

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

IMPACT OF MOTIVATIONAL PHONE CALL AND EDUCATIONAL BROCHURE  
ON MAMMOGRAPHY APPOINTMENT KEEPING

A thesis submitted in partial fulfillment of the requirements

For the degree of Master of Public Health,

in Health Education

By

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## DEDICATION

This thesis is dedicated to my loving parents, Roberto Eguizábal and María Cárdenas de Eguizábal. Without your love and sacrifice, I would not be where I am today. I give you my deepest expression of love and appreciation for being a living example of hard work, discipline, and determination throughout my life. Your lesson about “la montaña”, once again helped me through the difficult times experienced along the thesis process. Thank you for continuing to be an infinite source of inspiration and moral support.

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## TABLE OF CONTENTS

COPYRIGHT PAGE .....	ii
SIGNATURE PAGE .....	iii
DEDICATION .....	iv
ACKNOWLEDGEMENTS .....	v
LIST OF TABLES .....	x
LIST OF FIGURES .....	xi
ABSTRACT .....	xii
CHAPTER ONE: Introduction .....	1
Background of the Study .....	1
<i>Inner Images, Inc.</i> .....	3
Statement of the Problem .....	4
Purpose of the Study .....	6
<i>Research Question</i> .....	6
<i>Objectives</i> .....	7
Hypothesis and Assumptions .....	7
Rationale .....	7
Study Delimitations .....	10
Study Limitations .....	10
Definition of Terms .....	12
Summary .....	14
CHAPTER TWO: Literature Review .....	17
Introduction .....	17
Breast Cancer .....	17
Breast Cancer Screening .....	22
Mammography and Mammography Utilization .....	23
Medical Appointment-Keeping Behavior .....	25
Factors Influencing Mammography Adherence among Latina Women .....	27
Current Methods to Increase Mammography Adherence and Appointment-Keeping ..	31
Protection Motivation Theory .....	34
Summary .....	37

CHAPTER THREE: Methodology.....	39
Introduction.....	39
Participants.....	39
<i>Participant Clinics</i> .....	39
<i>Sample Participants</i> .....	40
Research Design.....	42
Research Instruments .....	43
Implementation .....	47
Data Analysis .....	49
Summary.....	51
CHAPTER FOUR: Results.....	54
Introduction.....	54
Study Population and Demographic Characteristics.....	54
Hypothesis Testing.....	59
Observed Outcomes vs. Historical Data .....	61
Age and Appointment-Keeping .....	63
Clinic and Appointment-Keeping.....	64
Summary.....	65
CHAPTER FIVE: Discussion.....	68
Introduction.....	68
Demographic Characteristics .....	68
Hypothesis Findings.....	71
Inner Images, Inc. ....	74
Additional Findings .....	75
Study Limitations.....	76
CHAPTER SIX: Conclusion.....	80
Introduction.....	80
Summary .....	80
Conclusions.....	82
Recommendations for Future Research .....	84
Recommendations for Inner Images, Inc. and Providers of Mammography Services ..	87
REFERENCES .....	90

APPENDICES .....	97
Appendix A: Introductory Letter and Author’s HIPAA Certification.....	97
Appendix B: Educational Brochure .....	99
Appendix C: Telephone Call Script.....	103
Appendix D: Oral Consent Script.....	110
Appendix E: Suitability Assessment of Material Test.....	111
Appendix F: IRB Approval.....	121

LIST OF TABLES

Table 1: Proposed Statistical Analyses..... 49

Table 2: Study Participants by Age..... 54

Table 3: Age Distribution among Study Groups..... 54

Table 4: Age and Mammography Appointment-Keeping among Study Groups..... 55

Table 5: Total Number of Participants Provided by Clinics..... 56

Table 6: Total Number of Participants by Cities among Study Groups..... 57

Table 7: Mammography Appointment Attendance among Study Groups..... 59

Table 8: Hypothesis Testing Results..... 60

Table 9: Observed vs. Expected Outcomes for Study Groups..... 61

Table 10: Mammography Appointment Attendance among Study Groups and  
Participating Clinics..... 62

Table 11: Age and Appointment-Keeping within the Control Group..... 63

Table 12: Age and Appointment-Keeping within the Experimental Group..... 63

Table 13: Age and Appointment-Keeping within Study Groups..... 63

Table 14: Clinic and Appointment-Keeping within the Control Group..... 64

Table 15: Clinic and Appointment-Keeping within the Experimental Group..... 64

## LIST OF FIGURES

Figure 1: Protection Motivation Theory Constructs.....	35
Figure 2: Mammography Appointment Attendance in the Control Group.....	58
Figure 3: Mammography Appointment Attendance in the Experimental Group.....	59

## ABSTRACT

### IMPACT OF MOTIVATIONAL PHONE CALL AND EDUCATIONAL BROCHURE ON MAMMOGRAPHY APPOINTMENT KEEPING

By

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Regardless of race or ethnicity, breast cancer is the most common cancer among women in the United States (Centers for Disease Control and Prevention, 2011). It is also considered the main cause of cancer deaths among Latina women (Susan G Komen for the Cure, 2012b). Currently, screening mammography is considered to be the most effective method for detecting breast cancer at an early stage (Office on Women's Health, 2010a). Despite national recommendations however, Latina women have been found to be less likely to adhere to screening mammography compared to non-Hispanic White women (Wells & Roetzheim, 2007). Available literature shows that medical appointment-keeping rates among the Latino population are lower than rates among other ethnic groups.

The intervention was a quasi-experimental study designed to measure the impact of a motivational telephone call in conjunction with an educational brochure on screening mammography appointment-keeping rates among Latina women. In order to implement this study, the resources of Inner Images, Inc. were used. Inner Images Inc. is a mobile mammography clinic providing mammography services to more than 80 health centers in

California. The study was implemented among Latina women that have been scheduled to receive a mammogram with Inner Images, Inc.

A total of 129 (N=129) Latina women participated in this study. The study consisted of assigning women into either a control (n=67) or an experimental group (n=62). The experimental group received both components of the study: an educational brochure in conjunction with a motivational telephone call while the control group did not receive any of these components. Hypothesis testing showed a positive association between the implementation of the study's components and mammography appointment-keeping behavior among Latina women. When comparing historical data regarding mammography appointment-keeping rates among all three participating clinics and rates obtained from the study groups; results showed a significant difference among the experimental group only. Given that there was not significant difference between the historical controls and the control group, this observation provides support to the association found between the implementation of the study's components and mammography appointment-keeping behavior among Latina women. Additional observations also showed a significant increase of 15% in appointment-keeping rates in the experimental group compared to the control group.

In conclusion, the study was successful in demonstrating that there is a positive association between the implementation of an educational brochure and a motivational telephone call and mammography appointment-keeping behavior among Latina women. Recommendations for further studies include those that involve observing the impacts of educational brochure and motivational telephone call in different populations than the one selected for this study. Recommendations for Inner Images, Inc. include continuously

educate client clinics and Latina patients about breast cancer and the importance of early detection through mammography use in order to eliminate potential barriers to mammography and increase mammography adherence and mammography appointment-keeping rates.

*Key words: breast cancer, mammography, mammography adherence, appointment-keeping, women health, Latina women.*  
*Participant Clinic's Average*

# **CHAPTER ONE**

## **Introduction**

The present study was designed to measure the impact of motivational telephone call and educational brochure on mammography appointment-keeping among Latina women. The following chapter provides background information related to the study. It introduces topics such as 1) breast cancer, screening mammography and the importance of early detection of breast cancer among Latina women. It also offers a 2) description of the organization that supported the author by providing the resources to implement this study. In addition, the author introduces the 3) purpose of the study which includes the research question as well as the study's objectives, and 4) the hypothesis and assumptions that established the foundation for this study. Furthermore, the author provides 5) the rationale for the study, and 6) examines the potential limitations that could affect the study's development and results. The author finalizes the chapter by 7) listing and defining terms pertaining to the study.

