was a significant predictor of attitudes towards breast cancer screening at pretest, \( \beta = .26, t(98) = 2.04, \quad p = .04 \). Increasing levels of personal extrinsic religiosity were associated with more positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \( (r^2) = (.21)^2 \), indicated that 4% of the variance in attitudes towards breast cancer screening was uniquely accounted by personal extrinsic religiosity.

Collectivism was also a significant predictor of attitudes towards breast cancer screening at pretest, \( \beta = .30, t(98) = 3.01, \quad p = .00 \). Increasing levels of collectivism were
associated with more positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \((r^2) = (.31)^2\), indicated that 10% of the variance in attitudes towards breast cancer screening was uniquely accounted by collectivism. Refer to Table 25 for predictor variables and their contributions.

Table 25.

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>B</th>
<th>SE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.01</td>
<td>.00</td>
<td>.01</td>
<td>-.20</td>
<td>-.02</td>
<td>.01</td>
<td>-.21</td>
<td>-.02</td>
<td>.01</td>
</tr>
<tr>
<td>Having Had Children</td>
<td>.25*</td>
<td>.59*</td>
<td>.28</td>
<td>.34**</td>
<td>.80**</td>
<td>.26</td>
<td>.34**</td>
<td>.79**</td>
<td>.26</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.27**</td>
<td>.58**</td>
<td>.21</td>
<td>.29**</td>
<td>.63**</td>
<td>.22</td>
<td>.29**</td>
<td>.63**</td>
<td>.21</td>
</tr>
<tr>
<td>Acculturation</td>
<td>-.19*</td>
<td>-.03*</td>
<td>.01</td>
<td>-.20*</td>
<td>-.03*</td>
<td>.01</td>
<td>-.20*</td>
<td>-.03*</td>
<td>.01</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>.03</td>
<td>.00</td>
<td>.01</td>
<td>.03</td>
<td>.00</td>
<td>.01</td>
<td>.03</td>
<td>.00</td>
<td>.01</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>-.06</td>
<td>-.01</td>
<td>.03</td>
<td>-.06</td>
<td>-.01</td>
<td>.03</td>
<td>-.06</td>
<td>-.01</td>
<td>.03</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.02</td>
<td>.01</td>
<td>.05</td>
<td>.02</td>
<td>.01</td>
<td>.05</td>
<td>.02</td>
<td>.01</td>
<td>.05</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>.26**</td>
<td>.16*</td>
<td>.08</td>
<td>.26*</td>
<td>.16*</td>
<td>.08</td>
<td>.26*</td>
<td>.16*</td>
<td>.08</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.30**</td>
<td>.05**</td>
<td>.02</td>
<td>.29**</td>
<td>.05**</td>
<td>.02</td>
<td>.29**</td>
<td>.05**</td>
<td>.02</td>
</tr>
<tr>
<td>Biculturalism (Acculturation²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.18</td>
<td>.38</td>
<td>.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F(change in R²)</td>
<td>7.00**</td>
<td>.483**</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \(N = 100\).

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

**Attitude towards cervical cancer screening at pretest.** A hierarchical multiple regression analysis was conducted to predict attitudes towards cervical cancer screening. Using attitudes towards cervical cancer screening as the outcome, age and having a regular physician were controlled for and entered in the first step. Next, items used to predict attitudes towards cervical cancer screening included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

The results indicated that the model accounted for a significant amount of variance in attitudes towards cervical cancer screening, \(F (2, 97) = 7.39, p = .00; R^2 = .13\). The addition of cultural variables in model 2 did not significantly improve prediction \((R^2 \text{ change} = .06, F = \ldots)\.
1.18, \( p = .33 \)). The addition of the curvilinear effect of acculturation in model 3 did not contribute unique variance above and beyond model 2 \( (R^2 \text{ change} = .01, F = .90, p = .35) \).

Having a regular physician was a significant predictor of attitudes towards cervical cancer screening at pretest, \( \beta = .33, t(98) = 3.01 \quad p = .00 \). Having a regular physician was associated with more positive attitudes towards breast cancer screening. Squaring the semipartial correlation, \( (r^2) = (.31)^2 \), indicated that 10% of the variance in attitudes towards breast cancer screening was uniquely accounted by having a regular physician. Refer to Table 26 for predictor variables and their contributions.

**Self-efficacy for breast cancer screening at pretest.** A hierarchical multiple regression analysis was conducted to predict self-efficacy for breast cancer screening. Using self-efficacy for breast cancer screening as the outcome, age, having had children, health insurance, and a regular physician were controlled for and entered in the first step. Measures used to predict self-efficacy for breast cancer screening included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism; these measures were entered into the second step. The curvilinear effect of acculturation was entered into the third step.
The results indicated that the model accounted for a significant amount of variance in self-efficacy for breast cancer screening, $F (10, 89) = 7.20, p = .00; R^2 = .33$. The addition of cultural variables in model 2 significantly improved prediction ($R^2$ change = .11; $F = 3.06, p = .01$). The addition of the curvilinear effect of acculturation in model 3 did not contribute unique variance above and beyond model 2 ($R^2$ change = .00. $F = .25, p = .62$).

For model 2, having health insurance was a significant predictor of self-efficacy for breast cancer screening at pretest, $\beta = .23, t(98) = 2.31, p = .02$. Having health insurance was associated with higher levels of self-efficacy for breast cancer screening. Squaring the semipartial correlation, $(r^2) = (.24)^2$, indicated that 6% of the variance self-efficacy for breast cancer screening was uniquely accounted by having health insurance.

Having a regular physician was also a significant predictor of self-efficacy for breast cancer screening at pretest, $\beta = .28, t(98) = 2.67, p = .01$. Having a regular physician was associated with higher levels of self-efficacy for breast cancer screening. Squaring the semipartial correlation, $(r^2) = (.27)^2$, indicated that 7% of the variance self-efficacy for breast cancer screening was uniquely accounted by having a regular physician.

Acculturation was a significant predictor of self-efficacy for breast cancer screening at pretest, $\beta = .18, t(98) = 1.93, p = .05$. Higher levels of acculturation were associated with higher levels of self-efficacy for breast cancer screening. Squaring the semipartial correlation, $(r^2) = (.20)^2$, indicated that 4% of the variance self-efficacy for breast cancer screening was uniquely accounted by acculturation.

Collectivism was a significant predictor of self-efficacy for breast cancer screening at pretest, $\beta = .28, t(98) = 3.01, p = .00$. Higher levels of collectivism were associated with higher levels of self-efficacy for breast cancer screening. Squaring the semipartial
correlation, \( (r^2) = (.30)^2 \), indicated that 9% of the variance self-efficacy for breast cancer screening was uniquely accounted by collectivism. Refer to Table 27 for predictor variables and their contributions.

Table 27.

<table>
<thead>
<tr>
<th>Predictors of Self-Efficacy for Breast Cancer Screening</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>( \beta )</td>
<td>( B )</td>
<td>( SE )</td>
</tr>
<tr>
<td>Age</td>
<td>.06</td>
<td>.03</td>
<td>.05</td>
</tr>
<tr>
<td>Having Had Children</td>
<td>.12</td>
<td>1.52</td>
<td>1.38</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.27**</td>
<td>3.37**</td>
<td>1.25</td>
</tr>
<tr>
<td>Regular Physician</td>
<td>.30**</td>
<td>3.47**</td>
<td>1.16</td>
</tr>
<tr>
<td>Acculturation</td>
<td>.18*</td>
<td>.12*</td>
<td>.06</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>-.10</td>
<td>-.07</td>
<td>.06</td>
</tr>
<tr>
<td>Intrinsic Religiosity</td>
<td>.02</td>
<td>.02</td>
<td>.13</td>
</tr>
<tr>
<td>Social Extrinsic Religiosity</td>
<td>.03</td>
<td>.07</td>
<td>.24</td>
</tr>
<tr>
<td>Personal Extrinsic Religiosity</td>
<td>.04</td>
<td>.13</td>
<td>.39</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.28**</td>
<td>.23**</td>
<td>.08</td>
</tr>
<tr>
<td>Biculturalism (Acculturation²)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.33</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>( F(\text{change in } R^2) )</td>
<td>11.85**</td>
<td>3.06**</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. \( N = 100 \).

\* \( p < .05 \). \** \( p < .01 \).

**Self-efficacy for cervical cancer screening at pretest.** A hierarchical multiple regression analysis was conducted to predict self-efficacy for cervical cancer screening. Using self-efficacy for cervical cancer screening as the outcome, age, educational attainment, having had children, possession of health insurance, and possession of a regular physician were controlled for and entered in the first step. Next, measures used to predict self-efficacy for cervical cancer screening included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism; these measures were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

The results indicated that the model accounted for a significant amount of variance in self-efficacy for cervical cancer screening, \( F(10, 80) = 5.62, p = .00; R^2 = .41 \). The addition of cultural variables in model 2 significantly improved prediction \( R^2 \) change = .11; \( F = 2.44, \)
The addition of the curvilinear effect of acculturation in model 3 did not contribute unique variance above and beyond model 2 ($R^2$ change = .00. $F = .00, p = .99$.

For model 2, having health insurance was a significant predictor of self-efficacy in breast cancer screening at pretest, $\beta = .36$, $t(89) = 3.74, p = .00$. Having health insurance was associated with higher levels of self-efficacy for cervical cancer screening. Squaring the semipartial correlation, $(r^2) = (.39)^2$, indicated that 15% of the variance in self-efficacy for cervical cancer screening was uniquely accounted by having health insurance.

Collectivism was a significant predictor of self-efficacy for cervical cancer screening at pretest, $\beta = .31$, $t(89) = 3.05, p = .00$. Higher levels of collectivism were associated with higher levels of self-efficacy for cervical cancer screening. Squaring the semipartial correlation, $(r^2) = (.32)^2$, indicated that 10% of the variance self-efficacy for cervical cancer screening was uniquely accounted by collectivism. Refer to Table 28 for predictor variables and their contributions.

Table 28.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Age</td>
<td>.04</td>
<td>.02</td>
<td>.07</td>
</tr>
<tr>
<td>Educational Attainment</td>
<td>.23*</td>
<td>1.40*</td>
<td>.58</td>
</tr>
<tr>
<td>Having Had Children</td>
<td>.19</td>
<td>2.99</td>
<td>1.83</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>.39**</td>
<td>6.12**</td>
<td>1.52</td>
</tr>
<tr>
<td>Collectivism</td>
<td>.31**</td>
<td>.33**</td>
<td>.11</td>
</tr>
<tr>
<td>Biculturalism (Acculturation²)</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
</tr>
</tbody>
</table>

$R^2 = .31$. $F = 9.43**$. $F(change in R^2) = 2.44^*$. $N = 91. *p < .05. **p < .01.$

**Previous receipt of a clinical breast examination (CBE) at pretest.** A logistic regression analysis was conducted to predict whether or not participants had previously
received a CBE in her lifetime (0 = no, 1 = yes). Using previous receipt of a CBE as the outcome, participants’ age, children status, and health insurance status were controlled for and entered in the first step. Measures used to predict previous receipt of a CBE included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, and were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

Model 2 was marginally significant $\chi^2(9) = 54.83, p = .08$, indicating that the model fit improved with the addition of cultural variables. The Nagelkerke R-square value = .57, and the Cox and Snell R-square value = .42. The variables correctly predicted 84% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 4.61, p = .80$, indicating that the model did not differ from the observed data and was a good fit.

According to the Wald criterion, there were two significant predictors of whether or not participants had received a CBE: age and acculturation. Age significantly predicted receipt of a CBE, $\beta = .13, \chi^2(1) = 12.59, p = .00$. Increasing age predicted receipt of a CBE. The change in odds associated with a one-unit change in age was 1.14, indicating that a one-unit change in age resulted in a participant being 1.14 times more likely to have had a CBE.

Acculturation predicted previous receipt of a CBE, $\beta = .10, \chi^2(1) = 5.43, p = .01$. Higher levels of acculturation predicted previous receipt of a CBE test. The change in odds associated with a one-unit change in acculturation was 1.10, indicating that a one-unit change in acculturation resulted in a participant being 1.10 times more likely to have had a CBE.

Refer to Table 29 for predictor variables and their contributions.
A logistic regression analysis was conducted to predict whether or not participants had previously received a Pap test in her lifetime (0 = no, 1 = yes). Using previous receipt of a Pap test as the outcome, participants’ age, having had children, and household income were controlled for and entered in the first step. Measures used to predict previous receipt of a Pap test included centered scores in acculturation, ethnic identity, intrinsic religiosity, social extrinsic religiosity, personal extrinsic religiosity, and collectivism, and were entered into the second step. The curvilinear effect of acculturation was entered into the third step.

Model 1 was significant $\chi^2(3) = 39.02, p = .00$, indicating that the model fit did not improve with the addition of cultural variables. The Nagelkerke R-square value = .48, and the Cox and Snell R-square value = .35. The variables correctly predicted 85% of the cases. Hosmer and Lemeshow Test was non-significant, $\chi^2(8) = 9.19, p = .34$, indicating that the model 1 did not differ from the observed data and was a good fit.

According to the Wald criterion, household income significantly predicted cases for previous receipt of a Pap test, $\beta = .79, \chi^2(1) = 12.58, p = .00$. Higher levels of household income predicted previous receipt of a Pap test. The change in odds associated with a one-
unit change in household income was 2.20, indicating that a one-unit change in household income resulted in a participant being 2.20 times more likely to have had a Pap test. Refer to Table 30 for predictor variables and their contributions.

Hypothesis 6. Different sources of health information will be associated with participants’ knowledge and attitudes in regards to breast and cervical cancer screening. I predicted that reliance on media sources and informal sources would be associated with more knowledge and more positive attitudes in regards to breast and cervical cancer screening. The first step in testing this hypothesis was to compute a principal components factor analysis to determine if items assessing health information sources would emerge into meaningful domains. The emergent factors were then used to assess relationships to attitudes and knowledge of breast and cervical cancer for Vietnamese women. These analyses were conducted using items at pretest.

Factor analysis was employed to determine if the items would emerge into meaningful factors for the current Vietnamese sample. A factor analysis was run with a varimax rotation. Three factors were extracted. The number of extracted factors was
determined through the use of scree plots and eigenvalues that were greater than 1. The Kaiser-Meyer-Olkin measure of sampling adequacy was .77, above the recommended value of .6, and Bartlett’s test of Sphericity was significant, $\chi^2 (78) = 553.21, p = .00$. The communalities were all above .3, confirming that each item shared some common variance with other items. However, two items had similar high factor loadings on two factors. The first item included whether participants received health information by “talking to doctors and/or nurses (or health care providers).” This item had factor loadings of .48 and .49 on Factor 1 and Factor 2, respectively. The second item included whether participants received health information from “using leaflets, brochures, and/or pamphlets.” This item had factor loadings of .47 and .61 on Factor 1 and Factor 2, respectively. These two items were dropped for the next factor analysis.

A second factor analysis was conducted with a varimax rotation, omitting the two items described above. Three factors were extracted. The number of extracted factors was determined through the use of scree plots and eigenvalues that were greater than 1. The Kaiser-Meyer-Olkin measure of sampling adequacy was .72, above the recommended value of .6, and Bartlett’s test of Sphericity was significant, $\chi^2 (55) = 446.14, p = .00$. The communalities were all above .3, confirming that each item shared some common variance with other items. The initial eigenvalues showed that the first factor explained 29% of the variance, the second factor 24% of the variance, and a third factor 14% of the variance. Refer to Table 31 for factor loadings.
Factor 1 (Cronbach’s $\alpha = .82$) had items that were related to media sources offered in the English language, so it was named the English media sources. Factor 2 (Cronbach’s $\alpha = .81$) had items that were related to media sources in the Vietnamese language, so it was named the Vietnamese media sources. Factor 3 (Cronbach’s $\alpha = .74$) had items that were related to informal sources of health information, so it was named informal sources.

Altogether, 11 out of the original 13 items comprised the three sub-scales. Refer to Table 32 for descriptives of factor scores.

Table 31.

**Factors and Item Loadings**

<table>
<thead>
<tr>
<th>English Media Sources $\alpha = .82$</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading English language newspapers and/or magazines</td>
<td>.85</td>
</tr>
<tr>
<td>Listening to English language radio programs</td>
<td>.88</td>
</tr>
<tr>
<td>Watching English language television programs</td>
<td>.85</td>
</tr>
<tr>
<td>Using the Internet</td>
<td>.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vietnamese Media Sources $\alpha = .81$</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Vietnamese language newspapers and/or magazines</td>
<td>.81</td>
</tr>
<tr>
<td>Listening to Vietnamese language radio programs</td>
<td>.86</td>
</tr>
<tr>
<td>Watching Vietnamese language television programs</td>
<td>.83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Informal Sources $\alpha = .74$</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking to friends</td>
<td>.59</td>
</tr>
<tr>
<td>Talking to family members</td>
<td>.70</td>
</tr>
<tr>
<td>Talking to people at pagodas, temples, or churches</td>
<td>.85</td>
</tr>
<tr>
<td>Talking to people at community functions</td>
<td>.81</td>
</tr>
</tbody>
</table>

Note. $N = 102$.

