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Stereotypes about Healthcare Professionals, Emotions, and Mammography Compliance

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by

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Each person whose signature appears below certifies that this thesis in his/her opinion is adequate, in scope and quality, as a thesis for the degree Doctor of Philosophy

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CONTENT

FIGURES

Figures Page

TABLES

Tables Page

ABBREVIATIONS

M	Mean
SD	Standard Deviation
α	Alpha
β	Standardized Path Coefficient (Beta)
CI	Confidence Interval
df	Degrees of Freedom
HCP	Healthcare Professional
ACS	American Cancer Society
SCM	Stereotype Content Model
n	Number of Participants
p	Probability
t	T-test
r	Pearson's R (Correlation)
r^2	Variance Explained
χ^2	Chi-Squared

ABSTRACT OF THE THESIS

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by

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Doctor of Philosophy Graduate Program in Psychology
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Rates of mammography screening are particularly low for minority women, with only 42% of Latin American (Latino) women in the U.S. reporting having a mammogram in the last year as compared to 53% of non-Latino White (Anglo) women [1]. Minority patients are more likely to report negative healthcare encounters with their health professionals [2; 3], which may results in less favorable cultural stereotypes about healthcare professionals and more negative emotional reactions. Guided by Betancourt's Integrative Model of Culture, Psychological Processes, and Health Behavior [4] and the Stereotype Content Model [5], the aim of the present research was to examine the extent to which Latino (foreign born and US born) and Anglo American women's stereotypes about health professionals influence negative screening emotions and mammography compliance. Multi-stage stratified sampling resulted in a sample of 104 Latino (64 foreign born, 40 U.S. born) and 113 Anglo women at least 40 years of age. Preacher and Hayes PROCESS Macro [6-8] for moderated mediation was employed to test the hypothesis that warm/cold and competent/incompetent stereotypes about health professionals would influence mammography compliance directly and/or indirectly through negative screening emotions. For foreign born Latino women, stereotypes did not

influence screening emotions or mammography compliance. For U.S. born Latino women, cold, competent, and cold x competent stereotypes were associated with negative screening emotions. The interaction revealed that perceiving a health professional to be cold and incompetent resulted in higher levels of negative emotions, which in turn resulted in lower mammography compliance. For Anglo women, cold and cold x competent were associated with negative screening emotions. However, emotions were not in turn associated with mammography compliance. These findings illustrate the applicability of Betancourt's Integrative Model of Culture and the Stereotype Content Model to the understanding of health behavior and patient-professional relations among culturally diverse populations.

CHAPTER ONE

INTRODUCTION

Disparities in Cancer Screening & Continuity of Care

According to the American Cancer Society (ACS) [1], only 53% of women in the US over the age of 40 had a mammography in the last year. However, for minority populations breast cancer screening rates are even lower. Compared to 53% of non-Latino White (Anglo) women, only 41.7% of Latin American (Latino) women in the U.S. have had a mammogram [1]. Breast cancer can be detected at early stages when women regularly screen with mammograms [9-12]. Despite interventions designed to increase cancer screening, there are still Latino women in the United States who are not screening in compliance with ACS recommended guidelines. These findings point to a need to identify factors that may be responsible for the noted health disparities.

One such reason for these disparities may have to do with patients' beliefs and stereotypes about healthcare professionals that result from their own and others' previous healthcare encounters. These stereotypes could influence patients' perceptions regarding the outcome of future clinical interactions, thereby serving as a barrier to engage in future cancer screening. Although the study of stereotypes and person perception in interpersonal relationships have been extensively studied in social psychology, more research needs to be conducted within the healthcare setting.

Patient-Professional Interpersonal Relations

A positive relationship between the healthcare professional and patient is critical in the implementation of effective health promotion interventions. However, patients'

future health behaviors may be negatively influenced, based on perceived or real mistreatment from the healthcare professional, especially when race is perceived as an explanation. Over 50% of Latinos believe that disparities in healthcare treatment, surgery, or insurance coverage exist based on one's race or ethnicity [2]. In fact, Latino women reported that the ill-mannered behavior of healthcare professionals during breast cancer screening was an obstacle to their willingness to return for future screening [3]. These perceptions of healthcare mistreatment may also be associated with patient's socially shared beliefs or cultural stereotypes about healthcare professionals, which are based on their patient-professional relations.

From an interpersonal perspective, research suggests that an individual may ascribe negative traits to a person that he or she is interacting with when they believe their goals are in conflict with that person [5]. As a consequence of these ascribed negative traits, such as coldness or incompetence, that person may then experience negative emotions [13]. In the healthcare context, when a patient believes that their goals are in conflict with their healthcare professional, it can heighten the chances of a negative reaction to the healthcare interaction and a lower their likelihood of continuing care with that healthcare professional [14]. Because good patient-professional relations are associated with better patient outcomes [15], it is important to understand how the patient's stereotypes about healthcare professionals may influence their willingness to interact with the healthcare professional or to perform the necessary health behaviors to keep themselves well, such as appropriate screening for breast cancer.

Person Perception Research

The current research on stereotypes can be linked back to the studies on person perception conducted by Solomon Asch and Harold Kelley. Solomon Asch (1946) investigated the extent to which informing participants through a list of characteristics about a confederate would influence the participant's overall impression of the confederate. In particular, providing either a warm or cold description of the confederate resulted in consistent differences in the impressions participants had of the confederate [16]. Expanding on Asch's work, Harold Kelley (1950) investigated whether providing students with pre-information regarding the warmth or coldness of a substitute professor would influence the students' evaluation of that professor and their likelihood to interact with the professor. Students that were given information describing the professor as warm reported a more favorable impressions of the professor than the students that were provided with a cold description of the professor. Furthermore, 56% of those that believed the professor to be warm interacted with him during the lecture whereas only 32% of those that believed him to be cold did [17]. Findings from this research suggest that holding cold stereotypes about an individual results in less favorable perceptions and leads to less interpersonal interactions.

Fiske's Stereotype Content Model

Susan Fiske and colleagues further expanded on the person perception work of Solomon Asch (1946) in her Stereotype Content Model [SCM; 18], which identifies the stereotypes of warm, in addition to competence, as central to interpersonal relationships. According to Fiske, warm is synonymous with characteristics relevant to being "sincere

and helpful," whereas cold includes characteristics relevant to being "unpopular and unsociable" [5]. Competent is equivalent to characteristics of "scientific and skillful," while incompetent is synonymous with "foolish and unintelligent" [5]. The warm and competent stereotypes are central, according to Fiske, because they are at the core of appraising the intentions (warm) of the individuals and his or her ability to act (competent) on these intentions [19]. By understanding an individual's appraisal of another in terms of warm and competent, the potential outcome of the interaction can be anticipated to be either positive or negative.