## **Background of the Study**

Regardless of race or ethnicity, breast cancer is the most common cancer among women in the United States (CDC, 2011). The evidence that racial and ethnic disparities exist in the United States when it comes to breast cancer incidence and mortality rates is noticeable. Even though statistics show that breast cancer incidence rates are higher among non-Hispanic White women compared to any other racial or ethnic group, Latina women show higher mortality rates due to breast cancer compared to their non-Hispanic White counterparts (Susan G Komen for the Cure, 2012b).

As with all other types of cancer, if untreated, breast cancer can result in serious illness and even death (American Cancer Society, 2012b). Early detection is crucial for breast cancer survival. The three currently used methods for breast cancer screening and early detection include Clinical Breast Examination (CBE), Breast Self-Examination (BSE) and Screening Mammography (Every Woman Counts, 2013). Screening mammography, considered to be the most effective method for detecting breast cancer at an early stage, consists of low-dose x-rays images of the breast. A trained radiologist then examines these images to look for and detect abnormal changes in the structure of the breast (Office on Women's Health, 2010a).

Currently, the American Cancer Society recommends yearly mammograms starting at age 40 and continuing for as long as the woman is in good health (American Cancer Society, 2012a). Despite these recommendations, statistics show that even though mammography utilization rates among women in the United States have improved over time, they are still considered low among uninsured and ethnic minority groups. For instance, while the percentage of White women aged 40 and over who stated having a mammogram within the past two years was approximately 67%, among the Latina population, this number decreases to 64.4% (American Cancer Society, 2012d). While the reasons influencing mammography utilization among women in general are varied and complex, it is crucial that health care professionals and particularly mammography providers adopt the necessary measures to encourage women to comply with the stated mammography recommendations.

*Inner Images, Inc.*

Inner Images Inc. is a private organization providing on-site mobile screening mammography services in California. Founded in 2003 by Deborah Wright, Inner Images, Inc. currently counts with more than 10 mobile mammography units to provide accessible, affordable services to underserved women who have limited or no access to early screening tests for breast cancer (Inner Images, Inc., 2013a). Inner Images, Inc. is accredited by the Mammography Quality Standards Act (MQSA), which requires that all organizations providing mammography services meet strict quality standards and be inspected once a year. Under the MQSA, the organization is also recognized by the U. S. Food and Drug Administration (FDA). In addition, Inner Images, Inc. is a service provider for the government-funded programs Cancer Detection Program (CDP) and Family PACT Program.

The Cancer Detection Program: Every Woman Counts (CDP: EWC) is currently administered by the California Department of Health Care Services and provides free clinical breast exams, mammograms, pelvic exams, and Pap tests to California's underserved women (California Department of Health Care Services, 2013). Women are eligible for the afore mentioned services if they fulfill the following requirements (Inner Images, Inc., 2013c):

- No longer be of child bearing age,
- Be considered low income under the program's reference,
- Have medical insurance that does not cover these services,
- Have a high insurance deductible or co-payment,

- Not have access to these services through MediCal or other government program
- Live in California

Similarly, the Family PACT Program has been run by the California Department of Public Health (CDPH), Office of Family Planning (OFP) since 1997, with the goal of providing family planning and reproductive health services to low income women and men living in California (Bixby Center for Global Reproductive Health, 2012). Women are eligible for this program if they fulfill the following requirements (Inner Images, Inc., 2013c):

- Be at risk of pregnancy
- Be considered low income under the program's reference or below 200% of the Federal Poverty Level and
- Not have any other source of healthcare coverage for family planning services

Inner Images, Inc. brings mammography services to over 80 community-based health centers throughout the state of California. Health centers that want Inner Images Inc. to come to their facilities and provide mammography services to their patients must follow a set of criteria that include scheduling 25 to 30 patients for a 4-hour event or up to 30 to 50 patients for an 8-hour event (Inner Images, Inc., 2013b). Under this requirement, Inner Images, Inc. currently provides free mammogram services to approximately Latina women every month (Inner Images, Inc., 2013a).

### **Statement of the Problem**

Breast cancer is currently the most common cancer diagnosed among U.S. women regardless of race and ethnicity. It is currently the leading cause of cancer-related deaths

among Latina women and the second leading cause of death among all other ethnic groups (CDC, 2011). Even though breast cancer incidence among Latina women is lower compared to non-Hispanic White women, Latina women tend to be diagnosed with more advanced breast cancer compared to their White counterparts (Graves, et al., 2008). Similarly, Latina women tend to develop more aggressive types of cancer and are 20% more likely to die of breast cancer than non-Hispanic White women diagnosed at a similar age and stage (American Cancer Society, 2009).

Screening mammography is currently considered the most effective method to detect breast cancer at an early stage. It is recommended for women 40 years of age and older to get a screening mammogram on a yearly basis (Every Woman Counts, 2013). However, only about 50% of women between 40 and 85 years of age have a mammogram in any given year in the United States (Susan G Komen for the Cure, n.d.). Available information shows that mammography rates are low among women with low-income levels, recent immigrants, and individuals who lack health insurance coverage (American Cancer Society, 2012d). In addition, differences on mammography utilization across ethnic groups are also evident, as Latina women have been found to be less likely to receive a screening mammography compared to non-Hispanic White women (Wells & Roetzheim, 2007).

Currently, Inner Images, Inc. provides free screening mammography appointments for approximately 1,700 Latina women in more than 80 clinics throughout California. In order for Inner Images, Inc. to attend a clinic to offer free mammography services, the clinic needs to schedule certain amount of patients. According to Deborah Wright; Inner Images, Inc.'s President and Founder; approximately 28% of these women

do not keep their appointments to receive a free mammogram (Inner Images, Inc., 2012). Missed appointments not only represent a loss of time and resources for Inner Images, Inc. but they also have a negative impact on Inner Images, Inc.'s patients in general.

Research has shown that missed medical appointments rates are higher among the Latino population when compared to other ethnic groups (Parker, et al., 2012). When Latina women who are scheduled to receive a mammogram with Inner Images, Inc. fail to show up to their appointments they are missing the opportunity to get screened, find a potential problem early and possibly survive breast cancer in the future. Furthermore, as women do not show to their appointments, an opportunity for other patients that could have taken advantage of available spaces is lost. It is Inner Images, Inc.'s hope that the following study will proof the need to incorporate an outreach strategy to encourage and motivate Latina patients to attend their free screening mammography appointments given that at present, the organization does not have a specific method in place to do so. Is worth mentioning that all clinics that participated in this study had a system in place that involved calling patients to remind them of their appointments. During these calls however, a clinic staff member only reminded patients of the date and time of their appointments without providing any other educational or motivational information.

### **Purpose of the Study**

#### *Research Question*

The proposed research study intended to answer the following research question:

- (1) Will advanced educational and motivational contact increase free screening mammography appointment-keeping rates among Latina women?

## *Objectives*

The study's intended objectives were:

- (1) To measure the impact of motivational telephone call and educational brochure on free screening mammography appointment-keeping behavior among Latina women.
- (2) To contribute to the existing literature regarding approaches designed to increase mammography appointment-keeping rates among Latina women.
- (3) To improve future outreach efforts that aim to increase mammography appointment-keeping rates among Latina women and women in general.

## **Hypothesis and Assumptions**

The proposed research study intended to test the following directional hypothesis:

- (1) Advanced educational brochure and motivational telephone call will increase free screening mammography appointment-keeping rates among Latina women.

It is hypothesized that participants in the experimental group, who have received an educational brochure in conjunction with a motivational telephone call will show higher appointment-keeping rates than participants in the control group who have not received either component of the intervention.