Factor 1 (Cronbach’s $\alpha = .82$) had items that were related to media sources offered in the English language, so it was named the English media sources. Factor 2 (Cronbach’s $\alpha = .81$) had items that were related to media sources in the Vietnamese language, so it was named the Vietnamese media sources. Factor 3 (Cronbach’s $\alpha = .74$) had items that were related to informal sources of health information, so it was named informal sources.

Altogether, 11 out of the original 13 items comprised the three sub-scales. Refer to Table 32 for descriptives of factor scores.

Table 32.

**Descriptives of Total Summed Factor Scores**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Media</td>
<td>13.79</td>
<td>4.30</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Vietnamese Media</td>
<td>9.75</td>
<td>3.22</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Informal Sources</td>
<td>15.17</td>
<td>3.16</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

Note. $N = 102$
Bivariate associations were conducted to examine potential relationships among the three factors (English media sources, Vietnamese media sources, and Informal Sources of health information), knowledge of breast and cervical cancer, and attitudes towards breast and cervical cancer screening. Results indicate that reliance on informal sources of health information was associated with attitudes towards breast cancer screening, \( r(100) = .41, p \leq .01 \). Higher reliance on informal sources for health information was associated with more positive attitudes towards breast cancer screening. The other two sources of health information, English media sources, and Vietnamese media sources were not significantly related to attitudes towards breast cancer screening.

Refer to Table 33 for all bivariate associations in the correlation matrix.

Table 33.

<table>
<thead>
<tr>
<th>Bivariate Associations among Factor Scores, Cancer Knowledge, and Attitudes towards Cancer Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>1. English Media Sources (Factor 1)</td>
</tr>
<tr>
<td>2. Vietnamese Media Sources (Factor 2)</td>
</tr>
<tr>
<td>3. Informal Sources (Factor 3)</td>
</tr>
<tr>
<td>4. Knowledge of Breast Cancer</td>
</tr>
<tr>
<td>5. Knowledge of Cervical Cancer</td>
</tr>
<tr>
<td>6. Attitudes towards Breast Cancer Screening</td>
</tr>
<tr>
<td>7. Attitudes towards Cervical Cancer Screening</td>
</tr>
</tbody>
</table>

*Note.* *significant at \( p \leq .05 \); **significant at \( p < .01 \); \( N = 102 \)

Hypothesis 7. Informal networks in the church and temple communities will play a positive role in disseminating health information among the Vietnamese population.

Both quantitative and qualitative methods were used to address hypothesis 7. Findings from quantitative analysis will be presented first followed by findings from qualitative analysis.

**Quantitative findings.** Quantitative data was obtained by asking participants to respond to items on the follow-up questionnaire. Participants were asked to respond to the question, “Did you discuss any of the information that you learned in this program with other
individuals?” Participants answered by checking yes or no. Those who checked yes were then provided with a list of individuals outside of the program (e.g., your friends, your mother, your daughter(s), your sister(s), your neighbor(s), your father, your brother(s). Participants put a check next to the individuals with whom they had shared the health information. These categories were not mutually exclusive and participants could identify more than one category.

The finding indicated that 80 (86%) out of 93 women had shared information learned in the program with other individuals. The women were mostly likely to share health information with friends (73%), their mother (42%), their sister (41%), their husband (38%), and their daughters (27%).

Refer to Table 34.

<table>
<thead>
<tr>
<th>With Whom Did the Participant Share Health Information?</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friend</td>
<td>67</td>
<td>73</td>
</tr>
<tr>
<td>Mother</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>Sister</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>Husband</td>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>Daughter</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>Aunt</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Neighbor</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Brother</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Father</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Uncle</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*Note*. N = 93

**Qualitative findings.** Qualitative data were obtained by focus group discussions with intervention group participants. The discussions examined the women’s experience, perceptions, and feelings about the intervention and cancer screening. The development of
the focus group probes and the data analytic plan were guided by a Grounded Theory (Corbin, 2008). Grounded Theory guides inductive analysis that follows a bottom-up approach. In this type of methodology, the data guide and inform the theory.

There were four focus groups. Three of the focus groups were conducted in Vietnamese and one was in English. All focus groups were transcribed. Focus groups transcriptions in the Vietnamese language were translated into English then back-translated to ensure accuracy. Two individuals read through the transcriptions and independently developed thematic codes. After discussion, the emergent themes were agreed upon to ensure interrater reliability.

Participants were asked to respond to a focus group probe that asked them “Have you talked about what you have learned in these sessions with other women in the community? If yes, who did you talk with and what information did you share?” Overall, there were four emergent themes. The focus group discussions revealed that the women were likely to share health information with their (1) friends; (2) co-workers; (3) female family members; and (4) male family members.

Sharing health information with friends. One emergent theme was the sharing of health information obtained from the intervention session with friends. In discussions with friends, the participants shared that they informed their friends of symptoms of breast and cervical cancer. The women also encouraged their friends to get screened. One woman said:

*What I have learned and understood, I have told to my friends. What I have understood [from the sessions], I have shared with them because they didn’t get the chance to learn so they don’t have the knowledge [about breast and cervical cancer]. I told them that they should have exams if they experience the symptoms in their body.*

Another woman shared:

*I talked to my friends about the symptoms (of breast cancer and cervical cancer), the need to see a doctor for exams, the cause and consequences of the diseases.*
In addition, some of the participants’ responses revealed that the information learned in the intervention program was transmitted to women in Vietnam. One participant said:

*I shared what I have learned with some of my friends from far away. I talked over the phone about mammograms and Pap tests to my friends in Vietnam, so they know over there because they don’t have the opportunity to learn like here (the US).*

Another participant shared:

*I also passed information to my mom, my friends, and my aunts, cousins from Vietnam cause they are going back to Vietnam. So I encourage them to go get a test every year.*

*Sharing health information with co-workers.* A second theme that emerged from the focus group discussion indicated that informal conversations with co-workers occurred after the intervention. Some of the participants shared information on cancer topics with co-workers. One woman said:

*The last session, I told my coworkers ‘cause a lot of them are Asian. So I said, ‘you guys have to check it out.’ ‘And it surprised me [how little they knew], so I gave them the [session] information that I got from this class.*

Another woman shared:

*I talk to my friends at work. One of my friends complains of pain in the breast and, sometimes, pain in the abdomen. I told her that she should get a [breast] exam.*

One woman revealed that she shared the information she learned with male co-workers in a casual conversation:

*Um, I have actually talked to some coworkers at work but they’re male…I talked about it in the context of what are you…you know, casual conversation about oh, what are you doing this weekend? And I talked to them about the program. I didn’t go into detail about Asian statistics or anything like that…but an awareness program and how important it was to make people aware [or breast and cervical cancer].*

*Sharing health information with female family members.* The next emergent theme revealed that the women shared the information with female family members such as mothers, sisters, and daughters. One woman said, “I discussed with my mother and sisters
about regular exams…early detection for better treatment.” Another quote from a participant shows how health information was disseminated via communication in the family:

I shared the information with my sisters, my mom, and all the female friends that I have around me. And I realize that most of them, they don’t really go check up annually. So I highly recommend to them [what] they can [do to] prevent from getting cancer.

One important mechanism of health dissemination occurred between mothers and daughters. Some participants revealed that they shared what they learned in the sessions with their daughters. One woman said:

I discussed with my daughter the information about breast exams and Pap tests because she hasn’t gotten them yet. I told her to have the exams every 2 or 3 years because it’s important.

Sharing health information with male family members. The last emergent theme was that women shared health information with male family members. One woman revealed that she shared information with her brothers, “I discussed with my mother, my brothers, and my sisters about breast cancer and cervical cancer.”

Another quote by one of the participants illuminates a potential channel in transmitting health information was through marriage partners. In addition, it suggests that male family figures can serve as strong motivators in getting wives and daughters to adhere to screening guidelines:

It’s funny because I mentioned [the session] to my husband, and he said that we should do this to the male community. To have, you know, family and wife, and daughter [in the session] because that helps them to motivate the woman and the wife and the daughter to actually go and have the check-up. And you know, have the routine check-up because sometimes the man has to understand the problem too, so I think that was a good suggestion. So I don’t know how we want to reach out to that [male] group. Maybe from a newsletter, you know, it’s not a detailed session, but maybe a newsletter or something that could reach out to the male population.

Husbands may serve as a source of comfort and relief from anxiety stemming from cancer concern. One woman revealed, “I talked to my husband about cancer. I am scared of breast
cancer. Because of the surgery, I would lose my breast, *that's scary!* …or die.” This quote illustrates how husbands may serve as an outlet for women to discuss their worries while assuaging their anxiety.

**Hypothesis 8. Culturally relevant values and roles for the collectivistic Vietnamese woman (e.g., being a mother and a caretaker) will be associated with cancer screening-related behaviors such that an emphasis on caretaking roles will increase motivations for the Vietnamese women to get screening.** This hypothesis was also addressed using qualitative methods. During focus groups, participants were asked to discuss likely motivations or reasons to engage in cancer screening. Overall, there were five emergent themes which revealed five sources of motivation for participants to get cancer screening: (1) the desire to be healthy; (2) early detection of cancer; (3) fear of getting sick or dying; (4) knowing others who are sick; and (5) desire to stay healthy to care for others.

*The desire to be healthy.* One emergent theme was that the motivation for cancer screening was to maintain good health. One woman revealed, “The reason? Women often get breast cancer and cervical cancer so we need clinical exams and Pap test to maintain good health.” Another woman said:

> Breast exams and cervical exams are important to maintain your health. And if disease is detected early, it can be treated easily and quickly. If it is detected too late, it is difficult to treat…and there are consequences…[Treatment] is expensive and [other people] worry and suffer more.

*Early detection of cancer.* Another common theme was that the women were motivated to screen for the early detection of cancer. One woman said, “If you get a Pap test or breast exam, you can detect the disease early and get effective treatment. That is the motivation.” Another woman revealed,

> Um, the test, like the Pap smear test is like a preventive test. So you know that it’s
better to check than to not to do anything at all because if you do find something then…um, you ahead of the game instead of waiting 'til something occurs then it’s too late. So it’s preventive. Um, you know, what I look for anything that is…you wanna find out sooner than later. So that’s the main reason why it motivates me.

Fear of getting sick or dying. Another emergent theme in the discussion of motivation for screening involved the fear of dying and getting sick. The following quotes reveal that how some women’s perceptions of cancer are imbued with fatalistic beliefs of cancer. One woman revealed:

[I screen] because I am afraid of cancer. That’s why I would go get an exam. So I can have prevention for cancer. If my husband can’t give me a ride, I will ask other people for help. I need to find a way to go for exam. Woman should have an exam once a year. It’s very good. Breast and cervical cancer are very common in our women. Many people think that if we are careful [with our diet] then we will be alright, but it’s not so simple. If it is our fate to get cancer we can’t avoid it, so we should go to see a doctor to help. That’s my opinion.

Another woman said:

…cancer is mostly terminal…even though some are curable but when you hear cancer, um, it’s a big disease that’s terminal, so that’s one thing that you don’t want to mess with. And you wanna do everything that you can, and cancer grows so fast that if you’re on an annual exam and if you miss one year, a lot can happen in a few months. So you don’t wanna mess with that.

Knowing others who are sick. Another emergent theme was that the motivation for cancer screening was attributed to knowing other women who had cancer. One women said:

I get my annual exam [breast and cervical cancer screening] because the people around me were getting cervical and breast cancer. Getting an annual exam is useful for your health.

Another woman revealed that seeing cancer patients can serve as a motivation for getting screened:

I think that it’s the patient. If you see someone that is in the treatment for the cancer and you look at that person. You look at yourself, and you see what is necessary to get [cancer] detected.

Desire to stay healthy to care for others. The last prevalent theme was that the
motivation for cancer screening was attributed to wanting to be healthy in order to care for others. Specifically, women discussed being motivated to get screened in order to be healthy to care for their families. One woman said that she was motivated to get cancer screening in order “to get healthy… protection for yourself, the family, your children…friends. You need to be healthy first, so you can care for yourself your family and other people.” The women also voiced concerns that if they fell ill, no one would be able to care for their husbands and children. One woman said:

_If I die who is going to take care of me and my children? We must have [breast and cervical] exams because it useful for you and your husband, children, your future._

**Discussion**

The United States is entering into a new era, one where the changing cultural landscape will lead to dynamic shifts in power, normative trends, and even visibility of populations that once were muted. As a result, researchers, scientists, counselors, physicians, and practitioners need to acknowledge and consider the shifts in upcoming decades and to espouse new paradigms in health outreach and practice to accommodate these new populations. Never before has multicultural competence been so vital for scientists and physicians as they must develop knowledge of the populations with whom they will work.

Breast and cervical cancer are major causes of female morbidity and mortality in the U.S. Screening guidelines have contributed to substantial reductions in morbidity, mortality, and health care costs associated with breast and cervical cancer among U.S. women (IARC, 1986; Otto et al., 2003; Sasieni et al. 1996, Saslow et al., 2004; Tabar et al., 2003, US Preventive Services Task Force, 2002). However, Vietnamese women continue to have high levels of breast and cervical cancer due to inconsistent adherence to screening guidelines
The present intervention study was conducted to address cancer screening disparities using culturally-tailored strategies in working with a Vietnamese sample.

This study was called *Suc Khoe La Quan Trong Hon Sac Dep!* (Health is Better than Beauty!). The goal of this study was to implement and evaluate a breast and cervical cancer screening intervention for Vietnamese women. The study enrolled Vietnamese women from the local Richmond metropolitan area. Women were randomly assigned to an intervention or control condition. Women in the intervention condition were exposed to information on female cancers and were taught how and where to access Pap tests and clinical breast exams. Women in the control condition received print materials on general health topics that were not related to breast or cervical cancer (e.g., diet and physical exercise). Six month follow-up data indicated that the intervention was successful in increasing breast and cervical cancer knowledge, positive attitudes towards screening, self-efficacy for screening, and actual screening behaviors.

The remainder of the discussion section is organized as follows. I will first present the present study’s unique contributions to the literature. Then, I will address how the study’s hypotheses were addressed and explain the findings in the context of current relevant literature. Next, I present the study’s implications and ideas for future intervention research. Afterwards, I will address the study’s limitations and then provide conclusions.

**The Study’s Contributions**

The current study provides contributions in several ways. One, research conducted in the United States on Vietnamese women and cancer screening has been limited. Research that has been done has primarily focused on populations located on the West Coast (e.g., De
Alba, Ngo-Metzger, & Sweningson, 2005; Mock et al., 2009; Nguyen et al., 2006; Tung, Nguyen, & Tran, 2008). There is a paucity of research on Vietnamese populations in other geographic areas. This study contributes to the literature by examining the health behaviors and beliefs of Vietnamese women on the East Coast. The experience of Vietnamese on the West Coast (e.g., California) may be atypical for Vietnamese immigrants as many do not live in communities in which a high percentage of their neighbors are also Vietnamese (D’Andrade, 2008). The smaller Vietnamese population in a southern mid-sized city such as Richmond may lead to smaller Vietnamese enclaves. It is important to understand the experiences of ethnic minority individuals from divergent communities and geographical locations.

Two, typical cancer screening interventions do not focus on the influence of cultural variables on health behaviors. The present study contributes to the literature by examining proximal-level cultural orientations and their potential role in motivating women to engage in cancer screening. For example, the collectivistic orientation of Vietnamese culture provides a context in which people are seen within the family structure rather than independent and autonomous individuals (Chung & Bemak, 1998; Triandis, 1985). This study provides initial evidence that Vietnamese women’s caretaking roles and the dependence of others can serve as powerful motivators to engage in cancer screening behaviors.

Three, this study contributes to the literature on religiosity and health behaviors by examining the relationships between cancer-related variables and different facets of religiosity. To my knowledge, no previous studies have examined the different components of religiosity and their influence on cancer screening. I predicted that extrinsic religiosity would be associated with health-related outcomes while intrinsic religiosity would not be
associated as these two components of religiosity underlie different motivations (Allport and Ross, 1967). The study’s findings provide support that different components of religiosity may have differential impact on cancer-screening outcomes among this sample.

Four, the study makes a contribution to better understand how health information is transmitted within an ethnic minority population. The findings indicated how and to whom information on the topics of breast and cervical cancer for the Vietnamese (e.g., English media sources, Vietnamese media sources, and informal sources) was transmitted.

The Study’s Hypotheses

**Hypothesis 1. Women in the intervention group will show increases in breast and cervical cancer-screening variables (e.g., knowledge, attitudes, intention to screen, self-efficacy, and actual screening behavior) from pretest to posttest and from posttest to follow-up. Women in the intervention group will show higher increases in outcomes than women in the control group.** The findings provide support for the beneficial effects of the intervention immediately after the intervention and at six-month follow-up. Participants in the intervention group showed significant immediate gains from pretest to posttest on most of the study’s outcomes. These gains were in breast cancer knowledge, cervical cancer knowledge, attitudes towards breast cancer screening, attitudes towards cervical screening, self-efficacy for breast cancer screening, and self-efficacy for cervical cancer screening.