Betancourt's Integrative Model of Culture, Psychological Factors, and Behavior Adapted for the Study of Health Behavior

Rohner (1984) developed a conceptual definition of culture that is made up of a "highly variable system(s) of meaning" or stereotypes and socialized beliefs that are learned and shared by those people within a particular group [20]. According to Betancourt's Integrative Model of Culture, Psychological Processes and Behavior [21-23], socially shared cultural beliefs, values, norms and expectations are expected to influence psychological factors such as emotions and health behavior (see Figure 1).

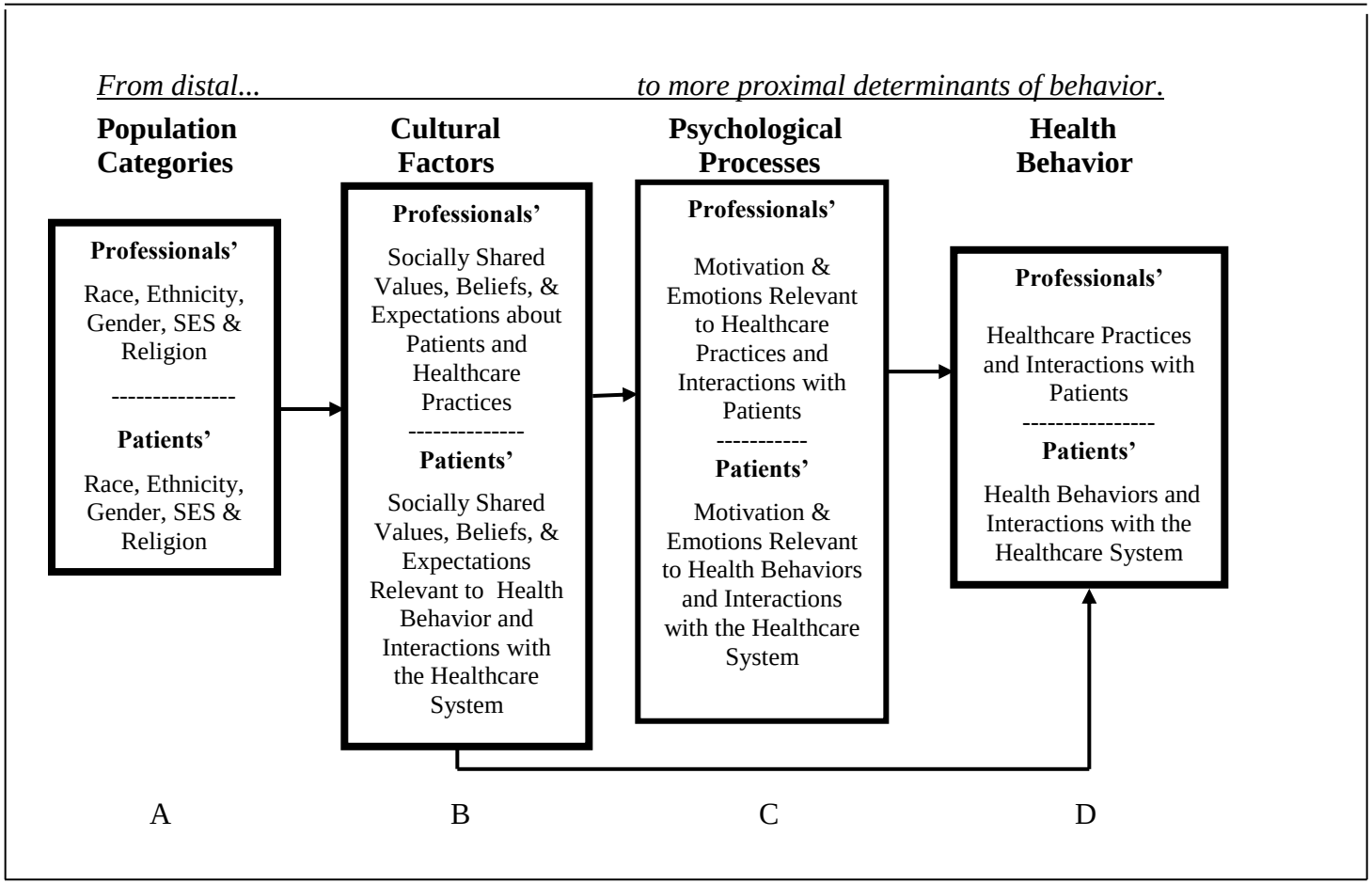

Figure 1. Betancourt's integrative model of culture, psychological factors, and behavior adapted for the study of health behavior (Betancourt & Flynn, 2009).

Given that we live in an ethnically diverse society, it is important to examine ethnic variations in cultural stereotypes about healthcare professionals and how these stereotypes influence patient-professional interactions, emotions, and related health behaviors. In fact, previous research indicated that Latino women were more likely to report unfavorable cultural beliefs about healthcare professionals performing breast cancer screening exams when compared to Anglo women and these beliefs were found to influence continuity of care [14]. In another study examining the role of emotions on cancer screening behavior, Latino women reported significantly higher levels of anxiety and fear about clinical breast exam screening as compared to Anglo women, which in turn impacted clinical breast exam compliance [23].

Fiske's Stereotype Content Model and Betancourt's Integrative Model of Culture can be employed to better understand patient-professional clinical interactions. For example, understanding diverse patients' cultural stereotypes about healthcare professionals, in regards to the level of warmth and competence, could provide valuable information regarding future clinical interactions. Patients who report positive stereotypes about their healthcare professionals, in regards to levels of warmth and competence, may in turn report less negative screening-related emotions and as a result be more compliant with breast cancer screening guidelines. Whereas patients who report negative stereotypes (cold and incompetent) may report more negative screening-related emotions and be less compliant with breast cancer screening guidelines.

The Present Study

The aim of the present research was to examine the extent to which Latino and Anglo American women's stereotypes about health professionals influence negative screening

emotions and breast cancer screening compliance. These relations were examined among Anglo and Latino women born in the US and Mexico. It was hypothesized that Latino and Anglo American women's stereotypes about healthcare professionals would directly, and/or indirectly influence mammography compliance through negative screening emotions (general hypothesis). Specifically, patients who reported lower scores on cold stereotypes (e.g. higher warmth) and higher scores on competent stereotypes about health professionals were expected to be more compliant with mammography guidelines (hypothesis 1). Higher scores on cold and lower scores on competent stereotypes would be associated with higher scores on negative screening emotions (hypothesis 2). Higher scores on negative screening emotions were in turn expected to influence lower mammography compliance (hypothesis 3). Finally, consistent with previous research [18], it was hypothesized that ethnicity would moderate the relations among negative screening emotions and mammography compliance (hypothesis 4). Specifically, it was expected that the relations among emotions and mammography compliance would be stronger for Latino as compared to Anglo women.