## **Rationale**

There are several reasons that supported the development and implementation of this study. Statistics show that despite national recommendations for screening mammography, only 50% of women between 40 and 85 years of age are receiving a mammogram in the United States (Susan G Komen for the Cure, n.d.). Latina women have been among those who underutilize screening mammography services. For instance,

only 47% of Latina women 40 years of age and older reported having a mammogram in the last year compared to 52% of non-Hispanic Whites in 2010 (American Cancer Society, 2011). Currently, Inner Images, Inc. does not have a specific method in place to encourage Latina patients to attend their free screening mammography appointments. The current study will allow Inner Images, Inc. to have a method to contact patients directly prior to their appointment in order to encourage and motivate them to keep those appointments.

A significant number of studies have measured the individual and combined impact of different approaches that involve contacting patients such as telephone counseling, appointment reminder calls, reminder postcards, invitation letters, printed materials etc. as strategies to increase mammography screening adherence rates among women. Direct-contact strategies, which are defined as “individual directed interventions that involve contact by phone or any type of personal contact”, have been proved to increase screening mammography adherence among women by 21% to 46% (Denhaerynck, et al., 2003).

Even though, telephone counseling has been proved to be the most effective from all telephone approaches, this approach is sometimes hard to adopt due to both time and resource restrictions (Taplin, et al., 2000). Inner Images, Inc. had expressed interest in developing a method that was more informative, purely educational and that showed a higher potential to yield more benefits than a simple telephone call reminding patients about their appointments. Similarly, the decision to utilize an educational brochure as one of the main components of this study was based on available literature that supports this method’s efficiency to significantly increase patients’ general knowledge about breast

cancer screening as well as their knowledge of the benefits of mammography (Deavenport, Modeste, Marshak, & Neish, 2011). Also supporting this decision is the understanding that increasing education and breast cancer knowledge is crucial when aiming to increase mammography adherence rates among the Latino population (Graves, et al., 2008).

The contents on the research study instruments were selected based on previously identified barriers to mammography adherence among Latina women. These barriers include lack of knowledge about breast cancer and mammography, false beliefs regarding self-perceived risk, fatalistic beliefs related to cancer, lack of motivation to adhere to mammography recommendations and fears related to mammography test procedures. Inner Images, Inc.'s administrators wanted to direct the focus on providing this group of patients with educational and motivational information to address these barriers, which will potentially increase their motivation to attend their free mammography appointment.

The behavior change theory that provides the framework for this study is the Protection Motivation Theory (PMT). The PMT comprise two main processes in an “attempt to match the cognitive processes that people use in evaluating threats (the threat appraisal process) and in selecting among coping alternatives (the coping appraisal process)” (Floyd, Prentice-Dunn, & Rogers, 2000). The study and intervention components (brochure and telephone call) were designed based on the constructs of the PMT. In addition, studies have shown that interventions with an informational component based on the PMT have been found to increase individuals' intentions to engage in health protective behaviors including screening for breast cancer (Naito, O'Callaghan, & Morrissey, 2009). In regards to mammography utilization, however, “the

effects of PMT-based informational interventions on women’s mammography intentions have not been explicitly investigated” (Naito, O’Callaghan, & Morrissey, 2009).

If the proposed research study yields positive results and the proposed hypothesis is supported, Inner Images, Inc. would strongly consider incorporating the components presented in this study as part of its organizational operations, which will increase appointment rates, help detect breast cancer earlier and potentially save more lives among its Latina patients.

### **Study Delimitations**

Participation in this study is delimited to:

1. Latina women
2. Aged 40 and over
3. Living in Los Angeles, Orange, San Diego or Ventura County
4. Having a scheduled appointment to receive a free screening mammogram with Inner Images, Inc.

### **Study Limitations**

The study had some limitations that threatened both the internal and external validity of the study. These limitations are:

1. An important limitation is that related to the study’s sample size. Factors affecting the sample size for this study include low clinic participation and the author’s lack of direct access to participating clinics’ mammography appointment logs.
2. Internal validity threats are “experimental procedures, treatments, or experiences of the participants that threaten the researcher’s ability to draw correct inferences from the data about the population in an experiment” (Creswell, 2013, p. 162).

Due to low participation rates from Inner Images, Inc.’s client clinics, the

selection method changed from random selection to a convenience sampling approach, which consequently reduced internal validity.

3. Hawthorne effect also represented a threat to internal validity in this study. The implementation of the study instruments; brochure and telephone call; might have clued participants of what was expected from them potentially influencing their decision to attend their free mammography appointment and affecting the study results.
4. An additional threat to internal validity is the presence of a confounding variable. Participating clinics had an appointment reminder telephone call system in place that might have had an effect in appointment-keeping rates among study participants.
5. External validity threats refer to “incorrect inferences from the sample data to other persons, other settings, and past or future situations” (Creswell, 2013, p. 162). Threats to generalizability were a factor in this study given that there were specific requirements that must be met in order for these women to be eligible to participate in this study. These include:
  - Study was implemented among Latina women only. Appointment-keeping behaviors may be different among other populations
  - Women participating in the study were eligible for free mammography screening and meet the criteria for low socioeconomic status.  
  
Appointment-keeping behavior may be different among women of different socioeconomic status.

- Participant clinics were selected exclusively from clinics served by Inner Images Inc. Results might have been different among women attending other medical settings.
- Participant clinics were located in urban areas.
- The study focuses only on women living in Southern California, specifically from the counties of Los Angeles, Orange and San Diego.

### **Definition of Terms**

**Appraisal:** Term that refers to the cognitive evaluation and interpretation of a phenomenon or event. Cognitive appraisals are seen as determinants of emotional experience, since they influence an individual's perception of an event (Psychology Dictionary, n.d).

**Adaptive Response:** Responses that protect and individual from a health risk (Norman, Boer, & Seydel, n.d.).

**Carcinoma:** Term used to describe a cancer that begins in the lining layer of organs like the breast. Nearly all breast cancers are carcinomas, either ductal carcinomas or lobular carcinomas (American Cancer Society, 2013a).

**Carcinoma in Situ:** Term used when cancerous cells have not invaded deeper tissues in the breast or spread to other organs in the body. Cancerous cells remain confined to area where it began. Breast cancer *in situ* is also known as non-invasive breast cancer (American Cancer Society, 2013a).

**Clinical Breast Examination (CBE):** Breast examination performed by a health care provider to check for lumps or other changes in the breast (National Cancer Institute, n.d.).

**Diagnostic Mammogram:** An x-ray of the breast that is used to check for breast cancer after a lump or other signs of breast cancer had been found (National Cancer Institute, n.d.).

**Ductal Carcinoma In Situ (DCIS):** It is the most common type of non-invasive breast cancer. DCIS means that the cancer cells are inside the ducts but have not spread through the walls of the ducts into the surrounding breast tissue (American Cancer Society, 2013a).

**Early detection of Breast Cancer:** An approach that allows for breast cancer to be diagnosed earlier than otherwise might have occurred (American Cancer Society, 2013b).

**Invasive Carcinoma:** It is an invasive cancer that has already spread and expanded outside the area where it started. Most of the cases of breast cancer are invasive carcinomas (American Cancer Society, 2013a).

**Invasive Ductal Carcinoma (IDC):** Invasive ductal carcinoma (IDC) “starts in a milk duct of the breast, breaks through the wall of the duct, and grows into the fatty tissue of the breast”. It is currently the most common type of breast cancer (American Cancer Society, 2013a).

**Invasive Lobular Carcinoma (ILC):** Invasive lobular carcinoma (ILC) “starts in the milk-producing glands (lobules)” of the breast. ILC is less common than IDC (American Cancer Society, 2013a).