The findings also provide support for the intervention’s effects on the study’s outcomes at follow-up. Participants in the intervention group showed higher gains than control participants in breast cancer knowledge, cervical cancer knowledge, and self-efficacy for cervical cancer screening. Women in the intervention group were also more likely to get a CBE. Assignment into the intervention group also marginally predicted higher scores in self-
efficacy for breast cancer screening and getting a Pap test.

This study used a Social Cognitive Theoretical (SCT) framework (Bandura, 1986) and the findings supported the usefulness of this framework for the promotion of health behaviors for this population. These findings are consistent with other studies that have found a SCT framework to be useful in interventions across a variety of health domains (e.g., physical activity, weight loss, alcohol use, and risky sexual behavior) (Ince, 2008; Mausbach, Semple, Strathdee, Zians, & Patterson, 2007; Opdenacker, De Bourdeaudhuij, Vanden Auweele, & Boen, 2009; Rinderknecht & Smith, 2004; Turner-McGrievy, Campbell, Tate, Truesdale, Bowling, & Crosby, 2009). This intervention promoted cancer screening outcomes by effectively targeting different components found in SCT. These included cancer screening knowledge, perceived self-efficacy, outcomes expectations, and perceived facilitators/impediments.

The intervention delivered health information to raise awareness and knowledge of breast and cervical cancer through an educational session. The educational session exposed the women to the benefits of engaging in breast and cervical cancer screening with the intention of shaping their expectations to become more favorable toward screening. Participants in this study were also provided with contacts and information for local resources and physicians that serve underserved, un-insured, and/or low-income populations in order to overcome perceived impediments to obtaining Pap tests and clinical breast examination and to increase self-efficacy for cancer screening. After participation in the intervention session, I expected that the women would set goals to obtain Pap testing and clinical breast examination. These goals were assessed by their intentions to obtain cancer-screening services.
In addition, the study illustrated the effectiveness of using community-based participatory research (CBPR) as a complementary approach in designing and delivering the intervention. CBPR has been successfully used in raising knowledge and cancer screening behaviors among diverse ethnic minority populations (Beck, Young, Ahmed, & Wolff, 2007; Halbert, Weather, & Delmoor, 2006; Powell et al., 2005; Smith, Christopher, & Alma Knows His Gun McCormick, 2004). The current study provides some support for the usefulness of CBPR approaches in promoting positive cancer screening outcomes for a Vietnamese population. Identifying and training individuals who are trusted within the community is essential when developing interventions appropriate for the target population (Beck, Young, Ahmed, & Wolff, 2007; Mock, Nguyen, Nguyen, Bui-Tong, & McPhee, 2006). The collaborative partnerships that were fostered between the principle investigator, community liaisons, and community members were vital in the legitimacy and acceptance of the intervention and crucial in the development and implementation of the program. In addition, the study provides external validity for CBPR approaches for Vietnamese populations.

The utilization of CBPR methods increased the intervention’s cultural appropriateness of the Vietnamese community. During program development, I consulted with community leaders and members to ensure the cultural appropriateness of the intervention materials (e.g., PowerPoint presentations, flip charts, questionnaires, and booklets/pamphlets). I also conducted focus groups after piloting the intervention in order to receive feedback about the intervention from participants. This led to modification of some of the wording in measures and using PowerPoint presentation when presenting health information rather than flipcharts. Also, instead of ordering catered Vietnamese food for the participants, the nuns from the Vietnamese Catholic church preferred to cook their own food. The intervention was modified
based on these comments.

In overview, the intervention was effective in increasing breast and cervical cancer knowledge, positive attitudes towards cancer screening, self-efficacy for cancer screening, and actual screening behavior. These gains were both short-term and long-term.

**Hypothesis 2.** Demographic variables (such as marital status, children status, educational attainment, employment status, household income, health insurance status, and regular physician status) will be positively associated with breast and cervical cancer screening-related variables. The results of the study indicated that key demographic variables were associated with the study’s outcome variables. Having children significantly predicted a number of the study’s outcomes. Participants with children were more likely to have positive attitudes towards breast cancer screening, have higher levels of self-efficacy for breast and cervical cancer screening, and have received a CBE and Pap test in their lifetime. The findings are in line with research that focuses on breast cancer survivors. Breast cancer survivors are more likely to fear progression of cancer if they are younger and have children in comparison to those who do not have children (Baucom, Porter, Kirby, Gremore, & Keefe, 2005-2006; Mehnert, Berg, Henrich, & Herschbach, 2009.) Breast cancer survivors that have children are likely to show concerns for the future welfare of their children and worry over the potential loss of opportunities to engage in the children’s upbringing. What distinguishes this study from previous literature is that participants in the current study were not previously diagnosed with breast or cervical cancer, yet the link between having children and cancer-screening outcomes is evident. I will discuss later how these findings illustrate how making salient the Vietnamese woman’s caretaking role can serve as a potential motivator for cancer screening behavior.
Higher levels of educational attainment were associated with higher levels of breast and cervical cancer knowledge and higher levels of self-efficacy for cervical cancer screening. The results of the study are aligned with previous research that shows that higher levels of education are associated with higher levels of breast and cervical cancer screening outcomes (Benyamini, Blumstein, Boyko, & Lerner-Geva, 2008; Couture, Nguyen, Alvarado, Velasquez, & Zunzunegi, 2008). The reason why education is linked to cancer screening may be related to information seeking as research shows that more educated individuals are likely to obtain multiple sources for information related to cancer, thus increasing knowledge (Walsh, et al., 2010). For example, individuals with a college degree are more likely to rely on the internet, books, and scientific research reports for cancer-related information in comparison to individuals with less than a high school degree.

Having health insurance was associated with higher levels of self-efficacy for breast and cervical cancer screening and with having a CBE. These results are consistent with previous research that shows a strong relationship between health insurance status and cancer screening behavior (Coughlin, Leadbetter, Richards, & Sabatino, 2008; Hiatt et al., 2001; Lee-Lin, Pett, Menon, et al., 2007; Meissner, Yabroff, Dodd, et al., 2009). This is not unexpected as individuals with insurance have methods to pay for cancer screening. In addition, insured individuals have more opportunities to join provider-based health promotion networks to use health services (Abraido-Lanza, Chao, & Gammon, 2004).

In addition, the study’s findings showed that higher levels of household income were significantly associated with receipt of a Pap test. These results are not surprising as income and health insurance are strongly correlated (DeNavas-Walt, Proctor, & Smith, 2008). Income and health insurance status constitute enabling factors; they enable individuals to
access cancer screening services due to higher levels of financial resource. Another explanation for the link between income, health insurance, and cancer screening may be related to perceived racial bias. Poor and uninsured ethnic minority individuals are more likely to perceive racial and ethnic bias in the health care setting (Stepanikova, & Cook, 2008). This increased distrust of health professionals may obstruct ethnic minority individuals from seeking health services. Providing health insurance for the uninsured may help reduce this perceived bias among some minority groups and increase adherence to screening guidelines.

Having a regular physician also predicted a number of key outcomes. Participants who had a regular physician were more likely to have positive attitudes towards both breast and cervical cancer screening, and higher levels of self-efficacy for breast and cervical cancer screening. This is in line with previous research which shows that having a regular physician is associated with increased utilization and earlier timing of breast and cervical cancer screening (Kagawa-Singer, & Pourat, 2000; Lew et al., 2003, Taylor, Yasui, Nguyen, Woodall, & Do, 2009). It is likely that women who have a regular physician receive physician recommendations and information about screening and this likely leads to positive attitudes towards screening. Women who have questions about how and where to access screening tests are also able to ask their physician who can answer those questions or direct them to appropriate resources and providers, leading to increased self-efficacy.

While there were some findings consistent with other research using other Asian populations, some of the demographic findings differed for this Vietnamese sample. The current Vietnamese sample differed from other Asian populations on demographic variable that are linked to less favorable health outcomes, providing support for the argument that
Asian subgroups do not comprise a monolithic Asian group. In the current study, 30% of the participants reported that they did not have health insurance, the median household income was from $25,000 to 50,000, and 28% of the current sample had received less than a high school (or GED equivalent) education. In comparison to national rates and to rates found in other Asian subgroups (DeNavas-Walt, Proctor, & Smith, 2008), these statistics reflect higher health risks for this Vietnamese sample.

The results of the current study also provide evidence of the low rate of cancer screening as 62% of the current sample had a previous Pap test and 58% had a previous clinical breast examination. These numbers replicate the screening results found in a pilot study (Nguyen, Belgrave, & Sholley, 2010). All in all, findings from demographic variables illustrate that the Asian population is not a monolithic group as there are marked difference among sub-groups in key demographic characteristics related to health behaviors.

In overview, higher levels of knowledge of breast and cervical cancer were associated with higher levels of educational attainment. Positive attitude towards breast cancer was associated with having children and having a regular physician. Positive attitude towards cervical cancer was related to having a regular physician. Higher levels of self-efficacy for breast cancer screening were associated with having children, health insurance, and a regular physician. Higher levels of self-efficacy for cervical cancer screening were associated with having children, higher educational attainment, having health insurance and a regular physician. Breast cancer screening was associated with having children and health insurance. Lastly, cervical cancer screening was associated with having children and higher levels of household income.
Hypothesis 3. Acculturation will be linearly associated with favorable cancer-screening variables, but this relationship will be best understood using an integrated (bicultural) framework of acculturation. Increasing levels of acculturation were linked to higher self-efficacy for breast cancer screening and receipt of a CBE. These results are in line with studies that show that Asian women who are more acculturated are more likely to undergo cancer-screening in comparison to women who are less acculturated (Tang et al., 1999; Yi & Reyes-Gibby, 2002; Tang et al., 2000).

Because much of the research on acculturation and health outcomes relies on a unidimensional measure of acculturation (Abe-Kim, Okazaki, & Goto, 2001), the role of integrated or bicultural orientations on health behaviors is largely neglected. The present study incorporated bicultural orientations in analyses that examined the relationships between cultural variables and cancer screening variables. However, the bicultural measurement of acculturation failed to capture significant relationships with any of the cancer screening variables. This is attributed to a few possible reasons. First, the study’s small sample size may have affected the study’s power, and the higher order effect of a bicultural orientation was not detected. Second, it is possible that bicultural orientation is irrelevant to cancer screening behavior. Perhaps the protective role of a bicultural orientation may be a more relevant when examining maladaptive or risky behaviors such as drug use. For example, lowly acculturated Vietnamese adolescents who espouse a segregated/separated orientation may experience stress when functioning in the dominant culture and may turn to self-medication and drugs as a coping mechanism. Completely assimilated individuals may adopt normative drug use found in American peer and adolescent populations. On the other hand, Vietnamese adolescents who espouse a bicultural orientation may be protected from drug and
alcohol use. Thus the equilibrium achieved by accepting both the host and majority culture and one’s own native culture can produce healthy outcomes for the individual. However, this was not the case as a bicultural orientation was not associated with cancer screening variables in the current study.

Higher levels of acculturation predicted less positive attitudes towards breast cancer screening. This finding was unexpected despite previous research that shows that acculturation is sometimes associated with higher levels of risky behavior such as cigarette smoking (An, Cochran, Mays, McCarthy, 2008), substance abuse (Kaplan et al., 2003; Reid, Higgs, Beyer, & Crofts, 2002), risky sexual behavior (Yi, 1998), and poor dieting and sedentary lifestyle (Kaplan et al., 2003) for the Vietnamese. It comes as a surprise because in these cases, acculturation is linked to higher levels of risky behaviors. However, the finding in the present study suggests that acculturation may be linked to lower levels of promotive health attitudes and behaviors.

It is plausible that acculturation is moderated by age in that younger Vietnamese women are more likely to be acculturated and less likely to consider breast cancer screening. In addition, highly acculturated Vietnamese women may be less likely to possess traditional cultural values that emphasize female roles in caretaking for the family. As a result, the protective role of collectivistic motivations for cancer screening behaviors may not be present for highly acculturated women. I will discuss this more in-depth later. A study by Andreeva and colleagues (2010) had similar findings in that acculturation was linked to fewer sun-safe behaviors (e.g., applying sunscreen, seeking shade, wearing protective clothing) for Latina women. These combined findings challenge linear acculturation models
for ethnic minority health as increasing acculturation may not be the optimal strategy in securing better health outcomes or changes in health behavior for women.

In overview, increasing levels of acculturation were linked to higher self-efficacy for breast cancer screening and receipt of a CBE. The bicultural measurement of acculturation was not related with any of the cancer screening variables. In addition, higher levels of acculturation predicted less positive attitudes towards breast cancer screening.

Hypothesis 4. Ethnic identity will be positively associated with cancer-related variables. Ethnic identity was not associated with any of the study’s outcome variables. This is surprising as previous findings highlight the protective role of ethnic identity for risky health behaviors such as tobacco use, alcohol use, and marijuana use for ethnic minority individuals (Belgrave et al., 1997; Brook, Duan, Brook, & Ning, 2007; Love, Yin, Codina, & Zapata, 2006). Similar to the role of bicultural orientation, it is plausible that ethnic identity may work more as a buffering factor and protect when there are maladaptive or risky behaviors such as drug use within the Vietnamese population. In other words, ethnic identity may not play a direct or promotive role in cancer screening for Vietnamese women.

However, a study by Bowen and colleagues (2003) found within a sample of Jewish women, that higher levels of ethnic identity were associated with a heightened awareness of breast cancer risk factors. It is possible that the relationship between ethnic identity and cancer screening may also be moderated by knowledge of cancer risk for Vietnamese women. Vietnamese are five times as likely to have cervical cancer in comparison to White women (ACS, 2009a). As a result, membership in this ethnic minority group is linked to increased cancer risk. Among Vietnamese women who are familiar with this knowledge, increased ethnic identity may make this cancer risk more salient and this may serve to
increase adherence to cancer screening guidelines. More research is needed to elucidate the relationship between ethnic identity, cancer knowledge, and cancer screening.

It is also plausible that ethnic identity may be an irrelevant construct for cancer screening variables in the Vietnamese sample. As discussed later, other cultural variables (e.g., collectivism and religiosity) may be more appropriate cultural variables as they may be more salient to the Vietnamese population in the context of health behaviors.

**Hypothesis 5.** *Religiosity, specifically extrinsic social religiosity and extrinsic personal religiosity, will be positively associated with cancer-related variables.* Personal extrinsic religiosity was positively associated with positive attitudes towards breast cancer screening. This is consistent with a study by Mitchell and colleagues (2002) that found that the majority of African American female participants believed that God worked through doctors to cure breast cancer. A person who has high levels of personal extrinsic religiosity is likely to use religion as a means for comfort, security, and protection. Vietnamese women with higher levels of personal extrinsic religiosity are more likely to take comfort in religion when dealing with concerns surrounding cancer. They may be likely to have positive attitudes towards cancer screening, believing that God plays a role in early cancer detection for better health.

Social extrinsic religiosity was associated with positive attitudes towards breast and cervical cancer screening, higher levels of self-efficacy for breast and cervical cancer screening, and receipt of a CBE. An individual who is high in social extrinsic religiosity uses his or her religion for social purposes. Previous research has uncovered the roles that faith-based organizations play in increasing breast cancer awareness among ethnic minority groups (Erwin, Spatz, & Stotts, 1999; Weinrich et al., 1998). It is possible that women who are high
in social extrinsic religiosity are more active in their community, thus acquiring connections to and sources of health information found within the faith-based community. In addition, Vietnamese women receive much of their health information from informal sources such as friends and family (as discussed later), and those who are high in social extrinsic religiosity will have increased and stronger communities ties found in the church or temple. Acquiring health information from friends and family may lead Vietnamese women to develop positive attitudes towards cancer screening as the information came from trusted sources.

Intrinsic religiosity was associated with lower levels of self-efficacy for breast cancer screening. Vietnamese women who are high in intrinsic religiosity may harbor fatalistic views of cancer and, in turn, this undermines perceived self-efficacy for cancer screening. However, further research is needed to clarify the different components of religiosity that are associated with fatalistic views of cancer.

In overview, personal extrinsic religiosity was associated with positive attitudes towards breast cancer screening. Social extrinsic religiosity was associated with positive attitudes towards breast and cervical cancer screening, higher levels of self-efficacy for breast and cervical cancer screening, and receipt of a CBE. Intrinsic religiosity was associated with lower levels of self-efficacy for breast cancer screening.

**Hypothesis 6. Different sources of health information will be associated with participants’ knowledge and attitudes in regards to breast and cervical cancer screening.** I predicted that reliance on media sources and informal sources would be associated with more knowledge and more positive attitudes in regards to breast and cervical cancer screening. A factor analysis was conducted to determine if items assessing health information sources would emerge into meaningful domains. Three factors were
extracted: English media sources, Vietnamese media sources, and informal sources.

The emergent factors are in line with findings of previous research. Research shows that media that is offered in the native language of an ethnic minority population can be particularly effective in conveying health messages (Hill et al., 2009; Jenkins et al., 1997; Jenkins et al., 1999; Mock et al., 2007). In addition, previous research shows that minority populations rely on informal sources (e.g., friends or family members) when accessing health-related information (Cheong, 2007).