CHAPTER TWO

METHODS

This study employed archival data from a larger grant funded by the American Cancer Society to investigate the role of culture and cancer-related health care behaviors.

Participants and Procedures

Approval for the study was obtained from the Institutional Review Board of Loma Linda University prior to data collection. Multi-stage, stratified sampling was conducted to obtain nearly equal proportions of Latino and Anglo women from varying demographic characteristics in Southern California. Using US Census tract data from the Federal Financial Institutions Examination Council, projections regarding ethnicity, SES, and age were anticipated for potential recruitment sites including churches, markets, universities, mobile home parks, and community settings. Once permission from key personnel at the selected sites was obtained, an English and/or Spanish recruitment flyer was posted describing the study, eligibility for participation, and the time and on-site location where interested women could go to participate.

Bilingual (Spanish-English) research assistants greeted interested women at each recruitment location, described the purpose of the study, and eligibility criteria (Latino or Anglo American, at least 20 years old, and able to read English or Spanish). After participants provided informed consent, they were administered an English or Spanish version of the instrument which took approximately 30 to 45 minutes to complete. Participants were compensated $15.

As a result of recruitment efforts, a total of 335 Latino (n=164) and Anglo (n=171) women participated in the larger study. At the time of data collection, the ACS recommended that women 40 years of age and older should have annual mammograms. Of the 335 women, a total of 217 (64 foreign born Latino, 40 US born Latino, 113 Anglo) women were at least 40 years of age and were therefore included in the present study.

Measures

The scales used for the purpose of this study were available in both English and Spanish. All scales were translated by bilingual (Spanish-English) speaking experts using the double back-translation and de-centering procedures [24-27].

Cultural Stereotypes about Healthcare Professionals

Consistent with Fiske's stereotype content model, two items from a recently developed Cultural Beliefs about Healthcare Professional Scale were used to assess cold and competent stereotypes. Participants were asked to think about female and male healthcare professionals that perform breast and cervical cancer screening exams and indicate the extent to which they agreed with 22 positive and negative stereotypes. All items were placed on a 7-point Likert scale from "not at all" to "very much." Because mammograms are typically performed by female healthcare professionals [28], only the cold and competent stereotype items worded in relation to female healthcare professionals were used for the purpose of this study.

Negative Screening Emotions

Three items similar to those used in previous research examining the influence of screening emotions on clinical breast exams [23] were employed. These items were developed based on interviews with Latino and Anglo women, which revealed that fear, anxiety, and embarrassment were the most frequently reported emotions associated with future cancer screening. Participants were asked the extent to which they agreed with the following statements, "Thinking about having a mammogram makes me anxious," "Mammograms are embarrassing," and "When I think about having a mammogram I get scared." Items were placed on a 7-point Likert scale *(1=strongly disagree to 7=strongly agree)*. Exploratory factor analysis revealed that the item assessing embarrassment loaded low on the negative emotions scale for all ethnicities, which resulted in its elimination. Reliability for the two item scale was strong (foreign born Latinos α=0.91; US born Latinos α=0.96; Anglos α=0.93).

Mammography Screening Compliance

Based on American Cancer Society breast cancer screening guidelines at the time of data collection [29], mammography exams were recommended for women in their 40s once a year. To assess mammography compliance, participants were provided with an illustration of a woman having a mammography exam and a brief description of the exam. Participants were then asked, "Have you ever had a mammogram?" followed by, "If yes, how many have you had in the last 6 years?" Using similar methods employed by Kundadjie-Gyamfi and Magai (2008), a screening compliance proportion score was calculated based on the total number of mammogram exams reported, divided by the

maximum number that a woman of her age should have if they were fully compliant with screening guidelines (minimum compliance=0; maximum compliance=1.0) [30].

Covariates

Additional information was obtained regarding participants' income, education, insurance status, survey language, and immigration status. In addition, the 13-item Marlow-Crowne [32] social desirability scale was administered.

CHAPTER THREE

RESULTS

Preliminary Analyses

A total of 217 (64 foreign born, 40 US born, 113 Anglo) women were at least 40 years old and subsequently of the age to have routine mammography screening exams. A missing variables analysis identified 10 cases (2 Latino, 8 Anglo) with missing values on more than half of the items from multi-item subscales and were therefore excluded. These participants were older (M = 75.50, SD = 14.85) than the retained sample (M = 50.03, SD = 14.85), t (105) = 2.40, p = .02.

After imputing values for 11 Latino and 5 Anglo women using the expectation-maximization algorithm, the resulting sample of 207 (63 Foreign born Latino, 39 US born Latino, 105 Anglo) women were included in subsequent analyses. A series of one-way between subjects ANOVAs revealed significant differences in age [F(2, 204) = 21.49, p = 0.000] and education [F(2, 204) = 24.51, p = 0.000] for the three groups of participants. Post hoc comparisons using the Tukey HSD test revealed that Anglo participants were older (M = 61.30, SD =11.63) than US born (M = 55.82, SD = 10.75) and foreign born Latinos (M = 50.06, SD = 9.30). Moreover, US born Latinos were older than foreign born Latinos. In regards to education, Anglo participants (M = 13.33, SD = 2.33) and US born Latinos (M = 13.13, SD = 2.18) reported more years of education compared to foreign born Latinos (M = 9.94, SD = 4.58).

As expected, foreign born Latinos were more likely to have completed the survey in Spanish compared to Anglos (79.4% and 0%, respectively; χ^2 (1) = 118.64, p < .001) and US born Latinos (2.6%; χ^2 (1) = 56.83, p < .001). Foreign born Latinos (66.7%)

were also less likely to have health insurance compared to Anglos (88.6%; χ^2 (1) = 11.97, $p < .001$) and US born Latinos (94.9% ; χ^2 (1) = 10.97, $p < .01$).