**Lobule Carcinoma In Situ (LCIS):** Refers to abnormal cells in the lobules of the breast. Even though LCIS rarely becomes invasive cancer, having lobular carcinoma in situ in one breast increases the risk of developing breast cancer in either breast (National Cancer Institute, n.d.)

**Maladaptive Response:** Responses that “place an individual at health risk” (Norman, Boer, & Seydel, n.d.).

**Protection Motivation Theory (PMT):** Proposed by Ronald Rogers in 1975, the PMT was initially proposed to “provide conceptual clarity to the understanding of fear appeals” (Norman, Boer, & Seydel, n.d.). It was eventually revised and extended to “more general theory of persuasive communication, with an emphasis on the cognitive processes mediating behavioral change” (Norman, Boer, & Seydel, n.d.). This theory is “organized along two processes that attempt to match the cognitive processes that people use in evaluating threats (the threat appraisal process) and in selecting among coping alternatives (the coping appraisal process)” (Floyd, Prentice-Dunn, & Rogers, 2000).

**Screening:** Term used to refer to medical examinations and tests performed to find a disease in people that do not have any evident signs or symptoms (American Cancer Society, 2013b).

**Screening Mammogram:** A low-dose x-ray of the breast performed to detect breast changes in women who have not shown signs or symptoms of breast cancer (Office on Women's Health, 2010a)

**Self-Breast Examination (SBE):** An exam performed by a woman on her own breast in order to check for visible or palpable changes in the breast such as lumps or other abnormalities (National Cancer Institute, n.d.).

## **Summary**

Regardless of race or ethnicity, breast cancer is the most common cancer among women in the United States (Centers for Disease Control and Prevention, 2011). It is also considered the main cause of cancer deaths among Latina women (Susan G Komen for

the Cure, 2012b). In addition, Latina women tend to be diagnosed with more advanced breast cancer compared to their White counterparts (Graves, et al., 2008). Despite these statistics, Latina women have been found to be less likely to receive a screening mammography compared to non-Hispanic White women (Wells & Roetzheim, 2007).

Research has shown that missed medical appointments rates are higher among the Latino population when compared to other ethnic group (Parker, et al., 2012). Inner Images Inc., a private mobile mammography clinic provides services to approximately 1,700 Latina women every month. However, a noticeable 28% of these women do not attend their appointments (Inner Images, Inc., 2012). The purpose of the study is to observe if advanced motivational and educational contact increase free screening mammography appointment-keeping rates among Latina women. The study components include an informational, educational brochure in conjunction with a motivational telephone call. These were selected based on available literature that supports direct-contact strategies such as telephone calls and educational printed materials as effective methods to increase screening mammography adherence among the intended population. In addition, both the brochure and the telephone call contain information to address some of the already acknowledge barriers to mammography among the Latina population. The framework for the study was based on the Protection Motivation Theory (PMT), given that interventions with and informational component based on the PMT have been found to increase individuals' intentions to engage in health protective behaviors (Naito, O'Callaghan, & Morrissey, 2009).

Results obtained by this study could contribute to the existing literature regarding approaches to increase mammography appointment-keeping rates among Latina women.

In addition, it will help Inner Images, Inc. improve future outreach efforts with the purpose of not only increasing mammography appointment-keeping rates but also helping detect breast cancer at earlier stages consequently reducing breast cancer and potentially save more lives. The following chapter will review the available literature regarding the main topics related to this study.

## **CHAPTER TWO**

### **Literature Review**

#### **Introduction**

The study was designed to evaluate the impact of motivational telephone call and educational brochure on free screening mammography appointment-keeping rates among Latina women that had scheduled appointments with Inner Images, Inc. The following chapter reviews the current literature related to the different topics around this study including 1) breast cancer, 2) identified risk factors for breast cancer, 3) and current breast cancer statistics. In addition, the review includes information on 4) current breast cancer screening methods, 5) mammography and mammography utilization rates among the study population, 6) factors influencing mammography utilization among Latina women and 7) how missed medical appointments affect both, healthcare providers and patients. Finally, this chapter will introduce the Protection Motivation Theory (PMT), which construct model provided the groundwork for the design, development and implementation of this study.

#### **Breast Cancer**

The American Cancer Society defines cancer as “a group of diseases characterized by uncontrolled growth and spread of abnormal cells” (American Cancer Society, 2012c). Starting at the cell level, cancer occurs when the normal process of cell production and reproduction is affected/disrupted by changes or damages on the cells’ DNA. Mutated cells start reproducing uncontrollably forming masses or tumors (National Cancer Institute, 2013b). Tumors can be either benign or malignant. Benign tumors are usually not dangerous since they are not invasive, they do not spread and they usually do

not grow back once they are removed. Malignant tumors, on the other hand, have the ability to invade surrounding tissue and spread to far parts of the body. Even though not always removable, when they are removed, they can grow back. They represent, therefore, a threat to health and life. (National Cancer Institute, 2012b).

Breast cancer is cancer that forms within the breast. A woman's breast is made up of milk production glands, called *lobules*; *ducts* that connect these lobules to the nipple; and *fatty, connective* and *lymphatic tissue* (American Cancer Society, 2011). Breast cancers that are confined to their original place without spreading to other areas are called "in situ". Given that breast cancer generally develops between the lobules or the ducts in the breast, breast cancer can be lobule carcinoma in situ (LCIS) or duct carcinoma in situ (DCIS) respectively (American Cancer Society, 2011). In the United States, DCIS is more common than LCIS as it has been found that 7 out of 10 women with breast cancer have DCIS compared to 1 in 10 women with LCIS (National Cancer Institute, 2012b).

Breast cancers that have spread outside the area where they originally started are called "invasive or infiltrating". It has been found that most breast cancers have these properties. Invasive ductal carcinoma (IDC) and invasive lobular carcinoma (ILC) are therefore breast cancers that have broken through the lobules or ducts where they originated and spread to surrounding tissues. IDC is the most common type of breast cancer as it has been found that "about 8 out of 10 invasive breast cancers are infiltrating ductal carcinomas" compared to 1 out of 10 being infiltrating lobular carcinoma (American Cancer Society, 2013a)

Cells on invasive and infiltrating breast cancer tumors can spread out to other areas of the body through the lymphatic system. Breast cancer cells can enter and invade

lymphatic blood vessels and grow in the lymph nodes located under the arms, above the collarbone and behind the chest bone. Breast cancer cells spreading to the lymph nodes might be an indication of increased chances that the cancerous cells have gotten into the bloodstream potentially reaching other areas in the body (American Cancer Society, 2013a).

### **Risk Factors for Breast Cancer**

The most important recognized risk factors for developing breast cancer are gender and age (Every Woman Counts, 2012). Even though breast cancer can also develop in men, women' risk to get the disease is 100 times higher than men. A reason for this difference might be that hormones that can promote the development and growth of breast cancer, such as estrogen and progesterone, are more present in women than in men (American Cancer Society, 2013a). The second most important risk factor for breast cancer is age. The risk for developing breast cancer increases as women get older as it has been found that, "80% of breast cancers occur in women aged 50 and older" (Every Woman Counts, 2012). Additional statistics supporting this statement show that invasive breast cancer is more prevalent in older women. The American Cancer Society states that invasive breast cancer are found in 1 out of 8 women younger than 45 years old, compared to 2 out of 3 in women aged 55 and older (American Cancer Society, 2013a).