Two items that were dropped because of poor factor loadings were items related to using leaflets and brochures AND talking to doctors/nurses. These findings are not surprising as previous research shows that Vietnamese women may be less likely to be reached via conventional sources of health information such as those found in the patient-provider relationship (Meredith & Siu, 1995; Woodall et al., 2006). The transmission of health information from physician to patient is constrained by cultural barriers that prevent the discussion of topics that are considered taboo or private with other people, especially other strangers such as a doctor or physician.

In addition, the results indicate that higher reliance on informal sources for health information was associated with more positive attitudes towards breast cancer screening. Information seeking that occurs within informal communication channels may take place in safe, comfortable, and familiar settings for the Vietnamese woman. For example, a mother may provide breast cancer advice to her daughter or to her sister. These discussions are likely to take place in the home or another familiar environment that induces feelings of comfort. It is likely that information that is transmitted within these culturally familiar and informal environments will be accepted with more positive attitudes, especially when it comes from a
Hypothesis 7. Informal networks in the church and temple communities will play a positive role in disseminating health information among the Vietnamese population. I examined whether smaller enclaves and communities such as those on the East coast could be used to effectively disseminate health information and resources. The faith-based sites in the current study distributed health information in the intervention sessions and health literature (e.g., booklets, pamphlets, and handouts). The present study provides initial support for the flexible role of faith-based sites in offering multiple resources to the Vietnamese living in the East Coast.

In addition, the vast majority of women indicated that they shared the information learned in the program with other individuals. The women were mostly likely to share health information with their friends. This was followed by their mother, their sister(s), their husband, and their daughter(s).

Focus group interviews also asked questions that examined participants’ reactions, thoughts, feelings, and experiences in regards to the intervention. The women were also asked whether they shared the information that they learned in the program with other individuals. Thematic coding revealed that the women shared information learned from the program with friends and co-workers. Focus groups discussion also revealed that the women shared the information with female family members such as with their mother, sister(s), and daughters. These findings are in line with previous research that shows that information about cancer is transmitted between friends and family members (Cline, 2003; Green, Richards, Murton, Statham, & Hallowell, 1997; Husaini et al., 2001; Gravell, Zapka, and Mamon, 1985; Sinicrope, et al., 2008).
In addition, the findings showed triangulation as findings from both the quantitative and qualitative methods were similar. The combined qualitative and quantitative findings provide compelling evidence that health information is transmitted via informal networks.

It is worthy to note that some of the participants shared cancer information with friends and family members who reside in Vietnam. The implications from this finding are that interventions can be designed to reach an audience that is not in the immediate physical context. Future interventions can help Vietnamese women develop and practice skills in initiating conversations about breast and cervical and topics with members who may believe the topics to be taboo.

Some of the women revealed that they shared information learned in the sessions with their husbands. This finding reveals that health communication between husband and wife or romantic partners can serve as a potential channel for the transmission of breast and cervical cancer information. De Bocanegra, Trinh-Shevrin, Herrera, and Ganv (2009) conducted focus groups with both Mexican males and females. Both male and female participants stated a desire to attend cancer health education workshops open to both men and women, even if workshops focused on a specific gender (i.e. women’s cancer health issues, such as cervical cancer). Men indicated that they could provide better support to their partners, if they knew more about the female cancers. These findings highlight the potential role that males can serve and will be discussed in more detail later.

**Hypothesis 8. Culturally relevant values and roles for the collectivistic Vietnamese woman (e.g., being a mother and a caretaker) will be associated with cancer screening variables such that an emphasis on caretaking roles will increase motivations for the Vietnamese women to get screening.** Collectivism predicted positive attitudes...
towards breast cancer screening and higher levels of self-efficacy in breast and cervical cancer screening. There are two potential mechanisms that explain the relationship between collectivism and cancer screening variables. First, women from collectivistic cultures are expected to be primarily responsible for taking care of the home and the children (Davis, 2000). Vietnamese women may feel responsible for taking care of their own health in order to care for their husband and children. As a result, Vietnamese women may have positive attitudes towards cancer screening as it may help them maintain their health in order to help others who depend on them. Second, the family may provide a positive source of coping, and this results in better health decisions. Vietnamese women with collectivistic values may have higher efficacy for screening because the family unit plays a central role in coping, healing, health-related decision-making for members of collectivistic societies (Braun, Mokuau, Hunt, Kaanoi, & Gotay, 2002; Davis, 2000). As a result, women may have a sense of familial support for cancer screening.

Comments from women during focus groups provided additional support of the importance of cultural values such as familism and collectivism in promoting healthy behaviors. Focus group discussions revealed that caretaking roles may help increase Vietnamese women’s adherence to screening guidelines. Participants indicated that they were motivated to be healthy in order to care for their families. They voiced concerns that if they fell ill, no one would be able to care for their husbands and children. These findings are similar to the findings from another study that found that a main motivator for cancer screening for Mexican immigrant women was to prevent prolonged sickness of the mother, which would affect her ability to care for her children (de Bocanegra, Trinh-Shevrin, Herrera, & Ganv, 2009). The focus groups also uncovered some other motivators for cancer
screening. These included a desire to be healthy, the avoidance of illness/disease, the fear of death, and knowing other individuals who had cancer.

These findings remind us that we can not decontextualize health and illness and that the successful integration of health behaviors requires consideration of cultural values and current practices. Implications for cancer outreach programs are that they should emphasize that it is worthwhile for women to participate in cancer screening, to ensure that the Vietnamese woman is not taken away from her family.

**Implications for Programs and Interventions**

The 2003 Health Information National Trends Survey found that being female, younger age, higher education, and higher income predicted cancer information seeking behavior (Rutten, Squiers, & Hesse, 2006). The findings from this study show that certain groups are more likely to use a greater number of information sources. These groups include those who are younger and are more educated (Rutten, Arora, Bakos, Aziz, & Rowland, 2005). Though informal sources are utilized more often, the present study illustrated how the Vietnamese population also relies on media sources in obtaining health information. As the Vietnamese sample becomes increasingly acculturated and as younger first and second generation immigrants grow older, we should expect to see changes in information seeking trends. The findings from this study suggest that interventions may need to be tailored to effectively use preferred information mediums. Future intervention and programs may want to integrate the use of the internet, especially social networking sites such as Facebook, in reaching out to younger Vietnamese females and disseminating health information.

In addition, the mechanisms of information seeking that occur within informal communication channels take place in safe and familiar settings for the Vietnamese woman.
For example, a mother may provide breast cancer advice to her daughter or to her sister. It is likely that information that is transmitted within these culturally familiar and informal environments are accepted with more positive attitudes, especially when it comes from a trusted source. This has important practice implications for the delivery of information to Vietnamese community members. Implications for programming efforts are that interventions could target Vietnamese women who can ‘culturally broker’ information learned in the intervention sessions. For example, Vietnamese women recruited in an education or intervention program could be asked to bring another Vietnamese woman with her. The presence of the ‘cultural broker’ may help to assuage any distrust or anxiety that the second participants may have. This will lead to more acceptance of the delivered health message.

At the end of the intervention program, one community member from the Hue Quang Temple community asked for additional booklets on breast and cervical cancer in order to distribute them to other individual who did not enroll in the program. The booklets were also displayed and made available for interested individuals who visited the Temple. This raises the possibility that another potential way to transmit health information to individuals outside of the program would be to incorporate a homework component. Vietnamese participants would be assigned homework in which they are to share what they learn in class with other Vietnamese females (e.g., their mothers or sisters). Pamphlets and booklets on breast and cervical cancer would be given to participants to be distributed to individuals outside of the intervention program. The transmission of information would come from a trusted source and take place in a familiar and informal setting.
Some of the participants revealed that they shared information learned in the sessions with their husbands. This suggests that health communication between husband and wife or romantic partners can serve as another potential way in which breast and cervical cancer information can be transmitted. An implication of these finding is to recognize that husbands/partners can play a role in relaying health information to their wives and other family members and vice versa. Future interventions could involve and educate both partners in order to increase motivations. The inclusion of males in the intervention or educational program may be particularly effective as traditional Vietnamese society is patriarchal in nature. The encouragement of males for their wives, sisters, and daughters to engage in screening can serve as powerful motivators. Second, wives may also play a role in transmitting health information concerning men’s health. For example, future interventions may provide women with take-home pamphlets or booklets on prostate cancer to be distributed to their husbands.

The findings from the current study provided evidence of the effectiveness of faith-based sites in the delivery of intervention programs for ethnic minority populations. In addition, specific components of religiosity such as social extrinsic religiosity were associated with positive attitudes towards cancer screening, higher levels of self-efficacy for cancer screening, and higher levels of screening behavior. This has programmatic implications in that women who are high in social extrinsic religiosity are more active and more likely to participate in social events in their community. These women are more apt to have connections to and to be sources of health information within the faith-based community. An implication of these findings is that educational programs could try to maximize the potential role that social events in faith-based communities could play in
making breast and cervical cancer information visible to the community. For example, traditional Vietnamese holidays and festivals are celebrated on church and temple grounds. Health information booths that offer information on cancer topics in the Vietnamese language can be distributed during community events. Community members would have the opportunity to stop by the booths to ask questions and receive pamphlets/booklets on cancer topics. The culturally familiar environment would make it easier for community members to approach these booths.

**Implications for Future Research**

The study’s findings indicated that intrinsic religiosity was associated with lower levels of self-efficacy for breast cancer screening. Further research is needed to clarify the different components of religiosity that are associated with fatalistic views of cancer. It is possible that highly intrinsic religious women believe cancer to be solely terminal. Women who adhere to these views are less likely to engage in cancer screening as they may perceive screening to be futile. Screening programs may wish to target women with fatalistic and terminal views of cancer. Women who believe cancer to be exclusively terminal could receive information about early detection and successful treatment rates of breast and cervical cancer. Women with fatalistic views of cancer due to beliefs of divine retribution either from God or other divine forces could have their beliefs shaped through a similar lens. Information provided in intervention sessions could incorporate the potential role of God in helping cancer survivors. Interventions conducted in faith-based settings might also incorporate prayer or meditation in helping women assuage anxiety surrounding breast or cervical cancer.

Future research could also investigate the effectiveness of theoretical approaches used and variables examined in this study on other health outcomes for the Vietnamese
population. The successful fusion of SCT and CBPR in the present study provides evidence for their effectiveness in the promotion of health knowledge, attitudes, self-efficacy, and behaviors for Vietnamese members. Future intervention research could examine the effectiveness of culturally tailored interventions on other important cancer outcomes such as colorectal cancer. Colorectal cancer is the third most common cancer in the United States (ACS, 2011) and also the third most common for both Vietnamese men and women (Cockburn & Deapen, 2004). One study surveyed 867 Vietnamese over the telephone and found that respondents had low levels of knowledge of colorectal cancer and cancer screening (Nguyen, McPhee, Stewart, Doan, 2008). In addition, rates of colorectal screening recognition, receipt, and intention were low. Future research could also examine demographic and cultural correlates for colorectal cancer screening variables and examine if they are similar to those that were found for breast and cervical cancer screening in the present study.

Research on other cancer risk behaviors among Vietnamese women is also needed. In the current study, participants originally responded to items that assessed health behaviors related to cancer risk reduction from the Behavioral Risk Factor Surveillance System (CDC, 2010). Items asked about fruit and vegetable intake, amount of physical activity, and smoking and alcohol use – all risk factors for cancer

These items were dropped from the study due to ceiling effects and restriction of range in responses. For example, none of the women reported smoking behaviors and only two participants reported alcohol consumption in the past 30 days. However, modifiable risk factors are likely to become more prevalent among future Vietnamese generations due to acculturation. Future research needs to examine the role of these risk factors in order to
understand how to reduce cancer risk.

The present study enrolled only Vietnamese women. It is not clear whether a similar intervention would be effective for a Vietnamese male population. Cultural traits may be expressed differently or may be entirely irrelevant in influencing cancer screening variables for men. For example, intra-cultural variability within collectivistic cultures comes from hierarchical structures found in societies (Turiel & Wainryb, 1998). Many subgroups are structured in accordance to the distribution of power (e.g., socioeconomic class or gender). Often, members that comprise higher positions of power are more *individualistic* than members that comprise lower positions of power. For example, men in patriarchal societies, such as India, often display higher levels of autonomy, independence, and agency in comparison to women who are more communal and relational (Neff, 2001). As a result, women adhere to more collectivistic orientations than men. Future research could examine whether gender moderates the relationship between cultural variables and cancer screening variables.

**Study Limitations**

There were several limitations to the study. This discussion will cover limitations that posed threats to internal validity first. Then, a discussion of limitations that posed threats to external validity will follow.

**Limitations to internal validity.** There was non-equivalence between the intervention and control group on measures at pretest and these differences detracts from the internal validity of the study findings. The groups significantly differed in age, having children, marital status, previous receipt of a CBE, intrinsic religiosity, and social extrinsic religiosity at baseline. In order to control for non-equivalence, these variables were used as covariates
in subsequent analyses. While there was some non-equivalency, it is important to note that the groups were equivalent on most measures.

Women in the intervention group were older than those in the control group. Although participants were randomly assigned into the two groups at the start of the study, the participants were then assigned into a specific educational session by age. The rationale was that women would be more comfortable discussing female health topics in the presence of peers. The non-equivalence is attributed to the omission of the first intervention group that contained younger females. A decision was made to drop data from the first intervention session because the session was conducted in a residential setting (i.e., off of church and temple grounds) due to scheduling conflicts at the temple. At decision was made not to retain participants in this session because this site differed from the other sites; this site difference was expected to introduce too much error variance. This inadvertently led to the omission of younger participants in the intervention group. Future studies should attempt to standardize intervention sites in order to avoid these issues.

Another limitation is the lack of an activity-control group. Instead, the study utilized a print-material control group. This poses problems with internal validity. Though unlikely, the beneficial effects of the intervention could possibly be attributed to the time that women spent in the class with other community members rather than the intervention material itself. An activity-control group would have ruled out the possible confounding effect of time spent in the classroom on cancer screening outcomes. In addition, the lack of an activity-control group prevented the collection of posttest data for women in the control group. Because I utilized a print material control group, the women were not exposed to an activity; therefore, only pretest measures were collected.
In addition, measures of breast and cervical cancer screening relied on self-report measures, and this also serves as a study limitation. The use of self-report measures in capturing behavior presents challenges related to recall error. Other potential issues concern social desirability of reporting past clinical breast examinations or Pap tests. However, studies of the accuracy of self-reported cancer screening procedures suggest that there is relatively high agreement with actual behavior (Caplan et al., 2003; McGovern et al., 1998; Thompson et al., 1999). Still, to ensure accuracy, future studies could request participants to bring documentation or proof of their screening test at follow-up and provide incentives for doing so.

Another study limitation was the lack of sensitivity in the intention to screen measure. Most of the women reported that they intended to engage in breast and cervical cancer screening in the future providing at ceiling effect on this measure. Intention was measured using a conventional dichotomous response format (yes/no). The lack of response variability led to the omission of this variable in analysis. As a result, future studies should measure intention to screen by using a more sensitive continuous response format when measuring intentions.

The present study was potentially over-powered. A power analysis indicated that a sample size of 60 was needed to achieve sufficient power in detecting the effects of the intervention. The study sample (N = 102) potentially over-powered some of the intervention’s effects, and this may have led to the detection of small effects sizes that were statistically significant but possibly of little practical significance. The larger than needed sample size potentially contributed to the inflation of Type I error.

In addition, participants enrolled in the intervention condition were only provided with
a one-session educational component. The low amount of dosage on breast and cervical
topics may have weakened the study’s effectiveness in increasing gains in some of the breast
and cervical cancer screening variables.

The use of the SL-ASIA as a measure of acculturation is another possible study
limitation. The study failed to find significant relationships between a bicultural orientation
and cancer screening variables. Use of the suggested scoring procedures by Suinn and
colleagues (1987) leads to a problem in the way biculturalism was captured. Bicultural
behaviors are embedded in the middle of the scoring range and cannot be independently
evaluated. To overcome this problem, acculturation scores were squared, in order to capture
curvilinear associations between acculturation and cancer screening variables. However, the
study failed to find significant relationships; one possible reason is attributed to greater
power needed to examine higher order effects. Still, future research would benefit from a
stronger measure of bicultural orientation. Items on an improved bicultural orientation could
try to access how likely an individual is to strongly endorse elements from both the majority
and minority culture.

In addition, the study’s finding indicated that cultural variables were not associated
with some of the breast and cervical cancer screening outcomes. In some cases, the addition
of cultural variables in the models did not account for unique variance in the outcomes
beyond what was predicted by demographic variables. It is conventional for studies to control
for the effect of structural incongruities or organizational barriers (e.g., health insurance or
level of educational attainment) before adding the influence of psychosocial variables (e.g.,
acculturation or ethnic identity) in statistical models. However, it is plausible that the effect
of culture may occur simultaneously with or precede the effect of demographic variables on
cancer screening outcomes.

In the present study, educational attainment predicted breast and cervical cancer knowledge. However, differential gender expectations govern how boys and girls are raised in Vietnam (Phan, Rivera, & Roberts-Wilbur, 2005). Girls are watched much more closely, are expected to stay closer to home, and are provided with more domestic and household chores. It is not uncommon for girls to remain at home while the family finances education for boys. As a result, many Vietnamese women who immigrate to the United States have received little formal education, which contributes to less exposure cancer topics. In this scenario, the influence of culture precedes the influence of educational attainment.