Table 1

Demographic characteristics for the foreign-born Latinos, US born Latinos and Anglos

	Foreign Born (n = 63)	US Born (n = 39)	Anglo (n = 105)
Age *M* (*SD*)	50.06 (9.30) [ab]	55.82 (10.75) [ac]	61.30 (11.63) [bc]
Education *M* (*SD*)	9.94 (4.58) [ab]	13.13 (2.19) [a]	13.33 (2.33) [b]
Income (%)			
≤ $14,999	31.7	17.9	28.6
$15-24,999	27.0	20.5	23.8
$25-39,999	17.5	17.9	13.3
$40-59,999	11.1	17.9	9.5
$60-79,999	3.2	7.7	14.3
$80-100,000+	9.6	18.0	10.5
Spanish survey (%)	79.4 [ab]	2.6 [a]	0.0 [b]
Health Insurance (%)	66.7 [ab]	94.9 [a]	88.6 [b]

Note: [a] refers to significant differences between foreign and US born
[b] refers to significant differences between foreign born and Anglos
[c] refers to significant differences between US born and Anglos

Descriptive Statistics and Inter-Correlations

Mammography compliance was relatively low for all ethnic subpopulations. Specifically, 51.3% of U.S. born Latino, 33.3% of foreign born Latino, and 34.3% of Anglo women were fully compliant with mammography screening guidelines. Table 2 includes the means, standard deviations and correlations for the relevant study variables. Results from a series of one-way between subjects ANOVAs revealed significant differences in scores on cold [$F(2, 204) = 3.12$, $p = 0.05$] and competent [$F(2, 204) = 5.49$, $p = 0.005$] stereotypes for the three groups. Tukey HSD Post hoc test indicated that US born Latino women ($M = 2.82$, $SD = 2.08$) reported higher scores on the cold healthcare professional stereotype as compared to Anglo women ($M = 2.06$, $SD = 1.65$).

Anglo women (M = 5.90, SD = 1.52) reported that healthcare professionals were more competent than foreign born (M = 5.11, SD = 2.20) and US born Latino women (M = 4.92, SD = 2.26).

Table 2

Inter-correlations, means, and standard deviations for the foreign born Latinos, US born Latinos & Anglos

	1	2	3	4	5	6
1. Cold	-					
2. Competent	-.16[a]/.28[ac] † /-.34[c] **	-				
3. Emotion	.05/.14/.21*	-.04/.15[c]/-.25[c] *	-			
4. Anxious	-.05/.12/.18 †	-.02/.10/-.20*	.96**/.98**/.96**	-		
5. Scared	.09/.15/.22*	-.03/.15[c]/-.26[c] **	.95**/.97**/.92**	.83**/.90**/.78**	-	
6. Mammography Compliance	-.24[b] † /-.15/.02[b]	.24 † /.11/.05	-.06/-.15/.05	-.04/-.13/.04	-.02/-.19/.05	-
M	2.49/ 2.82[c] /2.06[c]	5.11[b] /4.92[c] /5.90[bc]	2.90/ 2.59/2.55	2.86/2.64/2.84	2.73/2.36/2.08	.59/ .65/.57
SD	1.66/2.08/1.65	2.20/2.26/1.52	2.20/2.05/1.92	2.26/2.08/2.17	2.26/2.06/1.79	.37/ .42/ .39

Values for foreign Born/US born/Anglo participants; *p<0.05; **p<0.01; ***p<0.001, †<0.10

[a] refers to significant differences at 0.05 or fisher r-z differences at 0.01 between foreign and US born
[b] refers to significant differences at 0.05 or fisher r-z differences at 0.01 between foreign born and Anglos
[c] refers to significant differences at 0.05 or fisher r-z differences at 0.01 between US born and Anglos

Test of Research Hypotheses

To test the study hypotheses, regression based path analysis models were conducted in SPSS using computational tools for exploring interactions and indirect effects in moderated mediation models [6-8]. Depicted conceptually in Figure 4a, the double moderation model in path diagram form can be found in Figure 4b and consists of three sub-models depicted by seven paths (a1, a2, a3, b, c1, c2 and c3). First, the direct effects of cold (c1) and competent (c2) and their interaction (cold x competent; c3) on mammography screening compliance were estimated (see Model 1). Then the direct effects of cold (a1) and competent (a2) and their interaction (cold x competent; a3) on negative screening emotions were tested (see Model 2). And finally the direct effect of negative screening emotions on mammography screening compliance (b) and the conditional indirect effects of cold, competent, and cold x competent stereotypes through negative screening emotions were tested (see Model 3, quantified as the product of a paths and b). For each of the double moderation models, the covariates were partialed from all the study variables. Each of these three models was tested separately for foreign born Latino (see Table 3), US born Latino (see Table 4), and Anglo (see Table 5) participants. The results from the test of the study hypotheses are presented for each group separately.

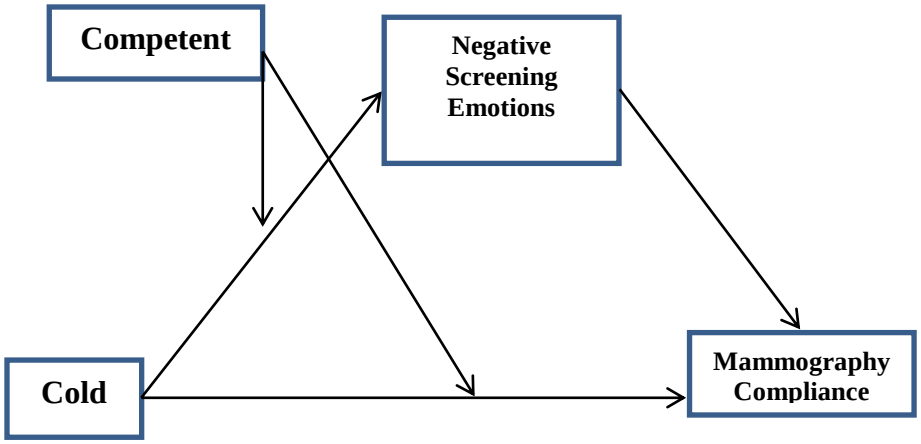

Figure 4a. Proposed conceptual model in which the effect of cold on emotions and mammography compliance is moderated by competent.