The hereditary property of breast cancer has been proved which has led to consider genetic factors and family history of breast cancer as important risk factors for the disease. Statistics show that genetic factors such as the inherit mutation of the BRCA1 and BRCA2 genes account for around 20-25% of hereditary breast cancers and about 5-10% of all breast cancers (National Cancer Institute, 2013a). BRCA1 and

BRCA2 are genes that produce proteins that help prevent breast cancer by suppressing abnormal tumor growth. Mutations in these genes can interfere with the genes' normal functions increasing the risk for cancer development. Women that carry mutation on the BRCA1 and BRCA2 genes are estimated to have an increased risk breast cancer of 44 to 78% and 31 to 56% respectively (American Cancer Society, 2011). Family history of breast cancer also affects a woman's risk for breast cancer. Even though more than 85% of women that develop breast cancer do not have a relative that has been diagnosed with the disease, it has been found that having a direct blood relative (mother, sister or daughter) that has been diagnosed with breast cancer doubles a woman's risk to develop the disease. Furthermore, this number goes up to a three-fold risk when two relatives have been diagnosed with breast cancer (American Cancer Society, 2013a).

### **Breast Cancer Statistics**

Regardless of race or ethnicity, breast cancer is the most common type of cancer diagnosed among women in the United States. It is also the leading cause of death from cancer among Hispanic women and the second leading cause of death from cancer among White, African American, Asian/Pacific Islander and American Indian/Alaska Native women (CDC, 2011). Statistics for 2013 show that there is an estimated 232,340 of U.S. women expected to be diagnosed with new cases of invasive breast cancer. Similarly, 64,640 women are expected to be diagnosed with new cases of in situ breast cancer, 54,944 of which will be DCIS. Regarding mortality of the disease, an estimated of 39,620 U.S. women are expected to die from breast cancer by the end of 2013 (American Cancer Society, 2013c).

Breast cancer is very prevalent among the U.S. Latino population. Current statistics show that there was a decrease in breast cancer incidence rates from 9.7 down to 9.3 per 100,000 between the years 2000 and 2009. Similarly, death rates decreased by 1.6% per year during the same period of time. However, even with this decrease, breast cancer is still considered an important health concern for women in this population. In 2012, an estimated of 17,100 Latina women were expected to be diagnosed with breast cancer. Also, breast cancer was expected to be responsible for 15% of the total 15,800 cancer-related deaths estimated for the same year among Latina population (American Cancer Society, 2012c).

Differences in breast cancer among Latina women and women from other ethnic backgrounds go beyond those that refer to just incidence and mortality rates. Available literature suggests that there are also differences when it comes to diagnosis and characteristics of the breast cancer tumor in Latina women. It has been found that “even accounting for differences in age, socioeconomic status, and method of detection”, breast cancer is more likely to be diagnosed at a later stage among Latina women compared to non-Hispanic White women. A study confirms this statement by finding that “Latinas are 20% more likely to die of breast cancer than non-Hispanic White women diagnosed at a similar age and stage” (Kingsley, 2010). Similarly, breast cancer tumors in Latina women seem to be different from those developed among non-Hispanic White women. Research shows that Latina women are more likely to have more aggressive types of breast cancer, and to develop the disease at a younger age when compared to non-Hispanic White women (Mack, Pavao, Tabnak, Knutson, & Kimerling, 2009).

## **Breast Cancer Screening**

Breast cancer is considered a progressive disease whose natural course is in most cases growing, worsening and spreading. Given this property, it is always better to detect the disease at an early stage when it is easier to treat and more likely to be cured (Every Woman Counts, 2013). When breast cancer is detected due to evident symptoms, it usually means that the disease has already spread to surrounded areas (American Cancer Society, 2013b). Screening for breast cancer has the purpose of finding signs of the disease before symptoms become evident. Hard, irregular, painless lumps or masses are the most common signs of breast cancer. However, in some instances breast cancer lumps can also be soft, rounded and painful. Other signs of breast cancer include skin irritation, swelling redness or thickening of the breast or nipple, breast or nipple pain, nipple retraction and unusual nipple discharge. Furthermore, a lump in the lymph nodes or swelling of these glands can also be indicative of breast cancer (American Cancer Society, 2013b).

Early detection of breast cancer is crucial for surviving the disease. The American Cancer Society states that early detection is considered one of the possible explanations for the steady decrease in breast cancer death rates observed since 1989 in the United States (American Cancer Society, 2012c). This is confirmed by the literature as it is found that a woman has as high as 98% of 5-year survival rate if breast cancer is found at an early stage. This percentage drastically drops to 26% when breast cancer has already spread to other tissues and organs (Every Woman Counts, 2013).

There are currently three methods used for breast cancer screening depending on the woman's age: clinical breast examination, breast self-examination and mammography

(Every Woman Counts, 2013). For women in their 20's and 30's, the American Cancer Society recommends clinical breast examination (CBE) "as part of a periodic (regular) health exam by a health professional, at least every three years" (American Cancer Society, 2013b). In CBE a trained healthcare provider visually and manually examines the breasts and surrounding lymph nodes for changes in the breast, abnormalities and lumps (Every Woman Counts, 2012). The second method used for breast cancer screening is breast self-examination (BSE). BSE is recommended for women starting in their 20's. Even though currently, due to a lack of strong evidence of the efficacy of this technique, the decision of performing BSE is left on the woman's personal choice; women are encouraged to get familiar with their own breast, performing regular visual and manual examination in order to effectively report any changes or abnormalities found in the breasts (Every Woman Counts, 2013).

### **Mammography and Mammography Utilization**

The third screening method for breast cancer is mammography. Screening mammograms are low-dose x-ray pictures of the breast that are taken from two different angles in order to detect abnormalities that cannot be easily felt (National Cancer Institute, 2012a). In screening mammography, health providers look for abnormal changes in the breast, irregularities between both breasts, and the appearance of lumps and calcifications, which are deposits of calcium within the breast tissue (Office on Women's Health, 2010a). Mammograms can also be used for diagnostic purposes. Diagnostic mammograms are used to identify breast cancer in women that have symptoms or have had an abnormal screening mammogram. Contrary to screening mammograms, diagnostic mammograms might require several pictures of the breast

(American Cancer Society, 2013b).

Mammography is currently considered the “most effective method for detecting breast cancer early” (Every Woman Counts, 2013). The American Cancer Society recommends that women 40 years of age and older get a screening mammogram once a year for as long as the woman enjoys good health (American Cancer Society, 2012a). The impact of mammography on breast cancer mortality has been proved. Studies have confirmed that screening mammograms can lower breast cancer mortality by about 20% and 35% among women aged 50-64 and 50-74 respectively (Denhaerynck, Lesaffre, Baele, Cortebeeck, Van Overstraete, & Buntinx, 2003). With early detection of breast cancer through mammograms, a woman can not only reduce her risks of dying from breast cancer but also find a greater range of treatment options for the disease (American Cancer Society, 2011). In spite of these recommendations, a report by the American Cancer Society showed that in 2010, 50% of women between 40 and 85 years of age reported having a mammogram within the past year. Similarly, only 67% of these women reported having a mammogram within the past two years. The same report shows that a lower percentage of women between 40 to 49 reported having received a mammogram within the past year (47%) or within the past two years (62%) when compared to women aged 50 to 64 (56% and 73% respectively) and 65 and over (49% and 64% respectively) (American Cancer Society, 2012d).

Mammography utilization among Latina women is also a concern. Latina women have been among those who underutilize screening mammography services. Available literature seems to confirm that mammography utilization among Latina women is lower when compared to that of non-Hispanic Whites. For instance, in 2010, only 47% of

Latina women 40 years of age and older reported having a mammogram in the last year compared to 52% of non-Hispanic Whites. Similarly during the same year, 64% of Latinas reported having received a mammogram within the past two years compared to 67% of non-Hispanic Whites (American Cancer Society, 2011).

Difference in mammography utilization within the Latina population is also evident, as it has been found that Mexican and Central American women reported not having received a recent mammogram when compared to women from other Latina groups (American Cancer Society, 2012c). Also, the literature shows that there are differences in mammography utilization among U.S born Latinas and foreign-born Latinas. A study observing these two groups found that foreign-born Latinas had the highest rates of never been screened for breast cancer with mammography and/or clinical breast examination (Rodriguez, Ward, & Perez-Stable, 2005).