Recommendations for future research are to examine the role of cultural variables simultaneously with demographic variables or control for prior to the addition of demographic variables.

**Limitations to external validity.** Though the study provided a contribution by examining health behaviors within a Vietnamese sample in the Southeast region of the US, this serves as a limitation to external validity. As noted earlier, ethnic minority enclaves may differ from region to region. For example, on the West coast, particularly California, there are many different health resources and providers that cater specifically to the Vietnamese. Therefore, reliance on faith-based communities for disseminating health information may not be as important. In addition, Vietnamese individuals who live in areas less inhabited by other Vietnamese members may not be as likely to have access to Vietnamese enclaves. It may be particularly important to devise different strategies outside the realm of CBPR if there is no existing Vietnamese community.

In addition, the reliance on faith-based communities may limit potential health
intervention topics. For example, there may be stigma related to cervical cancer because of
the association with sexual transmission of HPV. However, the emphasis on cancer and
illness provides routes for potential acceptance of the topics. On the other hand, it may be
difficult for interventions addressing topics such as HIV/AIDS and risky sexual behavior to
find acceptance and legitimacy in Vietnamese faith-based communities. For example, an
item that assessed previous sexual behavior (i.e., intercourse) was dropped from the study as
most participants indicated that they had not engaged in sex, even women who responded
that they had children.

The study’s findings provide initial support of the intervention’s effectiveness in
increasing breast and cervical cancer screening. Intervention participants reported higher
rates of screening at the six-month follow-up than control participants. However, intervention
participants were not asked to report where they received their screening tests. It is unknown
whether participants used the study’s referrals or relied on the provided contact information
for local clinics and physicians that served non-insured or low-income populations. Future
research should ask participants to report where they received screening tests to measure the
effectiveness of referrals.

Conclusions

This study provides evidence for the practical application of SCT and CBPR in
developing cancer screening interventions for the Vietnamese population. The study found
that a culturally tailored intervention based on SCT and CBPR was effective in increasing
favorable cancer screening outcomes. This study also illustrated how health information was
transmitted across informal channels within faith-based communities. Health and illness
should never be decontextualized as cultural beliefs and values are manifested in the way
illness and disease is interpreted and treated.

One principle of multicultural competence underscores the importance of intervention researchers developing knowledge of the ethnic minority population with whom they collaborate. When working with ethnic groups, it is essential for the researcher to have an understanding of the different immigration experiences, history of the group’s experience with institutional and cultural racism, as well as cultural beliefs, practices, and values. Only when we are equipped with knowledge and compassion, are we able to effectively promote health in a way that makes sense to the community.
List of References


midlife women in Israel. *Women's Health Issues, 18*, 257-266.


Lim, J., & Yi, J. (2009). The effects of religiosity, spirituality, and social support on quality of
life: A comparison between Korean American and Korean breast and gynecological

in the Greater San Francisco Bay Area. Western Journal of Medicine, 176, 87-91.

behaviors in school-age Mexican-American children. Psychological Reports, 98, 735-
744.

Americans: The impact of acculturation, cultural barriers, and spiritual beliefs. Social
Work in Mental Health, 7, 476-493.

among Asian Americans using targeted and culturally appropriate media: A case
study. Home Health Care Management & Practice, 17, 39-44.

Ma, G.X., Shive, S.E., Tan, Y, Toubbeh, J.I., Fang, C., Carolyn, Y. et al. (2005). Tobacco
use, secondhand smoke exposure and their related knowledge, attitudes and behaviors


promotion programs: Lessons from the Los Angeles mammography in churches

Strauss (Eds.), Multidisciplinary perspectives on the self (pp. 18-48). New York:
Springer-Verlag.

and attitudes towards cervical screening: A comparison of smokers and non-smokers.
Family Practice, 19, 18-22.

341-345.

of a behavioral intervention for increasing safer sex behaviors in HIV-negative,
heterosexual methamphetamine users: Results from the Fast-Lane Study. Annals of
Behavioral Medicine, 34, 263-274.


years in the receiving culture as markers of acculturation in ethnic enclaves. *Journal of Cross-Cultural Psychology, 37*, 345-353.


Appendix A

Demographic Questions

Please answer the following questions to the best of your ability:

1. What is your date of birth? (Month/date/year) ____________  
   What is your Western age in years? ____________

2. In school, what is the highest grade you ever completed?
   - [ ] Some high school
   - [ ] High school graduate/GED
   - [ ] Some college
   - [ ] College graduate
   - [ ] Post-college graduate
   - [ ] Vocational training

3. Do you have children? Yes No (If no, skip to #4)  
   a) How many children do you have? ____________  
   b) What is the age of your oldest child? __________

4. Who do you live with (circle one)?
   - [ ] Alone
   - [ ] with family
   - [ ] with a roommate
   - [ ] Husband
   - [ ] boyfriend
   - [ ] other _________________

5. Which of the following categories best represents your estimated household income?
   - [ ] Less than $10,000
   - [ ] $10,000-15,000
   - [ ] $15,000-$25,000
   - [ ] $25,000-$50,000
   - [ ] $50,000-$75,000
   - [ ] Over $75,000

6. What is your marital status?
   - [ ] single
   - [ ] married
   - [ ] divorced
   - [ ] widowed

7. Do you have a regular physician?  
   - [ ] Yes
   - [ ] No

   If you answered “yes,” is this physician Vietnamese?  
   - [ ] Yes
   - [ ] No
If you answered “yes,” what is the gender of your physician?
☐ Male
☐ Female

8. Do you have health insurance?
☐ Yes
☐ No

9. Are you currently employed?
☐ Yes
☐ No

10. Have you had a hysterectomy?
☐ Yes
☐ No

11. Have you ever had sexual intercourse?
☐ Yes
☐ No

12. What year did you come to the United States? ____________

☐ Check here if you were born in the United States.

13. Have you been previously diagnosed with breast cancer?
☐ Yes
☐ No

14. Have you been previously diagnosed with cervical cancer?
☐ Yes
☐ No
CÂU HỎI VỀ CÁ NHÂN

Xin trả lời các câu hỏi sau đây:

1. Bạn sinh ngày nào? (tháng/ngày/năm) __________
   Bạn bao nhiêu tuổi (tuổi Tây)? __________

2. Bạn học tới lớp nào ở trường?
   □ Đỗ đẳng trung học
   □ Xong trung học
   □ Đỗ đẳng đại học
   □ Xong đại học
   □ Xong hậu đại học (thí dụ: y,duốc,luật v.v…)
   □ Trường dạy nghề

3. Bạn có con không? có, không (nếu không, qua câu số’ #4)
   a) Bạn có bao nhiêu con? __________
   b) Con lớn nhất mấy tuổi? __________

4. Bạn đang ở với ai? (khoanh một câu trả lời)
   Một mình với gia đình với bạn chung phòng
   Vợ chồng với bạn trai lý do khác ________________

5. Lợi tức hàng năm trong nhà bạn?
   □ Dưới 10,000
   □ $10,000-15,000
   □ $15,000-$25,000
   □ $25,000-$50,000
   □ $50,000-$75,000
   □ Trên $75,000

6. Tình trạng hôn nhân của bạn?
   □ Độc thân
   □ Có chồng
   □ Ly dị
   □ Góa chồng

7. Bạn có bác sĩ gia đình không?
   □ Có
   □ Không

   Nếu có, bác sĩ của bạn có phải là người Việt Nam không?
   □ Có
   □ Không
Nếu có, bác sĩ của bạn nam hay nữ?
☐ nam
☐ nữ

8. Bạn có báo hiểm sức khỏe không?
☐ có
☐ không

9. Bạn có việc làm không?
☐ có
☐ không

10. Bạn có bị giái phẫu cắt bờ tử cung không?
☐ có
☐ không

11. Bạn có ăn nắm với ai không?
☐ có
☐ không

12. Bạn đến Mỹ năm nào?

☐ gạch vào ô vuông, nếu bạn sinh ở Mỹ.

13. Bạn có bị ung thư vú bao giờ chưa?
☐ có
☐ không

14. Bạn có bị ung thư cổ tử cung bao giờ chưa?
☐ có
☐ không
Appendix B

Cervical Cancer Quiz
Directions: Read each question and answer to the best of your ability. Circle only one answer.

1. Cervical cancer is caused by:
   a. The human papilloma virus (HPV)
   b. Smoking
   c. Excessive alcohol intake
   d. High fat diet

2. Vietnamese women are 5 times more likely than White women to get cervical cancer.
   a. True
   b. False

3. A Pap smear is a:
   a. Blood test
   b. Test to detect abnormal cells from the cervix
   c. Pregnancy test

4. Signs and symptoms of cervical cancer include:
   a. Bleeding from your vagina after intercourse, between periods, or after menopause.
   b. White vaginal discharge
   c. Pain in the lower abdomen not related to menstruation
   d. All of the above

5. If detected early on, most cervical cancer can be treated and cured.
   a. True
   b. False

6. Which of the following is true about Pap smears?
   a. You should get a Pap smear when you are not having your period.
   b. Two days before a Pap smear, you should not use douches, birth control foams, or vaginal medicine as they may hide abnormal cells
   c. An abnormal Pap smear result doesn’t always mean that you have cervical cancer
   d. All of the above

7. The best ways to prevent cervical cancer are:
   a. Don’t start or quit smoking
   b. Have fewer sexual partners
   c. Use condoms
   d. Have routine Pap tests
   e. All of the above
8. How often should you get a Pap test?
   a. Once every year
   b. Once every 3 years
   c. Once every 5 years

9. Who should be getting a Pap test?
   a. Women over the age of 18 years
   b. Women who have had sexual intercourse
   c. All of the above

Breast Cancer Quiz

1. Who is at increased risk for breast cancer?
   a. Older women
   b. Women who have never had children or had their first child after the age of 30
   c. Women who excessively smoke tobacco and drink alcohol
   d. Overweight women
   e. Women who are on hormone therapy for menopause
   f. All of the above

2. What are some symptoms of breast cancer?
   a. A hard lump in the breast
   b. Blood or abnormal discharge from the nipple
   c. Dimpling or redness of the skin on the breast
   d. Unexplained weight loss
   e. All of the above

3. Clinical breast exams and mammograms are the best detection methods of breast cancer.
   a. True
   b. False

4. A mammogram will detect a small lump in the breast two years before it can be felt by hand.
   a. True
   b. False

5. When is the best time to get a mammogram?
   a. Women who still get periods should get a mammogram one week after their period
   b. Women who are menopausal can get a mammogram anytime they would like
   c. All of the above
6. Women between the ages of 20-39 should have a clinical breast exam:
   a. once a year
   b. every two years
   c. every three years
   d. every four years
   e. every five years

7. Women between the ages of 40-64 should have a clinical breast exam:
   a. once a year
   b. every two years
   c. every three years
   d. every four years
   e. every five years

8. A mammogram is:
   a. an x-ray of the breast
   b. a clinician performed breast exam
   c. a self-performed breast exam
   d. none of the above
   e. all of the above

9. A woman should have a yearly mammogram after the age of:
   a. 30
   b. 35
   c. 40
   d. 45
   e. 50

10. The most reliable form of breast cancer detection is:
    a. mammography
    b. breast self-exams
    c. clinician breast exams
    d. none of the above
    e. all of the above
Hướng dẫn: Các câu hỏi sau đây là về ung thư cổ tử cung. Khoanh tròn một câu trả lời mà bạn cho là đúng.

1. Ung thư cổ tử cung gây ra bởi:
   e. Siêu vi trùng Pappilloma ở người (HPV)
   f. Hút thuốc
   g. Ưống rượu quá nhiều
   h. Ăn uống nhiều chất mỡ

2. Phụ nữ Việt Nam bị ung thư cổ tử cung nhiều hơn phụ nữ Tây Phương?
   c. Đúng
   d. Sai

3. Thử Pap Smear (hay Pap test) là?
   d. Thử máu
   e. Thử để kiểm tiết bao bì bình thường ở cổ tử cung
   f. Thử xem có bao hay không

4. Những triệu chứng của ung thư cổ tử cung gồm có?
   e. Chảy máu từ âm đạo sau khi làm tình, giũa các kỹ kinh nguyệt, hay sau khi tắt kinh
   f. Ra huyết trắng từ âm đạo
   g. Đau bụng dưới không liên quan đến kinh nguyệt
   h. Tắt cả các câu trên đều đúng

5. Nếu khám phá sớm, hầu hết các ung thư cổ tử cung đều có thể chữa lành được
   c. Đúng
   d. Sai

6. Câu nào sau đây là đúng về Pap Smear?
   a. Bạn nên thử Pap Smear khi bạn ngoài kỳ kinh nguyệt
   b. Hai ngày trước khi thử Pap Smear, bạn không nên dùng douche, chất sộp ngoài thai, hay bỏ thuốc vào âm đạo bởi vì chúng có thể che dấu các tế bào bất bình thường
   c. Nếu kết quả thử Pap Smear bất bình thường, không luôn luôn là bạn bị ung thư cổ tử cung
   d. Tắt cả các câu trên đều đúng

7. Cách tốt nhất để ngừa ung thư cổ tử cung là:
   f. Dùng tập hút thuốc lá. Nếu bạn đang hút, thì bỏ thuốc ngay
   g. Không nên có nhiều bạn trai (tình nhân)
   h. Dùng bao cao su để ngừa thai
   i. Thử Pap test hàng năm
   j. Tắt cả các câu trên đều đúng
8. Phụ nữ nên thử Pap test thường xuyên như thế nào?
   d. Mỗi 1 năm
   e. Mỗi 3 năm
   f. Mỗi 5 năm

9. Ai nên thử Pap test?
   d. Phụ nữ trên 18 tuổi
   e. Phụ nữ đã ảnh hưởng với đàn ông
   f. Cả hai cái đều dùng cả

Hướng dẫn: Các câu hỏi sau đây về ung thư vú. Khoanh một câu trả lời mà bạn cho là đúng.

1. Những ai dễ bị ung thư vú hơn?
   g. Phụ nữ cao tuổi
   h. Phụ nữ chưa bao giờ có con hay có con đầu lòng sau tuổi 30
   i. Phụ nữ hút thuốc lá quá độ và uống rượu quá độ
   j. Phụ nữ quá nặng cân
   k. Phụ nữ uống kích thích tố (hormone) sau khi hết kinh
   l. Các câu trên đều đúng

2. Ung thư vú có những triệu chứng gì?
   f. Có cục cứng trong vú (dùng tay sờ thấy được)
   g. Chảy máu hay nước từ trong vú
   h. Da bị đỏ hay bị lởm xuong trên vú
   i. Xệt cân không có lý do
   j. Các câu trên đều đúng

3. Khám vú và chụp hình vú là phương pháp tốt nhất để tìm ra ung thư vú?
   c. Dúng
   d. Sai

4. Chụp hình vú sẽ phát hiện cục bueno nhỏ trong vú sớm hai năm, so với sờ thấy bằng tay.
   c. Dúng
   d. Sai

5. Khi nào là lúc tốt nhất để chụp hình vú?
   d. Phụ nữ vẫn còn kinh nguyệt, nên chụp hình vú một tuần lễ sau khi có kinh
   e. Phụ nữ đã đến hết kinh nguyệt, chụp hình vú lúc nào cũng được
   f. Cả hai câu đều đúng
6. Phụ nữ từ 20 đến 39 nên khám vú ở phòng mạch:
   f. Mỗi năm 1 lần
   g. Mỗi 2 năm
   h. Mỗi 3 năm
   i. Mỗi 4 năm
   j. Mỗi 5 năm

7. Phụ nữ lứa tuổi 40-64 nên khám vú ở phòng mạch:
   f. Mỗi năm 1 lần
   g. Mỗi 2 năm
   h. Mỗi 3 năm
   i. Mỗi 4 năm
   j. Mỗi 5 năm

8. Chụp hình vú Mammogram là:
   f. Chụp hình quan tuyến vú
   g. Khám vú bởi bác sĩ
   h. Tự khám vú lấy
   i. Các câu trên đều sai
   j. Các câu trên đều đúng

9. Phụ nữ nên chụp hình vú mỗi năm, bắt đầu từ tuổi:
   f. 30
   g. 35
   h. 40
   i. 45
   j. 50

10. Hình thức đáng tin cậy nhất để tìm ra ung thư vú là:
    f. Chụp hình vú
    g. Tự khám vú lấy
    h. Khám vú bởi bác sĩ
    i. Các câu trên đều sai
    j. Các câu trên đều đúng
Appendix C

Attitudes towards Cancer Screening (Marteau, Hankins, & Collins, 2002)

1. "How important are regular Pap smears for women to remain healthy?"

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(not at all important)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(extremely important)</td>
</tr>
</tbody>
</table>

2. "How useful is cervical cancer screening (Pap smears)?"

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(not at all useful)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(extremely useful)</td>
</tr>
</tbody>
</table>

3. "How important are regular clinical breast exams for women to remain healthy?"

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(not at all important)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(extremely important)</td>
</tr>
</tbody>
</table>

4. "How useful is clinical breast examination?"