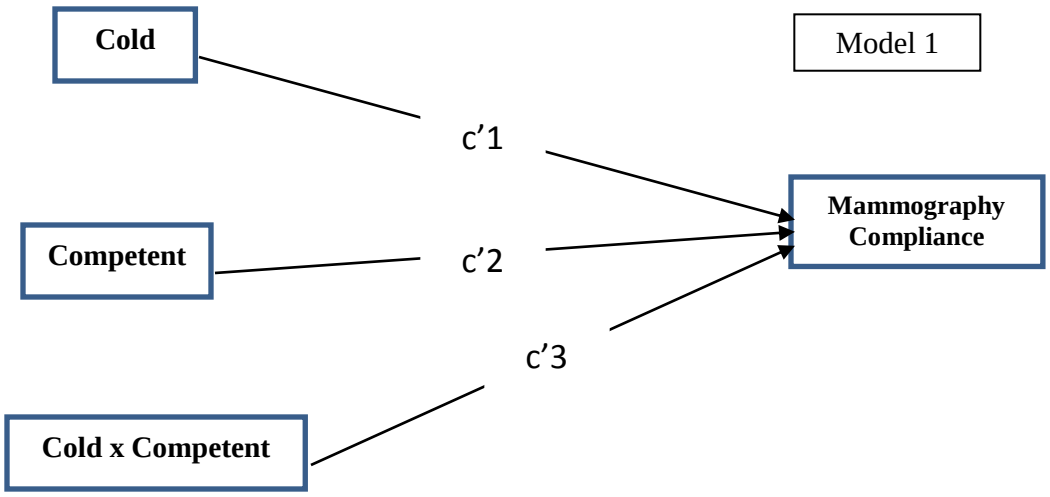

Figure 4b. Statistical model in which the effect of cold on mammography compliance is moderated by competent.

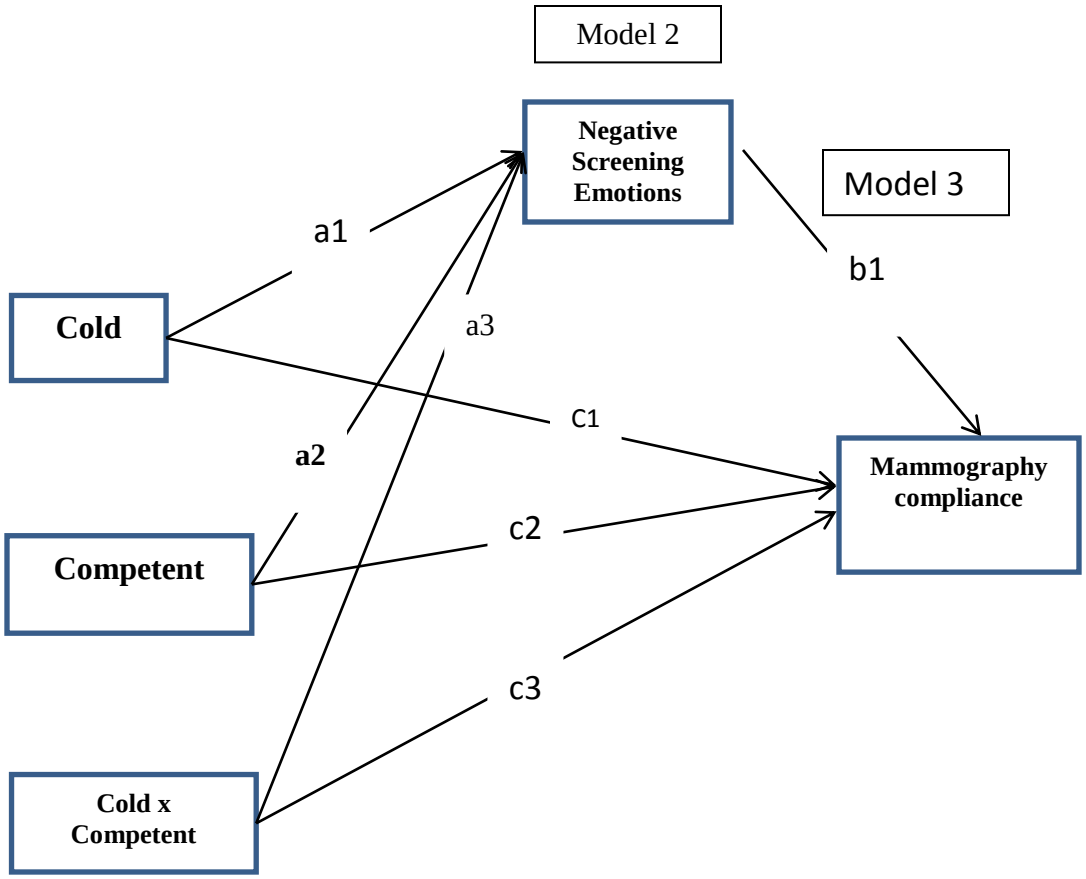

Figure 4c. Statistical model in which the effect of cold on emotions and mammography compliance is moderated by competent.

Test of Hypotheses for Foreign Born Latino American Women

A test of the study hypotheses for foreign born Latinos revealed that there was no direct effect of stereotypes on mammography compliance (Table 3, Model 1) or negative screening emotions (Table 3, Model 2). Furthermore there was no direct effect of emotions on mammography compliance and therefore no indirect effect of stereotypes on compliance through emotions (Table 3, Model 3).

Table 3

Regression model coefficients for foreign born Latinos

		Model 1 Mammography Compliance			Model 2 Negative Screening Emotions			Model 3 Mammography Compliance	
Predictor		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value
Constant		0.557 (0.34)	0.109		5.85 (1.89)	0.003		0.679 (0.37)	0.073
Emotion							b→	-0.021 (0.02)	0.399
Cold	c1→	0.01 (0.04)	0.784	a1→	-0.37 (0.33)	0.270	c'1→	-0.104 (0.06)	0.094
Competent	c2→	-0.10 (0.06)	0.115	a2→	-0.145 (0.21)	0.484	c'2→	0.007 (0.04)	0.848
Cold x Comp	c3→	0.01 (0.01)	0.378	a3→	0.048 (0.06)	0.455	c'3→	0.011 (0.01)	0.337
Education		0.01 (0.01)	0.461		0.085 (0.06)	0.166		0.010 (0.01)	0.379
Income		-0.01 (0.03)	0.786		0.101 (0.19)	0.600		-0.007 (0.03)	0.834
Has Insurance		-0.08 (0.11)	0.477		-1.49 (0.62)	0.021		-0.112 (0.12)	0.350
Social Desirability		0.01 (0.02)	0.710		-0.288 (0.12)	0.023		0.002 (0.02)	0.923
Spanish Survey		0.03 (0.15)	0.866		0.708 (0.86)	0.412		0.041 (0.16)	0.794
Model R^2		0.141	0.373		0.252	0.035		0.152	0.407
Interaction R^2		0.013	0.378		0.008	0.455		0.015	0.337

Test of Hypotheses for U.S. Born Latino American Women

For US born Latinos, the first hypothesis was partially confirmed. According to results from Model 1, which only examined the direct effects of the stereotypes on mammography compliance, there was a significant direct effect of cold on mammography compliance. However, the direction of this effect was not hypothesized. For US born Latinos, higher scores on cold stereotypes were associated with better compliance. Results from Model 1 revealed no direct effect of competent stereotypes on compliance, and the competent x cold interaction was approaching significance (Table 4, Model 1).