### **Medical Appointment-keeping Behavior**

Missed medical appointments or “no-shows” are considered a problem in the healthcare industry as it impact both health care providers and patients in a negative way. It has been proved that missed appointments have an unfavorable effect on the flow of patient care and clinic productivity (Moore, Wilson-Witherspoon, & Probst, 2001). Missed appointments can also result in loss of time, loss of resources and decreased quality of service and effectiveness by organizations providing health services (Parikh, Gupta, Wilson, Fields, Cosgrove, & Kostis, 2010). In addition, when patients fail to attend their scheduled medical appointment they missed opportunity for disease prevention and disease management and treatment, which can result in poor health outcomes (Cashman, Savageau, Lemay, & Ferguson, 2004).

Missed appointments rates in some general medicine and urban community health centers can vary from 15% to 30% and even up to 50% in some primary health clinics (Cashman, Savageau, Lemay, & Ferguson, 2004). Many studies have been conducted to try to identify not only the reasons as to why people miss their appointments but also common characteristics shared by people missing their appointments. Known reasons that explain why people become “no-shows” include the fact that they forget about their appointments, they either feel better or worse to keep appointments, they have problems with transportation and they think appointment costs too much. Also, confusion about both, the purpose of the appointment and the period of time between the scheduling of the appointment and the actual appointment have been found to have an effect on appointment-keeping behavior (Lucy, Paulman, Reuter, & Lovejoy, 2004). Furthermore, other factors influencing appointment-keeping behavior include day and time of appointment, location and proximity to the facility in which the appointment is scheduled and the provider’s level of training (Cashman, Savageau, Lemay, & Ferguson, 2004).

Socio-demographic characteristics associated with missed appointments include age, ethnicity, insurance, and socioeconomic status. Studies have found that patients that miss their appointments tend to be younger and of lower socioeconomic status than those who do attend their appointments (Lucy, Paulman, Reuter, & Lovejoy, 2004). Also, type of insurance have been found to be a factor influencing appointment-keeping behavior as the literature shows that patients with Medicaid are more likely to miss appointments when compared to patients with private insurance. Furthermore, it has been found that patients’ health status and their psychological health status is associated with appointment-keeping behavior. Patients experiencing depression, anxiety, and feelings of

hopelessness and helplessness are less likely to keep medical appointments (Cashman, Savageau, Lemay, & Ferguson, 2004).

Regarding ethnicity, the literature shows that White and Asian patients are more likely to keep their appointment compared to patients of other ethnic groups, including Latinos (Cashman, Savageau, Lemay, & Ferguson, 2004). This statement was confirmed by a study analyzing ethnic differences in primary care appointment-keeping behavior that found that Latinos showed the highest rates when it came to poor appointment-keeping (PAK) behavior, which was defined as missing more than one-third of planned medical appointments (Parker, et al., 2012). Considering that Latinos are an ethnic group that is more likely to miss medical appointments, it is important for health care providers to be able to not only identify but also address the factors influencing appointment-keeping among this population.

### **Factors Influencing Mammography Adherence among Latina Women**

Extensive research studies have been conducted among Latina women to identify the factors associated with mammography adherence. Recognized factors have been found to be “multiple and complex” (Schueler, Chu, & Smith-Bindman, 2008). Demographic and socioeconomic factors, such as age and health insurance have been found to have an impact on mammography utilization among this population (Tejeda, Thompson, Coronado, & Martin, 2008). Many studies have found association between mammography and different age groups among Latina women. For instance, a study found that Latinas between the ages of 43 and 50 were less likely to follow mammography recommendations when compared with women 50 years and older (Graves, et al., 2008). Another study obtained more detailed results and affirmed that

when comparing mammography utilization among women age 50 to 64 years, women age 55 to 59 years were more likely to adhere to mammography compared to women age 50 to 54 and 60 to 64 years (Wells & Roetzheim, 2007).

Lack of access to health care and health insurance has been reported as a significant barrier to screening mammography (Schueler, Chu, & Smith-Bindman, 2008). Rahman et al. showed that insured women were more likely to adhere to mammography guidelines than uninsured women (Rahman, Dignan, & Shelton, 2003). A study among Latina women with no access to health care found that lack of affordability was reported as the main reason keeping them from getting a mammography (Mack, et al., 2009). Such finding does not mean, however, that access to health care is a facilitator to mammography screening as another study in 2007 showed that the majority of women who have not had a mammography in the study reported having access to health insurance and a usual source of health care (Meissner, Breen, Taubman, Vernon, & Graubard, 2007).

The impact of psychosocial, cognitive and cultural factors such as perceived risk, knowledge, and personal beliefs about breast cancer and breast cancer screening on mammography utilization has also been explored. A woman's perception of her own breast cancer risk has been associated with adherence to breast cancer screening behavior (Magai, Consedine, Neugut, & Hershman, 2007). Perceived breast cancer risk is influenced by factors such as family history and misconceptions about breast cancer. Having a family history of breast cancer increases self-perceptions of breast cancer risk, which in turn can influence mammography utilization (Meissner, Breen, Taubman, Vernon, & Graubard, 2007). A study published in the *Journal of Women's Health*

reported that women with a first degree family history of breast cancer were more likely to adhere to mammography than those who reported not having a history of breast cancer in the family (Borrayo, et al., 2009). Studies also seem to have proven differences on the impact of family history of breast cancer among women of different age groups. For instance, a study showed that older women with family history of breast cancer were more likely to adhere to mammography screening guidelines than their younger counterparts (Rahman, Dignan, & Shelton, 2003). Also, younger women with family history of breast cancer were less likely to adhere to mammography screening compared to younger woman who did not have such history (Rahman, Dignan, & Shelton, 2003). These differences might be the result of erroneous beliefs regarding breast cancer and mammography as it was found that Latinas were less often aware that positive family history of breast cancer is considered a potential risk factors for developing breast cancer (Teran, Baezconde-Garbanati, Marquez, Castellanos, & Belkic, 2007).

Research has shown that lack of knowledge and misconceptions about breast cancer and perception of breast cancer risk are important factors influencing Latina women in their decisions to participate or not in mammography screening (Graves, et al., 2008). A meta-analysis on the factors associated with mammography utilization showed that knowledge about breast cancer and breast cancer screening positively affected mammography use among women in general (Schueler, Chu, & Smith-Bindman, 2008). These findings were duplicated in a study conducted among Latina women as it was observed that knowledge about breast cancer was an important factor influencing mammography utilization (Wells & Roetzheim, 2007). Yet another study provides support to this idea as it found that lower breast cancer knowledge was associated with

lower rates of mammography screening among Latina women, especially those from Central America and South America (Graves, et al., 2008).

Lack of knowledge can contribute to misconceptions and erroneous beliefs regarding breast cancer and mammography. Studies have shown that erroneous ideas and beliefs about breast cancer risk are frequent among Latina women and usually act as barriers to mammography utilization (Luquis & Villanueva Cruz, 2006). Personal beliefs about these topics can in turn influence a woman's perception of her risk to develop breast cancer. For instance, a study exploring barriers to mammography screening among Mexican women found that women did not believe they were at risk of breast cancer unless they had symptoms such as pain in their breast, detectable lumps or had received trauma to the breast, therefore they did not see the need to engage in mammography use (Tejeda, Thompson, Coronado, & Martin, 2008). The beliefs that mammography is only needed when symptoms are present and that mammography is ineffective are still powerful influences against mammography utilization among women (Magai, Consedine, Neugut, & Hershman, 2007).