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(not at all useful)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(extremely useful)</td>
</tr>
</tbody>
</table>
Hướng Dẫn: Các câu hỏi sau đây hỗ trợ bạn cam kết sao về tìm kiếm ung thư. Khoanh tròn một số mà bạn cho nghi là đúng:

1. Thử Pap smear đều đặn thì quan trọng như thế nào để phụ nữ bảo vệ sức khỏe?
   1  2  3  4  5  6  7
   (Không quan trọng)  (không chắc)  (rất quan trọng)

2. Thử Pap smear để kiểm ung thư cổ tử cung thì có hữu ích gì?
   1  2  3  4  5  6  7
   (không hữu ích)  (không chắc)  (rất hữu ích)

3. Khám vú thường xuyên thì quan trọng thế nào để phụ nữ bảo tồn sức khỏe?
   1  2  3  4  5  6  7
   (Không quan trọng)  (không chắc)  (rất quan trọng)

4. Khám vú thì hữu ích thế nào?
   1  2  3  4  5  6  7
   (Không hữu ích)  (không chắc)  (rất hữu ích)
Appendix D
Self Efficacy Scale for Obtaining Cancer Screening

**Instructions**: Circle the number that best describes how you feel.

1. **You can arrange transportation to get a clinical breast exam**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

2. **You can arrange other things in your life to have a clinical breast exam.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

3. **You can talk to people at the clinical breast exam center about your concerns.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

4. **You can get a clinical breast exam even if you are worried.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

5. **You can get a clinical breast exam even if you don’t know what to expect.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

6. **You can find a way to pay for a clinical breast exam.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

7. **You can make an appointment for a clinical breast exam.**
   
   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)
8. You know for sure you can get a clinical breast exam if you really want to.
   1  2  3  4  5
   (strongly disagree) (strongly agree)

9. You know how to go about getting a clinical breast exam.
   1  2  3  4  5
   (strongly disagree) (strongly agree)

10. You can find a place to have a clinical breast exam.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

11. You can arrange transportation to get a Pap test.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

12. You can arrange other things in your life to have a Pap test.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

13. You can talk to people at the Pap test center about your concerns.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

14. You can get a Pap test even if you are worried.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

15. You can get a Pap test even if you don’t know what to expect.
    1  2  3  4  5
    (strongly disagree) (strongly agree)
16. You can find a way to pay for a Pap test.

1                        2                    3                      4                          5
(strongly disagree)                                                                    (strongly agree)

17. You can make an appointment for a Pap test.

1                        2                    3                      4                          5
(strongly disagree)                                                                    (strongly agree)

18. You know for sure you can get a Pap test if you really want to.

1                        2                    3                      4                          5
(strongly disagree)                                                                    (strongly agree)

19. You know how to go about getting a Pap test.

1                        2                    3                      4                          5
(strongly disagree)                                                                    (strongly agree)

20. You can find a place to have a Pap test.

1                        2                    3                      4                          5
(strongly disagree)                                                                    (strongly agree)
**Hướng dẫn:** các câu hỏi sau đây, hỏi bạn có thể thành công làm được các việc sau đây. Khoanh tròn một số mà bạn nghĩ là đúng cho bạn:

1. Bạn có thể dàn xếp phương tiện để cho bạn đi khám vú.
   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

2. Bạn có thể dàn xếp các công việc của bạn để đi khám vú được.
   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

4. Bạn có thể đi khám vú mặc dù bạn e ngại.
   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

5. Bạn có thể đi khám vú mặc dù không biết người ta sẽ làm gì.
   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)

7. Bạn có thể lạy hẹn đi khám vú được.
   1                        2                        3                        4                        5
   (không đồng ý)                      (rất đồng ý)
8. Bạn biết chắc chắn bạn có thể đi khám vú được nếu bạn thật sự muốn.

   1  2  3  4  5  
   (không đồng ý)  (rất đồng ý)


   1  2  3  4  5  
   (không đồng ý)  (rất đồng ý)


    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)


    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)


    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)


    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)

14. Bạn có thể đi thử Pap test mặc dù bạn e ngại

    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)

15. Bạn có thể đi thử Pap test mặc dù bạn không biết người ta sẽ làm gì.

    1  2  3  4  5  
    (không đồng ý)  (rất đồng ý)

1 2 3 4 5
(Không đồng ý) (Rất đồng ý)

17. Bạn có thể lấy hẹn di thư Pap test được.

1 2 3 4 5
(Không đồng ý) (Rất đồng ý)

18. Bạn biết chắc bạn có thể đi thư Pap test nếu bạn tự sự muốn.

1 2 3 4 5
(Không đồng ý) (Rất đồng ý)


1 2 3 4 5
(Không đồng ý) (Rất đồng ý)


1 2 3 4 5
(Không đồng ý) (Rất đồng ý)
Appendix E

Cancer Screening Behaviors

Please respond by checking one of the options.

1. Have you ever had a clinical breast exam?
   - Yes
   - No

2. If you are over the age of 40, please answer item A.
   If you are between the ages of 20 to 39, please answer item B.
   
   A. Have you had a clinical breast exam in the last year?
      - Yes
      - No

   B. Have you had a clinical breast exam in the last 3 years?
      - Yes
      - No

3. Do you intend on getting a clinical breast exam in the future?
   - Yes
   - No

4. Have you ever had a Pap test?
   - Yes
   - No

5. Have you had a Pap test within the past year?
   - Yes
   - No

6. Do you intend on getting a Pap test in the future?
   - Yes
   - No
Làm ơn đánh dấu một câu trả lời : có hoặc không.

1. Bạn đã có bao giờ đi khám vú chưa?
   - ☐ có
   - ☐ không

2. Nếu bạn 40 tuổi trở lên , trả lời câu A
   Nếu bạn tuổi từ 18 đến 39 , trả lời câu B

A. Bạn đã có đi khám vú năm ngoài không?
   - ☐ có
   - ☐ không

B. Bạn đã có đi khám vú trong 3 năm qua không?
   - ☐ có
   - ☐ không

3. Bạn có dự tính đi khám vú trong tương lai không?
   - ☐ có
   - ☐ không

4. Bạn đã có bao giờ đi thử Pap test không?
   - ☐ có
   - ☐ không

5. Bạn đã thử Pap test trong năm ngoài không?
   - ☐ có
   - ☐ không

6. Bạn có ý định thử Pap test trong tương lai không?
   - ☐ có
   - ☐ không
Items for the follow-up session:

Please respond by checking one of the options.

1. Since our last meeting, did you get a Clinical Breast Exam?
   - Yes, I got a clinical breast exam
   - No, I did not get a clinical breast exam
     If you checked “NO”, have you scheduled to get a Clinical Breast Exam in the future?
       - Yes
       - No

2. Since our last meeting, did you get a Pap test?
   - Yes
   - No
     If you checked “NO”, have you scheduled to get a Pap test in the future?
       - Yes, I have scheduled a Pap test
       - No, I have not scheduled a Pap test

3. Do you intend on getting regular clinical breast exams in the future?
   - Yes
   - No

4. Do you intend on getting regular Pap tests in the future?
   - Yes
   - No
Làm ơn gạch một câu để trả lời:

1. Kể từ lần hợp trước, bạn đã đi khám vú chưa?
   ___ có
   ___ chưa
   Nếu chưa, bạn đã lấy hẹn đi khám vú trong tương lai không?
   ___ có
   ___ không

2. Kể từ lần hợp trước, bạn đã đi thử Pap test chưa?
   ___ có
   ___ chưa
   Nếu chưa, bạn đã lấy hẹn đi thử Pap test trong tương lai không?
   ___ có
   ___ không

3. Bạn có ý định đi khám vú đều đặn trong tương lai không?
   ___ có
   ___ không

4. Bạn có ý định đi thử Pap test đều đặn trong tương lai không?
   ___ có
   ___ không
Appendix F

Suinn Lew East Asian Acculturation Scale (Suinn et al., 1987)

Instructions: Check (X) one answer that best describes you.

1. What language do you speak?
   ___ Vietnamese only
   ___ Most Vietnamese, some English
   ___ Vietnamese and English about equally well (bilingual)
   ___ Mostly English, some Vietnamese
   ___ English only

2. How would you identify yourself?
   ___ Oriental
   ___ Asian
   ___ Asian-American
   ___ Vietnamese-American
   ___ American

3. What is the ethnic origin of friends and peers that you have?
   ___ Almost exclusively Asians, Asian Americans, Orientals
   ___ Mostly Asians, Asian-Americans, Orientals
   ___ About equally Asian and non-Asian groups
   ___ Mostly non-Asian ethnic groups
   ___ Almost exclusively non-Asian groups

4. If you could pick, whom would you prefer to associate with in the community?
   ___ Almost exclusively Asians, Asian Americans, Orientals
   ___ Mostly Asians, Asian-Americans, Orientals
   ___ About equally Asian and non-Asian groups
   ___ Mostly non-Asian ethnic groups
   ___ Almost exclusively non-Asian groups

5. What is your music preference?
   ___ Only Vietnamese music
   ___ Mostly Vietnamese music
   ___ Equally Vietnamese and English music
   ___ Mostly English music
   ___ Only English music
6. What is your movie preference?
   ___ Only Vietnamese language movies
   ___ Mostly Vietnamese language movies
   ___ Equally Vietnamese and English language movies
   ___ Mostly English language movies
   ___ Only English language movies

7. Where were you raised?
   ___ Only in Vietnam
   ___ Mostly in Vietnam, some in the U.S.
   ___ Equally in Vietnam and U.S.
   ___ Mostly in the U.S., some in Viet Nam
   ___ Only in the U.S.
   ___ Other (specify):_____________________

8. What contact have you had with Viet Nam?
   ___ Raise 1 year or more in Viet Nam
   ___ Lived for less than 1 year in Viet Nam
   ___ Occasional visits to Viet Nam
   ___ Occasional communication (letters, phone calls, etc.) with people in Viet Nam
   ___ No exposure or communication with people in Viet Nam

9. What is food preference at home?
   ___ Exclusively Vietnamese/Oriental food
   ___ Mostly Vietnamese/Oriental food, some American food
   ___ Equally Vietnamese/Oriental and American food
   ___ Mostly American food
   ___ Only American food

10. What is your food preference in restaurants?
    ___ Exclusively Vietnamese/Oriental food
    ___ Mostly Vietnamese/Oriental food, some American food
    ___ Equally Vietnamese/Oriental and American food
    ___ Mostly American food
    ___ Only American food
11. Do you…
   ___ Read only Vietnamese
   ___ Read Vietnamese better than English
   ___ Read both Vietnamese and English equally well
   ___ Read English better than Vietnamese
   ___ Read only English

12. Do you…
   ___ Write only Vietnamese
   ___ Write Vietnamese better than English
   ___ Write both Vietnamese and English equally well
   ___ Write English better than Vietnamese
   ___ Write only English

13. How would you rate yourself?
   ___ Very Vietnamese
   ___ Mostly Vietnamese
   ___ Equally Vietnamese and Westernized
   ___ Mostly Westernized
   ___ Very Westernized

14. Do you participate in Asian occasions, holidays, traditions, etc?
   ___ Nearly all
   ___ Most of them
   ___ Some of them
   ___ A few of them
   ___ None at all

15. Rate yourself on how much you believe in Vietnamese values (e.g. about marriage, families, education, work, etc.):

   1             2             3             4             5
   (do not believe)                      (strongly believe)

16. Rate yourself on how much you believe in American (Western) values:

   1             2             3             4             5
   (do not believe)                      (strongly believe)
17. Rate yourself on how well you fit when with other Vietnamese:

1          2          3          4          5
(do not believe)       (strongly believe)

18. Rate yourself on how well you fit when with other Americans who are non-Asian (Westerners):

1          2          3          4          5
(do not believe)       (strongly believe)

19. There are different ways in which people think of themselves. Which ONE of the following most closely describes how you view yourself?

1) I consider myself basically a Vietnamese person. Even though I live and work in America, I still view myself as a Vietnamese person.
2) I consider myself basically an American. Even though I have a Vietnamese background and characteristics, I still view myself basically as an American.
3) I consider myself as Vietnamese-American, although deep down I always know I am a Vietnamese person.
4) I consider myself as a Vietnamese-American, although deep-down, I view myself as an American first.
5) I consider myself as a Vietnamese-American. I have both Vietnamese and American characteristics, and I view myself as a blend of both.
HƯỚNG DẪN: Dánh dấu chữ thập (X) vào một câu trả lời.

1. Bạn nói ngôn ngữ nào?
   ___ chí nói tiếng Việt
   ___ Nói hầu hết tiếng Việt, chút ít tiếng Anh
   ___ Nói tiếng Việt và tiếng Anh bằng nhau
   ___ Hầu hết nói tiếng Anh, chút ít tiếng Việt
   ___ Chỉ nói tiếng Anh

2. Bạn cho bạn là người gì?
   ___ Người Việt Nam
   ___ Người Mỹ gốc Việt
   ___ Người Mỹ

3. Bạn bè của bạn là người nước gì?
   ___ Toàn là người Á Đông
   ___ Hầu hết là người Á Đông
   ___ Nữ Á Đông, nữ Mỹ (Tây Phường)
   ___ Hầu hết là người Tây Phường
   ___ Toàn là người Tây Phường

4. Nếu bạn có thể lựa chọn, bạn thích lựa chọn ai để giao tiếp trong công động?
   ___ Toàn là người Á Đông
   ___ Hầu hết là người Á Đông
   ___ Nữ Á Đông, nữ Mỹ (Tây Phường)
   ___ Hầu hết người Tây Phường
   ___ Toàn người Tây Phường

5. Bạn thích nghe loại âm nhạc gì?
   ___ Chỉ nhạc Việt thôi
   ___ Hầu hết nhạc Việt
   ___ Nữ nhạc Việt, nữ nhạc Mỹ
   ___ Hầu hết nhạc Mỹ
   ___ Chỉ nhạc Mỹ thôi
6. Bạn thích xem phim nói tiếng gì?
   ___ Chi phim nói tiếng Việt thời
   ___ Hậu hết phim nói tiếng Việt
   ___ Nửa phim tiếng Việt, nửa phim tiếng Mỹ
   ___ Hậu hết phim tiếng Mỹ
   ___ Chi phim tiếng Mỹ thời

7. Bạn lớn lên ở đâu?
   ___ Ở Việt Nam
   ___ Hậu hết ở Việt Nam, ở Mỹ thời gian ngắn
   ___ Ở Việt Nam và ở Mỹ bằng nhau
   ___ Ở Việt Nam, ở Mỹ thời gian ngắn
   ___ Ở Mỹ
   ___ Ở nơi khác, nói rõ:_____________________

8. Bạn có liên lạc gì với Việt Nam?
   ___ Tôi đã sống hơn 1 năm ở Việt Nam
   ___ Tôi đã sống chưa đến 1 năm ở Việt Nam
   ___ Tôi thường đọc sách và thăm Việt Nam
   ___ Tôi thường đọc sách (thư từ, diễn thoại) với người ở Việt Nam
   ___ Tôi không bao giờ tiếp xúc hay liên lạc với người ở Việt Nam

9. Bạn thích ăn đồ ăn gì ở nhà?
   ___ Hoàn toàn đồ ăn Việt Nam hay Á Đông
   ___ Hậu hết đồ ăn Việt/Á Đông, một chút đồ ăn Mỹ
   ___ Đồ ăn Việt/Á Đông, và đồ ăn Mỹ bằng nhau
   ___ Hậu hết đồ ăn Mỹ
   ___ Hoàn toàn đồ ăn Mỹ

10. Khi đi tiếp bạn thích ăn đồ ăn gì?
    ___ Hoản toàn đồ ăn Việt/Á Đông
    ___ Hậu hết đồ ăn Á Đông/thỉnh thoáng đồ ăn Mỹ
    ___ Đồ ăn Việt/Á Đông và đồ ăn Mỹ bằng nhau
    ___ Hậu hết đồ ăn Mỹ
    ___ Hoản toàn đồ ăn Mỹ

11. Bạn có thể đọc và hiểu...
    ___ Chi đọc và hiểu tiếng Việt
    ___ Đọc và hiểu tiếng Việt giỏi hơn tiếng Anh
    ___ Đọc và hiểu tiếng Việt, tiếng Anh giống bằng nhau
    ___ Đọc và hiểu tiếng Anh giỏi hơn tiếng Việt
    ___ Chi đọc và hiểu tiếng Anh
12. Bạn có thể viết được....