The second hypothesis was confirmed for the US born Latino sample in that cold, competent, and cold x competent were significantly associated with negative screening emotions (Table 4, Model 2). Higher scores on the cold stereotype were associated with an increase in negative screening emotions. The predicted directionality of the effect of competent on negative screening emotions was not expected. Higher scores on competent were associated with an increase in negative screening emotions.

The interaction of cold and competent on emotions was also significant. For US born Latinos, the variance in negative screening emotions explained by these predictors was just over 34%. Figure 2a plots the interaction graphically with regression lines for the mean of competent, one standard deviation above the mean and one standard deviation below the mean. As can be observed, when US born Latinos perceive health professionals to be low on the cold stereotype, the level of negative emotions remains relatively low, regardless of how they perceive the professional in terms of competence. However, US born Latinos who perceive the healthcare professional to be less competent

and high in regards to the stereotype cold, will experience higher levels of negative emotions related to mammography screening.

The third hypothesis was also confirmed for US born Latinos such that when cold and competent stereotypes are held constant, higher scores on negative screening emotions result in less mammography compliance (Table 4, Model 3). However, results from Model 3, which tested for moderated mediation, revealed that negative screening emotions did not fully mediate the association between the stereotypes and mammography compliance as demonstrated by the non-significant model R^2. However, consistent with the general hypothesis, cold and competent directly influenced mammography compliance. When negative screening emotions and competent are held constant, US born Latinos that scored healthcare professionals high on cold were more likely to be compliant. In a similar fashion, when emotions and cold were held constant, US born Latinos that scored healthcare professionals high on competent were more likely to be compliant.

Moreover, the interactions of cold and competent was also found to be a significant predictor of mammography screening compliance based on results from Model 3. The variance explained by the predictors in mammography compliance was approximately 34%. Figure 3a plots the interaction graphically with regression lines for the mean of competent, one standard deviation above the mean and one standard deviation below the mean. US born Latinos who perceive professionals to be high in competence and high in cold were less likely to be compliant with mammography screening ($p = .046$).

Table 4

Regression model coefficients for US born Latinos

		Model 1			Model 2			Model 3	
		Mammography Compliance			Negative Screening Emotions			Mammography Compliance	
Predictor		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value
Constant		0.54 (0.73)	0.461		-2.73(3.33)	0.419		0.320 (0.69)	0.649
Emotion							b→	-0.082 (0.04)	0.037
Cold	c1→	0.11 (0.05)	0.040	a1→	2.04 (0.63)	0.003	c'1→	0.358 (0.15)	0.025
Competent	c2→	0.19 (0.14)	0.180	a2→	0.67 (0.23)	0.006	c'2→	0.163 (0.05)	0.005
Cold x Comp	c3→	-0.04 (0.02)	0.086	a3→	-0.32 (0.11)	0.005	c'3→	-0.068 (0.03)	0.011
Education		-0.05 (0.04)	0.263		-0.16 (0.19)	0.410		-0.061 (0.04)	0.138
Income		0.03 (0.05)	0.529		-0.14 (0.24)	0.549		0.021 (0.05)	0.669
Has Insurance		0.08 (0.35)	0.825		4.02 (1.61)	0.018		0.409 (0.37)	0.272
Social Desirability		0.01 (0.03)	0.675		-0.02 (0.14)	0.906		0.011 (0.04)	0.691
Spanish Survey		-0.62 (0.46)	0.188		1.25 (2.09)	0.554		-0.513 (0.43)	0.247
Model R^2		0.231	0.375		0.340	0.092		0.339	0.146
Interaction R^2		0.081	0.086		0.202	0.005		0.167	0.011

Test of Hypotheses for Anglo American Women

For Anglos, the first hypothesis was not confirmed. There were no significant direct or moderating effects of the stereotypes on compliance (Table 5, Model 1).

The second hypothesis was partially confirmed for the Anglos in that cold was significantly associated with negative screening emotions (Table 5, Model 2). Higher scores on the cold stereotype were associated with an increase in negative screening emotions.

The interaction of cold and competent on emotions was also significant. The variance in negative screening emotions explained by these predictors was just over 19%. Figure 2b plots the interaction graphically with regression lines at competent mean, one standard deviation above and below the mean. At all levels of competent and when cold is low, the level of negative emotions remains relatively steady and low for Anglos. Anglos, who perceived their healthcare professional to be low in competence and high in cold, experienced higher levels of negative screening emotions.

The third hypothesis was not confirmed for Anglos because there was no direct effect of emotions on mammography compliance when cold and competent stereotypes were held constant (Table 5, Model 3).

Table 5

Regression model coefficients for Anglos

		Model 1 Mammography Compliance			Model 2 Negative Screening Emotions			Model 3 Mammography Compliance	
Predictor		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value		Unstandardized Coefficient	p-value
Constant		-0.43 (0.35)	0.225		0.824 (1.76)	0.641		-0.445 (0.35)	0.212
Emotion							b→	0.017 (0.02)	0.407
Cold	c1→	0.04 (0.08)	0.644	a1→	1.50 (0.39)	0.0002	c'1→	0.011 (0.08)	0.896
Competent	c2→	0.01 (0.04)	0.722	a2→	0.305 (0.20)	0.124	c'2→	0.009 (0.04)	0.824
Cold x Comp	c3→	-0.003 (0.01)	0.806	a3→	-0.24 (0.07)	0.0005	c'3→	0.001 (0.01)	0.957
Education		0.02 (0.02)	0.206		0.02 (0.09)	0.817		0.022 (0.02)	0.214
Income		0.05 (0.02)	0.017		-0.057 (0.11)	0.601		0.054 (0.02)	0.016
Has Insurance		0.27 (0.12)	0.022		-0.30 (0.58)	0.606		0.264 (0.12)	0.025
Social Desirability		0.02 (0.16)	0.146		-0.104 (0.08)	0.200		0.026 (0.02)	0.122
Model R^2		0.203	0.002		0.199	0.003		0.209	0.003
Interaction R^2		0.001	0.806		0.106	0.0005		0.000	0.957

Test of Moderation

To test the fourth hypothesis concerning the moderating effect of ethnicity on the relations among negative screening emotions and mammography screening compliance, Fischer's r-z were conducted (Table 2). Results revealed no significant ethnic differences in the relation among emotions and mammography compliance. However, there were significant ethnic differences in the relations among several of the study variables. For instance the relations among the stereotypes were moderated by ethnicity. For foreign born Latino and Anglo participants, higher scores on cold were associated with lower scores on competent. However, for US born Latinos, higher scores on cold were associated with higher scores on competent stereotypes about healthcare professionals. There were also differences in the relations between cold and mammography compliance. Foreign-born Latinos that rated health professionals high on cold were less likely to be compliant with mammography screening whereas there was no relation for Anglo participants. Lastly, there were significant differences between the stereotype competent and fear of mammography screening. Anglo women who rated health professionals as highly competent were less scared of mammography screening, whereas US born Latinos were more likely to be scared.