The impact of cultural factors on mammography use among Latinas has also been observed. A study found marked differences with respect to the factors considered more important in relation to breast cancer screening among Latina and non-Latina women. According to this study, cultural factors were significant only among Latina women (Teran, Baezconde-Garbanati, Marquez, Castellanos, & Belkic, 2007). One important cultural concept influencing mammography utilization among Latina women is *fatalism*. *Fatalism* is described as the belief that there is little an individual can do to alter fate. Under this belief, cancer fatalism refers to the belief that death is expected when cancer

occurs (Lopez-McKee, McNeill, Bader, & Morales, 2008). A study published in the Journal of Community Health provide proof that supports this statement as participant women declared that since there is not much they can do to prevent cancer and death, they were less likely to discuss breast cancer topics and to participate on preventative actions such as mammography screening and breast self-examination (Luquis & Villanueva Cruz, 2006).

Other identified factors influencing mammography utilization among Latina women are those related to pain and fear. Thoughts about mammography being a painful procedure can have a negative effect on mammography screening (Schueler, Chu, & Smith-Bindman, 2008). Results obtained by a previously mentioned study supports this statement as it found that pain was reported as a big barrier to mammography adherence among women regardless of prior mammography exposure (Tejeda, Thompson, Coronado, & Martin, 2008). In the case of fear, it is a psychosocial factor that has been found to both hinder and encourage mammography screening among women (Kim, et al., 2008). In other words, fear of getting breast cancer has proved to encourage women to adhere to mammography but it has also prevented women from having a mammogram. Furthermore, another study found that the degree of fear plays a role in the decision to get a mammogram as it found that moderate levels of fear could encourage women to have a mammogram while high levels of fear can prevent women from doing so (Andersen, Smith, Meischke, Bowen, & Urban, 2003).

### **Current Methods to Increase Mammography Adherence and Appointment-Keeping**

Numerous approaches, individually or in combination, have been used with the intention of increasing screening mammography adherence and mammography

appointment-keeping among women. These approaches include mass media, targeted printed materials, invitation letters, and direct-contact strategies such as physician and patient education, reminder telephone calls and in person and telephone counseling (Ludman, Curry, Meyer, & Taplin, 1999). Direct-contact approaches have been proved to be more effective in increasing mammography use. For instance, a study found that telephone and in-person counseling were twice and three times more effective at increasing mammography utilization respectively. These two approaches have been proven to be successful in changing women's perceived susceptibility to breast cancer, knowledge about the disease, as well as awareness about barriers and benefits of mammography (Champion, Skinner, & Foster, 2000).

Motivational telephone calls and telephone counseling differ from regular reminder telephone calls in that they provide the opportunity to address screening barriers, educate the patient and encourage positive preventive behavior while reminder telephone calls only prompt the patient about the need to either schedule or attend a mammography appointment. In other words, the message provided in telephone counseling calls is more personal and particular to the specific recipient (Saywell, Champion, Sugg Skinner, Menon, & Daggy, 2004). The literature supports the efficacy of telephone counseling interventions to increase the odds of getting a mammogram among women in different populations and healthcare settings. For example, a study conducted among 354 women in Los Angeles found that 36.8% of study participants that received tailored telephone counseling complied with screening mammography compared to 29.0% that did not received the intervention (Allen Jr & Bazargan-Hejazi, 2005). When comparing telephone counseling to reminder telephone calls, the literature shows

mixed findings. While S. Taplin, et al. (2000) found no significant difference on the impact on mammography utilization between women that received a motivational telephone counseling and those who received a reminder telephone call, another study proved that appointment reminder calls are not effective in increasing mammography appointment adherence among low-income women (Bailey, Delva, Gretebeck, Siefert, & Ismail, 2005).

Educational and informational printed materials such as handouts and brochures have also been used to as a strategy to increase mammography utilization. Brochures have been proven to be effective in encouraging people to adhere many types of cancer-screening tests including mammography (Denberg, et al., 2006). For instance, a study found that educating patients using a low cost brochure significantly increased patient's awareness and knowledge about breast cancer and mammography, which in turn increased mammography utilization (Boling, Laufman, Lynch, & Weinberg, 2005). It is important to mention that this approach has been identified as one effective channels of communication to reach Latino populations (National Eye Health Education Program, 2006).

The review of the literature shows that combined approaches have an increased effect on mammography utilization than single approaches (Bailey, Delva, Gretebeck, Siefert, & Ismail, 2005). For instance, a study observing the effect of personalized telephone call, mail and the combination of both approaches showed that even tough all three strategies showed a positive effect on mammography adherence, the combination of the two led to greatest mammography compliance (Saywell, Champion, Sugg Skinner, Menon, & Daggy, 2004). These results were duplicated by V. Champion et al., (2007)

who found that combining personalized telephone counseling and personalized printed materials were more effective in increasing mammography adherence than any of such approaches alone. Yet another study found that a group of patients receiving a person to person recommendation, an informational brochure and an educational video showed a higher percentage in mammography utilization compared to patients in the groups that received either one of these three components alone (Davis, Berkel, Arnold, Nandy, Jackson, & Murphy, 1998).

### **Protection Motivation Theory**

Originally proposed by Ronald Roger, the Protection Motivation Theory (PMT) describes two main appraisal processes that explain an individual's adaptive or maladaptive ways of coping with a health threat: the threat appraisal and the coping appraisal processes (Norman, Boer, & Seydel, n.d.). The threat appraisal refers to the individual's assessment of the health threat itself while the coping appraisal refers to the individual's assessment of the coping responses to the health threat (Norman, Boer, & Seydel, n.d.). In other words, an individual's intentions to either adopt a health behavior or not are based on his/her own judgment of the health threat and the coping responses associated with the proposed health behavior (Norman, Boer, & Seydel, n.d.). Each of these processes in turn is influenced by two components. The threat appraisal process is influenced by *perceived vulnerability*, which refers to the individual's perceived risk of facing the health threat, and *perceived severity*, which refers to the health threat's degree of seriousness if the individual were to face it. Similarly, the coping appraisal process is influenced by *response efficacy*, which refers to the individual's belief that the proposed health behavior will remove the health threat, and *self-efficacy*, which refers to the

individual's belief that he/she will be successful in carrying out the proposed health behavior (Norman, Boer, & Seydel, n.d.). Collectively, both appraisal processes constitute the basis of the protection-motivation theory. Figure 2.1 shows a graphic illustration of the core constructs of the PMT.

If applied to the present study, increased *perceived susceptibility* and *perceived severity* have been found to effectively increase levels of fear of the health threat, increasing the likelihood of adaptive (protective) behavior (Norman, Boer, & Seydel, n.d.). For instance, if a Latina woman's perception of her own vulnerability to develop breast cancer is high and her perception of the severity of breast cancer is also high, there is an increased possibility that this woman will decide to adopt positive measurements to protect herself from the disease by attending her mammography appointment. Similarly, a strong *response efficacy* and a high sense of *self-efficacy* have been found to provide a strong influence (motivation) on the adoption of the proposed health behavior (Norman, Boer, & Seydel, n.d.). For instance, if a Latina woman has a strong belief that screening mammograms are effective in detecting breast cancer early and she also has a strong belief that she is capable of attending her screening mammography appointment, there is an increased possibility that she will be more likely to take positive steps towards engaging in screening mammography (Norman, Boer, & Seydel, n.d.).