___ Việt được tiếng Việt thời
___ Việt tiếng Việt giỏi hơn tiếng Anh
___ Việt tiếng Việt và tiếng Anh giỏi như nhau
___ Việt tiếng Anh giỏi hơn tiếng Việt
___ Việt được tiếng Anh thời

13. Bạn nghĩ sao về tính tình của bạn?

___ Hoàn toàn Việt Nam
___ Rất Việt Nam
___ Nữa Việt Nam nưa Tây Phương
___ Rất Tây Phương
___ Hoàn toàn Tây Phương

14. Bạn có tham dự vào các ngày lễ, truyền thống của người Việt hay Á Đông không?

___ Hoàn toàn tham dự
___ Tham dự hầu hết
___ Tham dự một nửa
___ Tham dự rất ít
___ Không tham dự gì cả

15. Bạn tin tưởng vào các giá trị Việt Nam (như cuốn hồi, gia đình, giáo dục, và nghề nghiệp v.v....) mạnh như thế nào?

1 2 3 4 5
(không có tin) (tin rất nhiều)

16. Bạn tin tưởng vào các giá trị của Tây Phương mạnh như thế nào?

1 2 3 4 5
(không có tin) (tin rất nhiều)

17. Bạn có thể hòa đồng dễ dàng khi tiếp xúc với người Việt Nam khác không?

1 2 3 4 5
(không hòa đồng) (rất hòa đồng)

18. Bạn có hòa đồng được khi tiếp xúc với những người Mỹ/Tây Phương không?

1 2 3 4 5
(không hòa đồng) (rất hòa đồng)
19. Người ta nghĩ khác nhau về mình, chọn một câu diễn tả đúng nhất cách bạn nghĩ về bạn?

6) Tôi nghĩ tôi cần bản là người Việt. Mặc dù tôi sống và làm việc ở Mỹ, tôi vẫn xem tôi là người Việt Nam.
7) Tôi nghĩ tôi cần bản là người Mỹ. Mặc dù tôi có nguồn gốc và đặc tính của người Việt, tôi vẫn xem tôi là người Mỹ.
8) Tôi nghĩ tôi là người Mỹ gốc Việt, mặc dù thân đảy lòng, tôi luôn luôn biết tôi là người Việt Nam.
9) Tôi nghĩ tôi là người Mỹ gốc Việt, mặc dù thân đảy lòng, tôi xem tôi trước tiên như là một người Mỹ.
10) Tôi nghĩ tôi là người Mỹ gốc Việt. Tôi có đặc tính của Việt Nam lẫn Mỹ, tôi xem tôi như là được pha trộn cả hai.
Appendix G

East Asian Ethnic Identity Scale (Barry, 2002)

Instructions: Circle the number that best describes how you feel.

1. Members of my ethnic group do not have much to be proud of.
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)

2. I am not really sure what role, if any, my ethnic background plays in my life.
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)

3. I am proud to be able to speak an Asian language (for example, Vietnamese).
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)

4. My native language has many unique features.
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)

5. My native language is very special.
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)

6. When a stranger asks me where I am from, I am proud to tell him/her that I am Asian.
   1 2 3 4 5 6 7
   (strongly disagree) (neutral) (strongly agree)
7. Being Vietnamese is an important part of who I am.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

8. I am proud of my ancestors.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

9. I have a strong sense of being Asian.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

10. I rarely think about my ethnic background.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

11. If I were to be born again, I would not wish to be born Asian.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

12. I value my native language.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)

13. My ethnic group is very special.

1  2  3  4  5  6  7
(strongly disagree) (neutral) (strongly agree)
**Hướng dẫn:** Các câu sau đây để hỏi bạn đã hòa động thế nào trong nhóm chung tộc của bạn. Khoanh tròn một số dùng nhất cho bạn.

1. Những người trong nhóm chung tộc của tôi không có gì để hành diện cá.
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

2. Tôi thật không chắc nguồn gốc chung tộc của tôi có ảnh hưởng gì trong đời tôi.
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

3. Tôi thấy hành diện có thể nói được tiếng Việt, ngôn ngữ nước tôi.
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

5. Ngôn ngữ nước tôi rất đặc biệt.
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

6. Khi người ta hỏi tôi từ đâu đến, tôi hành diện nói rằng tôi đến từ ViệtNam hay Á Đông
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)

7. Là người ViệtNam là một phần quan trọng của bản thân tôi.
   1 2 3 4 5 6 7
   (không đồng ý) (rất đồng ý)
8. Tôi hành diện về tổ tiên tôi.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Tôi ý thức mạnh mẽ tôi là người ViệtNam/Á Đông.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Tôi ít khi nghĩ về nguồn gốc chung tổ tôi.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Nếu được sanh ra lại, tôi muốn không phải là người ViệtNam/Á Đông.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Tôi quý trọng nguồn người tôi.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix H
Religious Orientation Scale (Allport & Ross, 1967)

**Instructions:** Please circle the number that best describes how you feel.

1. Religion offers me comfort when sorrow and misfortune strike.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

2. I try hard to carry religion over to other dealings in life.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

3. Church/temple membership helps establish a person in the community.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

4. The purpose of prayer is to secure a happy and peaceful life.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

5. What I believe doesn’t matter as long as I lead a normal life.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)

6. I’ve often been keenly aware of the presence of a divine being.

   1                        2                    3                      4                          5
   (strongly disagree)                                                                    (strongly agree)
7. My religious beliefs lie behind my whole approach to life.
   1  2  3  4  5
   (strongly disagree) (strongly agree)

8. Prayers said alone are as meaningful as when said during service.
   1  2  3  4  5
   (strongly disagree) (strongly agree)

9. The church is most important as a place to form social relationships.
   1  2  3  4  5
   (strongly disagree) (strongly agree)

10. If not prevented by circumstances, I attend church once a week.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

11. Religion is important for answering questions about life’s meaning.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

12. Religion is interesting because church is a congenial social activity.
    1  2  3  4  5
    (strongly disagree) (strongly agree)

13. I read literature about my faith (or church)
    1  2  3  4  5
    (strongly disagree) (strongly agree)
14. Private religious thought and meditation is important to me.

1  2  3  4  5
(strongly disagree) (strongly agree)

15. The primary purpose of prayer is to gain relief and protection.

1  2  3  4  5
(strongly disagree) (strongly agree)
**HƯỞNG DẪN:** Các câu hỏi sau đây về tôn giáo và tâm linh. Khoanh tròn một số mà bạn cho là đúng nhất.

1. Tôn giáo đem đến cho tôi nguồn an ui khi bị buồn bã và bất hạnh.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

2. Tôi có gang ap dung tôn giáo vào cuộc sống hàng ngày.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

3. Là hội viên của nhà thờ hay đến chua giúp tôi có chỗ dự trong cộng đồng

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

5. Tín ngưỡng không thành vấn đề khi tôi có một cuộc sống bình thường.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

6. Tôi thường nhận thực bên nhay về sự hiện diện của Chúa/ Phật.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

7. Tôn giáo hướng dẫn tôi trong mọi náo cuộc đời.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

8. Câu nguyện một mình cũng có giá trị như với chung cộng đồng.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

9. Chua hay nhà thờ là nơi quan trọng nhất để tiếp xúc với cộng đồng.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Tôn giáo rất quan trọng để trả lời các câu hỏi về ý nghĩa cuộc đời.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Tôn giáo rất thu hút bởi vì nhà thờ hay chùa chính là nơi sinh hoạt xã hội.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Tôi có đọc sách báo về tôn giáo.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Mục đích chính của câu nguyên và suy niêm là để được an ủi và che chở.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I

General Sources of Health Information (Woodall et al., 2006).

**Instructions:** Please circle the number that best describes how often you use the following sources in obtaining health information.

1. Reading Vietnamese language newspapers and/or magazines
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

2. Reading English language newspapers and/or magazines
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

3. Listening to Vietnamese language radio programs
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

4. Listening to English language radio programs
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

5. Watching Vietnamese language television programs
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

6. Watching English language television programs
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)

7. Talking to friends
   - 1 (not used at all)
   - 2 (used sometimes)
   - 3 (used all the time)
8. Talking to family members

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Talking to people at pagodas, temples, or churches

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Talking to people at community functions

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Talking to doctors and/or nurses (or health care providers)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Using the Internet

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Using leaflets, brochures, and/or pamphlets

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(not used at all)</td>
<td>(used sometimes)</td>
<td>(used all the time)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hướng dẫn: Khoanh tròn một số để diễn tả đúng nhất về các phương tiện mà bạn thường dùng để học hỏi tin tức về sức khỏe:

1. Đọc báo hay tập chí tiếng Việt.
   1 2 3 4 5
   (không đọc) (đời khi) (rất hay đọc)

2. Đọc báo hay tập chí tiếng Anh.
   1 2 3 4 5
   (không đọc) (đời khi) (rất hay đọc)

   1 2 3 4 5
   (không nghe) (đời khi) (rất thường nghe)

   1 2 3 4 5
   (không nghe) (đời khi) (rất thường nghe)

5. Xem các chương trình truyền hình tiếng Việt.
   1 2 3 4 5
   (không xem) (đời khi) (rất thường xem)

6. Xem các chương trình truyền hình tiếng Anh.
   1 2 3 4 5
   (không xem) (đời khi) (rất thường xem)

7. Nói chuyện với bạn bè.
   1 2 3 4 5
   (không) (đời khi) (rất thường nói)
8. Nói chuyện với gia đình.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không)</td>
<td>(đôi khi)</td>
<td>(rất thường nói)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không)</td>
<td>(đôi khi)</td>
<td>(rất thường nói)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không)</td>
<td>(đôi khi)</td>
<td>(rất thường nói)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Nói chuyện với bác sĩ, y tá hay các nhân viên y tế.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không)</td>
<td>(đôi khi)</td>
<td>(rất thường nói)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Dùng mạng lưới Internet.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không dùng)</td>
<td>(đôi khi)</td>
<td>(rất thường dùng)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Dùng các tờ quảng cáo, hướng dẫn về y tế, sức khỏe.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(không dùng)</td>
<td>(đôi khi)</td>
<td>(rất thường dùng)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix J

Self-Construal Scale (SCS) (Singelis, 1994)

**Instructions:** Please circle the number that best describes how you feel.

1. I have respect for the authority figures with whom I interact.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. It is important for me to maintain harmony within my group.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. My happiness depends on the happiness of those around me.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. I would offer my seat in a bus to my professor.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. I respect people who are modest about themselves.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. I will sacrifice my self-interest for the benefit of the group I am in.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. I often have the feeling that my relationships with others are more important than my own accomplishments.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(strongly disagree)</td>
<td>(not sure)</td>
<td>(strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. I should take into consideration my parents’ advice when making education/career plans.

1 2 3 4 5 6 7
(strongly disagree) (not sure) (strongly agree)

9. It is important to me to respect decisions made by the group.

1 2 3 4 5 6 7
(strongly disagree) (not sure) (strongly agree)

10. I will stay in a group if they need me, even when I’m not happy with the group.

1 2 3 4 5 6 7
(strongly disagree) (not sure) (strongly agree)

11. If my brother or sister fails, I feel responsible.

1 2 3 4 5 6 7
(strongly disagree) (not sure) (strongly agree)
**Hướng dẫn:** Xin vui lòng khoanh tròn một số mà điện ta dùng nhất về bạn.

1. Tôi tổ lồng kinh trọng khi tiếp xúc với những người trên tôi.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)

2. Thất rất quan trọng với tôi để giữ hòa khí với người trong nhóm của tôi.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

( không đồng ý) (không ý kiến) (rất đồng ý)

3. Hành phúc của tôi là tùy thuộc vào hành phúc của những người chung quanh.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)

4. Tôi sẽ những chê cho những người già cả.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)

5. Tôi kính trọng những người kiếm nhũng doan trang.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)

6. Tôi sẽ hy sinh quyền lợi cá nhân cho quyền lợi của tập thể.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)

7. Tôi thường cảm thấy rằng mỗi quan hệ của tôi với những người khác thì quan trọng hơn là các thành tích của tôi.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(không đồng ý) (không ý kiến) (rất đồng ý)
8. Tôi nên để ý tới lời khuyên của cha mẹ khi quyết định việc đổi.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Điều quan trọng cho tôi là phải tôn trọng quyết định của tập thể.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Tôi sẽ ô lại với tập thể nếu họ cần tôi, ngay cả khi tôi không hài lòng với họ.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Nếu anh chỉ em tôi bị thất bại, tôi cảm thấy có trách nhiệm.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(không đồng ý)</td>
<td>(không ý kiến)</td>
<td>(rất đồng ý)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix K

Communication of Health Information

Did you discuss any of the information that you learned in this program with other individuals?
- [ ] Yes
- [ ] No

Who did you share this health information with? Please check all that apply.
Also, indicate if they are from the same church/temple community by circling yes or no.

Is this person(s) a part of your church/temple community? (circle yes or no)

<table>
<thead>
<tr>
<th></th>
<th>1. Friends</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Your Mother</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>3. Your Daughters</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>4. Your Sisters</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>5. Your Aunts</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>6. Your neighbors</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>7. You Husband</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>8. Your Father</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>9. Your Brothers</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>10. Your Uncles</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>11. Other: if yes, then please write down what your relationship is to this person</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Other: if yes, then please write down what your relationship is to this person ______________________
Bạn đã có thảo luận những điều bạn học được trong chương trình này với những người khác không?
   ___ có
   ___ không

Nếu có, bạn đã thảo luận với ai? Xin gạch những câu trả lời.
Và khoanh tròn có hay không nếu người này cùng Nhà Thờ/Chùa với bạn.

Người này có đi cùng Nhà Thờ/Chùa với bạn không?
   khoanh tròn có hay không

   ___1. bạn bè
   ___ có ___ không
   ___2. mẹ của bạn
   ___ có ___ không
   ___3. con gái của bạn
   ___ có ___ không
   ___4. chị em của bạn
   ___ có ___ không
   ___5. dì của bạn
   ___ có ___ không
   ___6. hàng xóm
   ___ có ___ không
   ___7. chồng của bạn
   ___ có ___ không
   ___8. cha của bạn
   ___ có ___ không
   ___9. anh em của bạn
   ___ có ___ không
   ___10. chú bác của bạn
   ___ có ___ không
   ___11. những người khác, họ liên hệ thế nào với bạn, viết ra __________________
Appendix L

PowerPoint Presentations on Breast and Cervical Cancer
Thủ Pup nhạt thí điểm?

Kết quả thủ Pup

Thủ Pup tin vào nỗi sợ đầu thai?

Ai cần phải thủ Pup?

Việc gì phải nhật hồ thiết lập thủ Pup?

- Thăm khám bắt buộc trước khi thực hiện thủ Pup mang tính chất định kỳ.
- Ngày sắp tới.
- Không để bất kỳ ai la hét, hét, hét, hét.
- Không thể bắt buộc người khác để thực hiện thủ Pup.
- Không được thử thủ Pup trong
- Không có tối thiểu thủ Pup.

(Viết bởi Đạo diễn Cung Cấp, Cục Trị bệnh B)
Focus Group Probes

1. Who are the people in your life that depend on you?

2. Has the experience with the breast and cervical cancer information session changed your views or beliefs on breast or cervical cancer? If so, how were your views changed?

3. Do you feel as if you have gained useful or helpful knowledge with the sessions? If so, what did you feel was the most useful?

4. What thoughts or feelings do you have towards getting a clinical breast exam, mammogram, or Pap test?

5. What would be a likely motivation or reason as to why you would get a Pap test or clinical breast exam?

6. Have you talked about what you have learned in these sessions with other women in the community? If yes, who did you talk with and what information did you share?

7. Do you know anyone who has been affected by cervical or breast cancer? Do you believe that it could happen to you?

8. What could be done to improve the educational sessions?
1. Những ai trong đội sóng của bạn mà tự thiếu vào bạn?

2. Những điều bạn đã học được trong cuộc nghiên cứu về ung thư vú và ung thư cổ tử cung có làm cho bạn quan niệm về ung thư vú và ung thư cổ tử cung không? Nếu có, quan niệm của bạn có thay đổi như thế nào?

3. Bạn có cảm thấy bạn đã có được những kiến thức hữu ích hơn các buổi học hoặc đây không? Nếu có, điều nào bạn thấy hữu ích nhất?

4. Bạn có cảm nhận gì về việc đi khám vú, chụp hình vú hay di thư Pap test?

5. Vì lý do hay động cơ gì đã khiến cho bạn đi thư Pap test hay đi khám vú?

6. Bạn có từng bạn bè về những điều bạn đã học hoặc tương đối trong các buổi học này với những người phụ nữ khác trong cộng đồng không? Nếu có, bạn đã nói với ai? và việc điều gì?

7. Bạn có biết người nào bị ung thư vú và ung thư cổ tử cung không? Bạn có nghĩ rằng chuyện này có thể xảy đến cho bạn không?

8. Bạn có nghĩ rằng mình nên làm gì để các cuộc học hỏi được thêm phần kết quả hơn?
Appendix M

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

TITLE: *Sức khỏe là quan trọng hơn sắc đẹp!* Health is more important than Beauty!

VCU IRB NO.: 

SPONSORS: Virginia Commonwealth University *and* the National Cancer Institute

This consent form may contain words that you do not understand. Please ask the study staff to explain any words that you do not clearly understand.

PURPOSE OF THE STUDY

The purpose of this research study is to find out what Vietnamese women know and understand about breast and cervical cancer and cancer screening.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT

If you decide to be in this research study, you will be asked to sign this consent form after you have had all your questions answered and after you feel as though you understand what will take place in the study. You will be asked to attend two group meetings. Each meeting will last approximately two hours. You will also be asked to fill out some surveys at the beginning and end of the meetings. The surveys will have questions about your attitudes and behaviors with regard to cancer. The surveys will also ask about your culture. You will also be interviewed about your thoughts and feelings about cancer in the second meeting.

RISKS AND DISCOMFORTS

Sometimes talking about topics such as illness and disease causes people to become upset. You do not have to talk about anything you do not want to. You may leave the group at any time.