(A) (B)

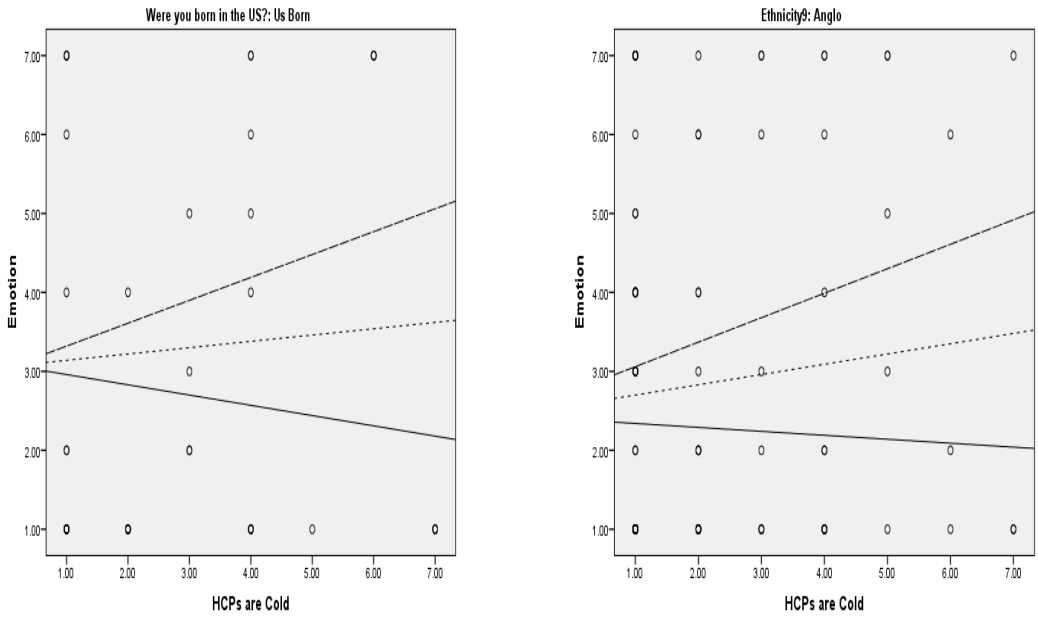

Figure 2. Graphs displaying the interaction effect of Cold on Emotions at different levels of Competent. [(a) US Born Latinos (b) Anglos]

(A)

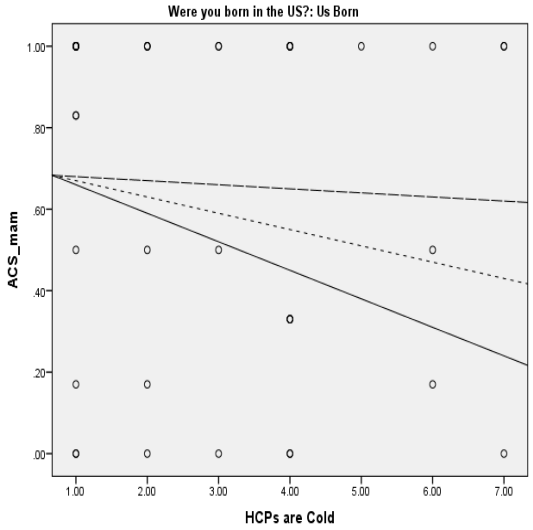

Figure 3. Graph displaying the interaction effect of Cold on mammography compliance at different levels of Competent. [(a) US Born Latinos; Anglos & foreign Born Latinos not significant]

Legend:

Competence Lines: +1 SD= ————

Mean=·····

-1 SD= ----------

CHAPTER FOUR

DISCUSSION

This study points to the importance of considering the stereotypes that culturally diverse patients have of their healthcare professionals in relation to screening related emotions and breast cancer screening compliance. Results from this study revealed that stereotypes of cold and competent, and particularly their interaction, have important implications on the experience of negative screening emotions and mammography compliance. For Anglo and US born Latino women, perceiving healthcare professionals as cold resulted in more anxiety and fear concerning the screening process. On the other hand, contrary to the expected findings, US born Latino women that perceived healthcare professionals as competent were more likely to experience fear and anxiety about cancer screening. Moreover, for US born Latino women mammography compliance was associated with negative screening emotions in addition to the cold and competent stereotypes.

Findings regarding the interaction of cold and competent stereotypes are particularly interesting from a theoretical perspective. Based on Fiske's Stereotype Content Model, out-groups stereotyped by variations in terms of cold/warm and competent/incompetent elicit different emotional and behavioral responses on the part of the perceiver [5]. Findings from this research regarding the application of the Stereotype Content Model in the healthcare setting are consistent with research concerning typically stereotyped out-group populations. Results from this study revealed that both US born Latino and Anglo women who perceived health professionals to be both incompetent (low scores on competent) and cold experienced more negative screening emotions. This

finding is similar to results from the Stereotype Content Model, which argues that individuals characterized as incompetent and cold are despised and excluded [32], which causes an increase in negative emotions.

According to the Stereotype Content Model, female professionals are typically characterized as competent and cold, resulting in a greater degree of envy and avoidance [32]. Consistent with these findings, U.S. Born Latinos were more likely to view female healthcare professionals as both highly competent as well as very cold. In the case of foreign born Latinos and Anglos, the opposite association was evident. These two groups saw female professionals as both high in competence and low in terms of cold. This finding may explain why the interaction of cold and competence on mammography compliance was only evident for U.S. born Latino women. Consistent with the Stereotype Content Model, for U.S. born Latino women, a lack of mammography compliance could be interpreted as a desire to avoid the clinical encounter with a person that is highly competent, yet very cold interpersonally.