BENEFITS TO YOU AND OTHERS

You will benefit by learning about breast and cervical cancer detection, prevention, and treatment.

COSTS

There are no costs for participating in this study other than the time you will spend in the meetings and filling out questionnaires.

PAYMENT FOR PARTICIPATION

You will receive $20.00 for participating in the first session. You will receive $30.00 for participating in the second session. A meal will be provided at each session.

CONFIDENTIALITY

Data is being collected for research purposes only. Your data will be identified by ID number and not name. Data from surveys and group discussions will be kept in secure files and these files will be deleted two years after the end of the study. Access to all data will be limited to study personnel. However, information from the study and the consent form signed by you may be looked at or copied for research or legal purposes by Virginia Commonwealth University.
The group discussion will be audio taped, but no names will be recorded. At the beginning of the session, all members will be asked to use a code name so that their real name is not recorded.

VOLUNTARY PARTICIPATION AND WITHDRAWAL
You do not have to participate in this study. If you choose to participate, you may stop at any time without penalty. You may also choose not to answer any question.

QUESTIONS
In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Anh B. Nguyen (Project Director)
804 402 9526
Nguyenab@vcu.edu

Faye Z. Belgrave (Principle Investigator)
804 827 3908
fzbelgrave@vcu.edu

If you have any questions about your rights as a participant in this study, you may contact:
Office for Research
Virginia Commonwealth University
800 East Leigh Street, Suite 113
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-827-2157

You may also contact this number for general questions, concerns or complaints about the research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm.

CONSENT
I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My signature says that I am willing to participate in this study. I will receive a copy of the consent form once I have agreed to participate.

Participant name printed   Participant signature   Date

Name of Person Conducting Informed Consent
Discussion / Witness
(Printed)

Signature of Person Conducting Informed Consent
Discussion / Witness   Date

Investigator Signature (if different from above)   Date
THÔNG BÁO VỀ CUỘC KHẢO CỨU VÀ GIÁY THẢO THUẦN – Mẫu A

ĐỀ MỤC: Health is more important than beauty! Sức khỏe là quan trọng hơn sắc đẹp!
VCU IRB NO: Hwa15-30-30

BẢO TRỘI BỘI: Đại Học VCU và Viện Ung Thư Quốc Gia

Giấy thoại thuần này có những danh từ bạn có thể không hiểu, xin hỏi bạn hướng dẫn để được giải thích tương tự những danh từ mà bạn không hiểu rõ.

MỤC ĐỊCH CUỘC KHẢO CỨU

Mục đích cuộc khảo cứu này là để tìm hiểu người phụ nữ Việt Nam hiểu về vi khuẩn và biết những thắc mắc về ung thư vú cũng như ung thư cộ tử cung, và sự truyền tiêm ung thư.

GIẢI THÍCH VỀ CUỘC KHẢO CỨU VÀ SỰ THAM Đ.RGB CỦA BẠN

Nếu bạn quyết định tham dự cuộc khảo cứu này, bạn sẽ được yêu cầu ký giấy thỏa thuận này sau khi những thắc mắc của bạn đã được giải đáp và sau khi bạn cảm thấy đã hiểu rõ là chúng ta sẽ làm gì trong cuộc khảo cứu này. Bạn sẽ được mời dự hai buổi họp. Mỗi buổi họp sẽ kéo dài khoảng hai tiếng. Bạn sẽ được hỏi thăm đề ý kiến trước và sau các phiên họp. Cuộc thẩm định của bạn có những câu hỏi về thái độ và cách cư xử của bạn đối với bệnh ung thư. Cuộc thẩm định của bạn cũng sẽ hỏi về phương diện vận động của bạn. Bạn cũng sẽ được phỏng vấn về các suy nghĩ và cảm giác của bạn về bệnh ung thư trong cuộc họp thứ nhất.

NHỮNG SỰ KHÔ KHÀN VÀ NGẠI NGỨNG


SỰ LỢI ÍCH ĐỂ ĐEN CHO BẠN VÀ CÁC PHỤ NỮ KHÁC

Bạn có lợi được học hỏi về cách phát hiện, phòng ngừa, và chữa trị bệnh ung thư vú và ung thư cộ tử cung.

SỰ TÔN PHÍ

Không có tôn phí gì để bạn tham dự vào cuộc khảo cứu này, bạn chỉ cần mất chút thời gian để tham dự hai buổi học và trả lời các câu hỏi trong tờ văn đáp.

THỦ LAO CHO SỰ THAM Đ.RGB

Bạn sẽ được tạng 20 dollars cho buổi học đầu, và 30 dollars cho buổi học thứ hai. Ngoài ra thể án sẽ được cung cấp cho mỗi buổi học.

Version 6/28/10

APPROVED

7-8-10 lo c.
SỰ KIN NHIỄM

Các dự kiến được thử thách cho cuộc khao cứu mà thời. Các dự kiến của bạn sẽ được ghi
bằng âm số chữ không dùng tên của bạn. Tất cả những dự kiến về cuộc thăm dò ý kiến
và về nhóm thảo luận đều sẽ được giữ trong những hồ sơ một cách kín đáo an toàn, và
các hồ sơ đó sẽ được hủy bỏ hai năm sau khi cuộc nghiên cứu đã hoàn thành. Chỉ có các
nhiên viên khảo cứu mới được quyền xem xét các dự kiến này. Tuy nhiên, các tài liệu về
cuộc khảo cứu và giấy báo cáo thuận có thể được sao lục và xem xét trở lại cho mục đích
khảo cứu hay phân lý bởi Trường Đại học VCU.
Nhóm thảo luận sẽ được thu vào cuối bằng, nhưng sẽ không thu tên tuổi của bạn.
Khởi đầu cuộc nhóm, tất cả các người tham dự sẽ được yêu cầu dùng âm số thay vì tên
thật của họ.

SỰ TÍNH NGUYỄN THAM DỰ HAY RÚT LUI

Bạn không phải bắt buộc tham dự cuộc khảo cứu. Nếu bạn tình nguyện tham dự, bạn có
thể rút lui bất cứ lúc nào mà không bị phán há. Bạn cũng có thể tự chọn không trả lời
bất cứ câu hỏi nào.

MÔI THÁC MÁC

Sau này, bạn có thể thắc mắc về sự tham dự trong cuộc khảo cứu này. Nếu bạn có thắc
mắc, hoặc thắc mắc, hãy liên hệ với cuộc khảo cứu này, xin liên lạc qua:

ANH BẢO NGUYỄN (Giám Đốc Kế Hoạch)
(804) 402 9526

FAYE Z. BELGRAVE (Thành Tra Nguyên Gốc)
(804) 827-3908

Nếu bạn có điều gì thắc mắc về quyền lợi của bạn khi tham dự cuộc khảo cứu, xin liên
lạc với:

OFFICE for RESEARCH
VIRGINIA COMMONWEALTH UNIVERSITY
800 East Leigh street, suite 113
P.O. Box 980568
Richmond, VA 23298
TelephoneNumber: (804)-827-2157

Bạn cũng có thể liên lạc với tôi trên nếu có những câu hỏi, than phán hay lo ngại về
cuộc nghiên cứu này. Xin bạn gửi số điện thoại trên nếu bạn không có thể liên lạc được
với bạn khảo cứu hay muốn nói với người nào khác. Các tin tức thêm về sự tham dự vào
cuộc khảo cứu có thể tìm thấy ở:

Version 6/28/10

APPROVED

7/8/10 /cm /jm
THÔÁA THUẤN


Tên người tham dự              chữ ký người tham dự              ngày/tháng/năm

Tên người hướng dẫn giấy thỏa thuận / người chứng  :

chữ ký người hướng dẫn giấy thỏa thuận / người chứng              ngày/tháng/năm

chữ ký giám đốc / thanh tra (nếu khác với trên)              ngày/tháng/năm

Version 6/28/10

APPROVED

7-8-10/...
Vita

Anh Bao Nguyen was born on August 05, 1982, in Montreal, Canada, and has dual citizenship (American and Canadian citizenship). She graduated from Jamestown High School, Williamsburg, Virginia in 2000. She received her Bachelor of Science in Psychology from Virginia Polytechnic Institute and State University, Blacksburg, Virginia in 2004. She received a Master of Arts in Psychology from the University of Richmond in 2006.

EDUCATION

Ph.D., Social Psychology, Virginia Commonwealth University, 2011.
Dissertation: “Sua Khoe La Tot Hon Sac Dep! Health is Better than Beauty! Improving Breast and Cervical Cancer Screening Outcomes among Vietnamese Women”
Committee Chair: Faye Z. Belgrave, PhD

M.A., Psychology, University of Richmond, 2006.
Thesis: “Predictors of Breast and Cervical Cancer Screening among Vietnamese Immigrant Women”
Thesis Director: Barbara K. Sholley, PhD

Major: Psychology

AWARDS AND HONORS

- Most Outstanding Social Psychology Graduate Student, Virginia Commonwealth University, Richmond, VA - 2011
- Society for Prevention (SPR)’s 18th Annual ECPN Student Poster Competition, 2nd place, Denver, Co – 2010
- SPR Minority Travel Scholarship for the 18th Annual SPR meeting in Denver, Co ($500) – 2010
- Student Poster Competition Award, Virginia Commonwealth University’s Graduate Student Symposium, tied for 2nd place, Richmond, VA ($150) – 2010
- Phi Kappa Phi award (the award is given to one outstanding doctoral level graduate student for excellence), Virginia Commonwealth University, Richmond, VA – 2010
- Student Poster Competition Award at the 2009 Virginia Forum on Youth Tobacco Use: Translating Research into Policy and Practice, tied for 1st place, Richmond, VA ($200) – 2009
- Elizabeth Fries Scholarship (the scholarship is presented to one female graduate student in the psychology department who pursues cancer control research), Virginia Commonwealth University, Richmond, VA ($500) – 2009
- Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellowships (F31) National Cancer Institute (NCI) – 2008-2011
- VCU Graduate Research Travel Grant ($400) – 2008
- Institute for Women’s Health (IWH) Community Participatory Seed Grant (the seed grant is awarded to faculty/students to foster excellence and fund community-based participatory research studies), Richmond, VA ($7,204) – 2007.
- VCU Graduate Research Travel Grant for SEPA conference ($400) – 2006
- Most Outstanding Graduate Student in Psychology (University of Richmond) – 2006
- University of Richmond Graduate Research Travel Grant for SEPA Conference ($400) – 2006
- University of Richmond Research Travel Grant for International Conference on Social Science Research ($900) - 2005
- University of Richmond Graduate Summer Research Grant ($1,200) – 2005
- Summer Student Research Fellowship and Grant for the Bonner Center for Civic Engagement (competitive fellowships that grant projects that explore factors and dynamics that contribute to social and civic problems with the intent to generate innovative solutions for community-identified needs), Richmond, VA ($1,500) – 2005
- University of Richmond Graduate Research Travel Grant for SEPA Conference ($525) - 2005
- Placed in top ten finalists in O.B.M. essay for Women’s Individuality - 2004
- Graduated with Cum Laude Honors from Virginia Tech - 2004
- Woman’s Club of Williamsburg Scholarship for showing strong sense of education, community service, and leadership ($1,000) – 2000
- Jamestown scholarship for strong academics, Jamestown High School, Williamsburg, VA ($1,000) – 2000

PROFESSIONAL EXPERIENCE

Adjunct Instructor, Department of Psychology, Randolph Macon College, Ashland, VA, August 2010- 2011

Adjunct Instructor, Department of Psychology, Virginia Commonwealth University, Richmond, Va, 2007 – 2011

Graduate Research Assistant, Virginia Commonwealth University Department of Psychology, Center for Cultural Experiences in Prevention, Richmond, VA, August 2006 -present

Graduate Teaching Assistant, Virginia Commonwealth University, Department of Psychology, Richmond, VA, August 2006 – May 2008

Graduate Research Assistant, University of Richmond, Richmond, VA, August 2004- May 2006.

TEACHING EXPERIENCE

Adjunct Instructor, Department of Psychology, Randolph Macon College, Ashland, VA, August 2010- present. Undergraduate course: Social Psychology (Psyc 340), Fall 2010. Role: Instructor.
Adjunct Instructor, Department of Psychology, Virginia Commonwealth University, Richmond, VA, June – August, 2007-2010. Undergraduate course: Experimental Methods (Psyc 317) and Social Psychology (Psyc 321) Role: Instructor.

Teaching Assistant, Department of Psychology, Virginia Commonwealth University, Richmond, VA, August –May, 2006-2008. Undergraduate course: Experimental Methods (Psyc 317). Role: Lab Instructor. Supervisors: Dr. Victoria Shivy; Dr. Robert Ham

Teaching Assistant, Department of Psychology, University of Richmond, Richmond, VA, August 2005 - May 2006. Undergraduate course: Applied Research Methods (Psyc 317). Role: Lab Instructor. Supervisor: Dr. Barbara Sholley

ARTICLES IN REFERRED JOURNALS


MANUSCRIPTS UNDER REVIEW


PAPER AND POSTER PRESENTATIONS- PEER REVIEWED
Nguyen, A.B., Clark, T.T, & Belgrave, F. (April, 2011). The role of empathy in drug use behaviors among African American Adolescents. Poster presented at the Graduate Student Symposium at Virginia Commonwealth University, Richmond, Va


*this poster placed in SPR's ECPN student poster competition

Nguyen, A.B., & Belgrave, F. (April, 2010). Ethnic Identity, Gender Role Beliefs, and Drug use Among African American Women. Poster presented at the 6th Annual Women's Health Research Day and the Graduate Student Symposium at Virginia Commonwealth University, Richmond, Va

*this poster tied for 2nd place in the Graduate Student Symposium student poster competition


*This poster tied for 1st place in the Student Poster Competition at the VFYT Conference.


*Abstract published in Journal of Women’s Health, 18(5).


Nguyen, A.B., & Sholley, B. (April, 2006). Factors Influencing the Utilization of Health-based Services among Vietnamese Immigrants. *Poster presented at the University of Richmond's Twenty-First Annual Arts and Sciences Symposium, Richmond, VA.

Nguyen, A.B., Jones, E., & Sholley, B. (April, 2006). Exercise Motivation: An Examination of Perceived Control. *Poster presented at the University of Richmond's Twenty-First Annual Arts and Sciences Symposium, Richmond, VA.


Nguyen, A.B., & Sholley, B. (September, 2005). Factors Influencing the Utilization of Community-Based Health Services among Vietnamese Immigrants. *Paper and poster presented at the Bonner Center for Civic Engagement Symposium, Richmond, VA.


Nguyen, A.B., & Sholley, B. (April, 2005). Social Dominance: Resistance to Attitude Change. *Poster presented at the University of Richmond's Twentieth Annual Arts and Sciences Symposium, Richmond, VA.


**FUNDED RESEARCH**

**Principal Investigator** (2008-present) Suc Khoe La Quan Trong Hon Sac Dep! Health is More Important than Beauty!: A Breast and Cervical Cancer Intervention for Vietnamese Women. Funded by the National Institutes of Health/National Cancer Institute on a F31 training grant. A study of cultural factors that increase Vietnamese women’s cancer screening knowledge, attitudes, self-efficacy, and behavior. A breast and cervical cancer intervention.


**Principal Investigator** (2005) Factors Influencing the Utilization of Community-Based Health Services among Vietnamese Immigrants ($1500). Funded by the Bonner Center for Civic
Engagement on a fellowship grant. A study of the attitudes, behaviors, and perceptions of health-related issues among the local Vietnamese population

OTHER FUNDED RESEARCH

Research Assistant (2006-2009). Pathways to Smoking among African American Adolescents. Funded by the Virginia Tobacco Settlement Foundation ($720,000). Study of factors that protect against tobacco use conducted in collaboration with several Virginia urban and rural school systems. PI: Faye Belgrave, Ph.D.


SERVICE

Editorial Service

Ad Hoc Reviewer

- Cultural Diversity and Ethnic Minority Psychology
- Journal of Health Care for the Poor and Underserved

Service to Department of Psychology

- Member of a Promotions Committee for Dr. Zyzniewski, Virginia Commonwealth University (2007)

Service to the Community

- Volunteer for Vietnamese Church of Martyrs Daycare (2008 – present)
- Volunteer for Hue Quang Buddhist Temple’s Vietnamese Language Classes (2010-present)
- Volunteer work with HandsOn Greater Richmond (and the Foodbank) with Backpack programs (April-May 2010)
- Volunteer work with Virginia Breast Cancer Foundation for National Lobby Day (May 2010)
- Volunteer work with Central VA Foodbank Float in the Christmas Parade (December 2009)
• Volunteer work with Virginia Breast Cancer Foundation for State Lobby Day (February 2008)

Personal Affiliations and Organizations:

• Society for Prevention Research (2010 to present)
• Society for the Advancement of Psychology (2008 to present)
• SEPA (2006 to 2008)
• Psi Chi (2005 to present)
• Center for Applied Behavior Systems (2003 to 2004)
• Golden Key Honor Society (2003 to present)
• National Society of Collegiate Scholars (2000 to present)
• Psychology Club of Virginia Tech (2001 to 2002)