There were some interesting ethnic differences based on the relations among the warm/cold stereotype and mammography compliance. For both U.S. and foreign born Latinos, bivariate correlations revealed that perceiving a female healthcare professional to be cold (less warm) was associated with lower mammography compliance. This however was not the case for Anglo women. Research suggests that certain perceivers, such as women who abide by specific gender roles related to "communal" (warmth) rather than "agentic" (competent) [33], are more likely to prioritize warmth over competence in interpersonal interactions [34]. It may be that U.S. and foreign born Latino women from this study prioritize warmth more than Anglo women thus resulting in the

stronger influence of the warm/cold stereotype on mammography compliance for the Latino women. Future research could benefit from investigating the extent to which patients value the characteristics of warm/cold and competent/incompetent in interpersonal relations with health professionals.

Although results from the test of ethnic group differences in the relations among negative screening emotions and mammography screening compliance did not reveal any significant differences, there were some observed differences based on findings from the moderated mediation analyses. Consistent with previous research that reported emotions played a more critical role in breast cancer screening compliance for Latino as compared to Anglo women [23], findings from this study revealed that negative screening emotions were associated with less mammography compliance for U.S. born Latino women but not Anglo women. Emotions also did not play a critical role in mammography compliance for foreign born Latino women. In the previous research [see 23], both foreign born and U.S. born Latinos were analyzed together. Findings from this study suggest that a more detailed analysis of country of origin may reveal additional within-ethnic group differences. Future research regarding the role of emotions in health behavior based on country of origin is warranted.

Limitations of the Study

Although the total sample of Latino participants included in this study was acceptable for the proposed analyses, the relatively small sample size for the subsample of foreign born and US born Latinos may have made some significant findings more difficult to detect. This may have been particularly the case concerning results based on

analyses relevant to foreign born Latino women. Furthermore, the sample of Latino American women was representative of the demographic region of Southern California, which is largely from a Mexican American cultural background. As a result, findings from this study may not be generalizable to other Latino subpopulations or regions of the United States.

Directions for Future Research

To better understand the influence of stereotypes through moderated mediation models, future research should include larger sample sizes, particularly for the Latino populations as country of birth appears to play an important role. It may also be beneficial for future research to examine social class differences between patients and their healthcare professionals, or the cultural script of simpitia, and how they may impact patients' stereotypes about healthcare professionals and negative screening emotions. Future research could also benefit from exploring the influence of ethnic concordance on perceived stereotypes and emotions related to mammography screening.

CHAPTER FIVE

CONCLUSIONS & IMPLICATIONS

With an increase in cancer screening procedures, there may also be an improvement in mortality rates for breast cancer. Even though there has been an increase in the rates of cancer screening, individuals from minority populations (Latinos) are improving at a much smaller rate than the majority population [23]. Therefore, it was believed that by understanding the influence of cultural stereotypes on screening-related emotions and mammography compliance, interventions can be developed with health professionals. Specifically these interventions can be designed to address the stereotypes that patients have of their health professionals' that may lead to higher negative emotions and lower mammography compliance, especially for US born Latinos. This may in turn result in more effective clinical encounters between diverse patients and their healthcare professionals which may ultimately lead to higher rates of breast cancer screening.

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APPENDIX A

SCALE ITEMS

Cultural stereotypes about healthcare professionals:
(7-point Likert [1=not at all to 7=very much])

Directions: Please think about FEMALE healthcare professionals that perform cancer screening exams (e.g. mammograms, clinical breast exams, pap smears) and indicate how much you think each of the following words describes them.

1) Female healthcare professionals are competent,
2) Female healthcare professionals are cold.

Negative screening emotions:
(7-point Likert [1=strongly disagree to 7=strongly agree])

Directions: Please think about MAMMOGRAMS and answer the following questions.

1) "Thinking about having a mammogram makes me anxious"
2) "Mammograms are embarrassing"
3) "When I think about having a mammogram I get scared"

Mammography screening compliance:
(Continuous variable [0-7+] transformed into continuous variable [0-1] see methods)

1) "Have you ever had a mammogram?" followed by, "If yes, how many have you had in the last 6 years?"

APPENDIX B

INFORMED CONSENT FORM

School of Science and Technology
Department of Psychology

11130 Anderson Street
Loma Linda, California 92350
(909) 558-8577
Fax: (909) 558-0171

Greetings,

If you are an Anglo American (Non Latino-White) or Mexican/Mexican American woman and are 21 years of age or older you are invited to participate in this study entitled "Culture and Healthcare." The purpose of this study is to better understand women's opinions and views about health care and services that women can use to stay healthy. The study is expected to help health care professionals better serve the needs of women of culturally diverse backgrounds.

If you agree, participation will take about 30-45 minutes and you will be asked some questions about your opinions, views, and expectations about health care and related issues such as breast and cervical cancer. By participating, you may feel a little uncomfortable by thinking about your own health, but you will be exposed to no greater risk other than what you are exposed to in daily life.

After you participate in the study, you may be asked whether you know of a friend who you think would also like to participate in this study. You can either give your friend's contact information to the researcher or else the researchers will provide you with information so that your friend may contact us directly after you talk to them. However, it is not necessary for you to recommend a friend.

Although you will not benefit personally, your involvement will help researchers learn more about women's opinions and views concerning healthcare and related issues. You will also be given $15 as a thank you. In addition, you will receive a gift bag including promotional items related to women's health such as breast and cervical cancer. You will also receive educational brochures on disease prevention and information on how to obtain free and low cost cancer screening services in your area.

Participation is completely voluntary and there is no penalty for not participating. If you choose not to participate in this study, you will still receive the gift bag and information about health services. You may choose to withdraw from participating at any time without any negative consequence.

Your responses to this survey are strictly confidential and will only be analyzed as part of a larger group of respondents.

We hope that you will decide to participate in this research and we thank you for your time and consideration. If you have any questions about participation, you may contact the investigator as follows:

Patricia Flynn, Ph.D., M.P.H.
Department of Psychology
(909) 558-7737

Hector Betancourt, Ph.D.
Department of Psychology
(909) 558-7738

If you wish to contact an impartial third party, not associated with this study, regarding any concern or complaint about this study please contact the following:

Office of Patient Relations (909) 558-4647, Loma Linda University Medical Center

By signing and dating below I acknowledge I have read the above information, I freely consent to participate in this study, and I am 18 years or older.

I consent to participate in this study.

Signature: _____ Date___/___/___

Please keep the Participants' Copy of this form for your records.

Loma Linda University
Adventist Health Sciences Center
Institutional Review Board
Approved 1/27/10 **Void after** 1/26/2011
57275 **Chair** R. L. Rigsby, MD