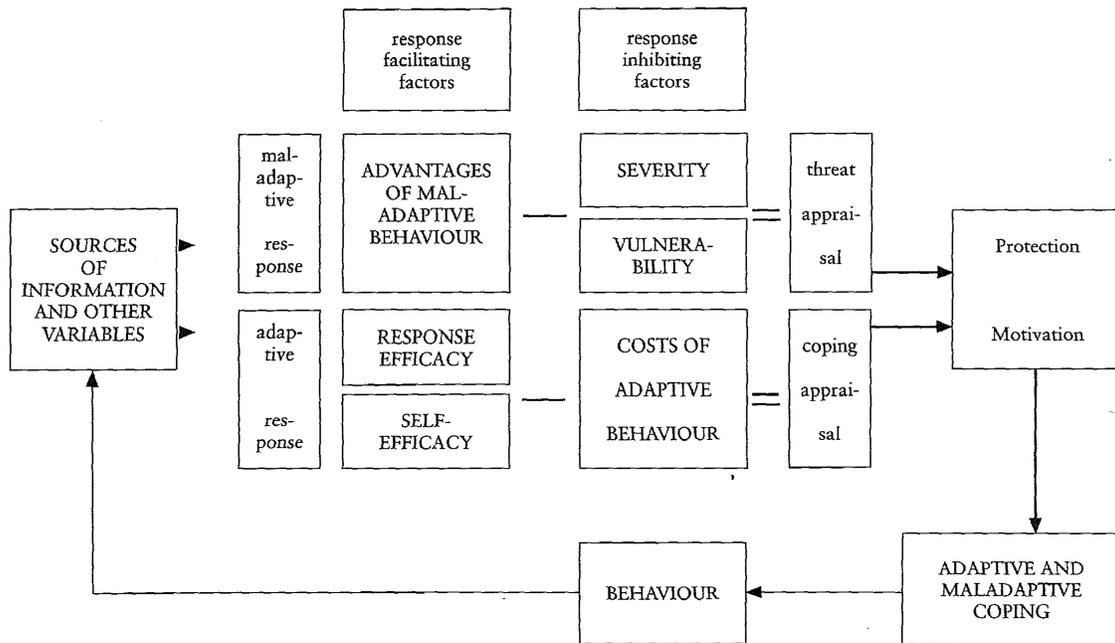


Figure 1. Protection Motivation Theory Constructs

The PMT has been widely used as a framework for studies looking to influence intentions to engage in health enhancing behavior such as disease prevention. For instance, Rippetoe and Rogers (1987) used the PTM to conduct a study to analyze the effect of breast cancer information on women' intentions to engage in breast self-examination. The study results showed that belief that breast self-examination is an effective method to detect abnormalities in the breast, *response efficacy*; was the strongest predictor of intention to perform this screening technique. Similarly, the study also showed that *perceived severity* and *perceived self-efficacy* were also predictors of the intention to engage in this health behavior (Norman, Boer, & Seydel, n.d.). As aforementioned, when it comes to mammography utilization, few studies have focused on the effects of a PMT implementation on women's intentions to adhere to screening mammography.

## Summary

Breast cancer the leading cause of death from cancer among Hispanic women in the United States (CDC, 2011). Breast cancer is more likely to be diagnosed at a later stage among Latina women compared to non-Hispanic White women (Kingsley, 2010). Similarly, Latina women are more likely to develop more aggressive types of breast cancer, compared to non-Hispanic White women (Mack, Pavao, Tabnak, Knutson, & Kimerling, 2009). Mammography, currently considered the most effective method for detecting breast cancer early (Every Woman Counts, 2013). The American Cancer Society recommends that women 40 years of age and older get a screening mammogram once a year for as long as the woman enjoys good health (American Cancer Society, 2012a). Latina women are among those who underutilize screening mammography services with only 47% of Latina women 40 years and over reporting having a mammogram in the last year (American Cancer Society, 2011).

As traditional factors such as age, income, and health insurance status become less significant in their ability to predict mammography use, other factors such as knowledge about breast cancer, perceived breast cancer risk and culture-based factors should be further addressed when working towards increasing screening mammogram adherence (Schueler, Chu, & Smith-Bindman, 2008).

Missed appointments not only represent a loss of time, loss of resources and decreased quality of service and effectiveness by organizations providing health services but also missed opportunity for poor health outcomes (Cashman, Savageau, Lemay, & Ferguson, 2004). Missed appointments rates range from 15% to 30% in community health centers and up to 50% in some primary health clinics (Cashman, Savageau,

Lemay, & Ferguson, 2004). Latinos showed the highest rates when it came to poor appointment-keeping (PAK) behavior, which was defined as missing more than one-third of planned appointments (Parker, et al., 2012).

Numerous approaches, individually or in combination, have been used with the intention of increasing screening mammography adherence and mammography appointment-keeping among women. The review of the literature shows that combined approaches have an increased effect on mammography utilization than single approaches (Bailey, Delva, Gretebeck, Siefert, & Ismail, 2005). Direct-contact approaches have been proved to be more effective in increasing mammography use (Champion, Skinner, & Foster, 2000). Educational and informational printed materials have also proven to be effective in encouraging people to adhere many types of cancer-screening tests including mammography (Denberg, et al., 2006).

## CHAPTER THREE

### Methodology

#### Introduction

The intervention was a quasi-experimental study designed to measure the impact of a motivational telephone call in conjunction with an educational brochure on free screening mammography appointment-keeping rates among Latina women. In order to implement this study, the resources of Inner Images, Inc. were used. Inner Images Inc. is a mobile mammography clinic providing mammography services to more than 80 health centers in California. The study was implemented among Latina women that have been scheduled to receive a mammogram with Inner Images, Inc. The following chapter covers the study methodology. Research methodology is defined as “a science of studying how research is done scientifically” (Kothari, 1990). In other words, this chapter describes the steps and procedures that were conducted before, during and after the implementation of this study including 1) Inner Images, Inc.’s client-clinics and participants’ selection and recruitment, 2) research design, 3) study’s implementation, 4) development of the instrument used in the study and 5) the proposed data analysis to be used.

#### Participants

##### *Participant Clinics*

Inner Images, Inc. works with more than 80 clinics and health centers in the entire state of California. Because of the study’s intended population and research focus, the selection criterion for the clinics was based on whether or not they were located in a community with a high population of Latinos; therefore participant clinics were selected through a convenience sampling method and were not randomized. This selection

approach led the author to consider clinics working with Inner Images, Inc. in Los Angeles, Orange, San Diego and Ventura Counties only.

A total of 16 clinics met the criteria for inclusion in the study. These 16 selected clinics were contacted and sent a set of documents that included an introductory letter, detailed information about the study, the author's special certification and both research instruments to be used in the study: brochure and telephone call script (See Appendices A, B & C). By the end of the recruitment period, a total of 3 clinics agreed to participate in this study. These clinics provided the author with screening mammography appointment logs for a total of six months. Appointment logs contained patients' basic information such as full name, date of birth and current address and telephone number.

#### *Sample Participants*

Inclusion criteria for participation in the study included the following:

- Be Latina woman
- Be age 40 and over
- Live in Los Angeles, Orange, San Diego or Ventura County
- Have a scheduled appointment to receive a free screening mammogram with Inner Images, Inc.

It is important to mention that in order to receive a free mammogram with Inner Images, Inc., participants had previously met the organization's requirements, which include:

- To be eligible for either one of the federally funded programs: the Cancer Detection Program: Every Woman Counts (CDP: EWC) or the Family PACT Program. Eligibility requirements for each of these programs are as follow:

- To be eligible for the Cancer Detection Program: Every Woman Counts (CDP: EWC), women need to:
  - No longer be of child bearing age
  - Be considered low income
  - Not have medical insurance that covers a mammogram or to have a high insurance copayment or deductible
  - Not have access to a mammogram through MediCal or other government program
  - Live in California
- To be eligible for the Family PACT Program, women need to:
  - Be at risk for pregnancy
  - Be considered low income or below 200% of the Federal Poverty Level
  - Not have any other source of healthcare coverage for family planning services

Exclusion criteria for participation in the study included the following:

- Non Latina women
- Women ages 39 and below
- Women attending clinics receiving services from Inner Images, Inc. outside the counties targeted in this study
- Women attending clinics receiving services from Inner Images, Inc. without an appointment to receive a mammogram

## Research Design

The design of the research study was a quasi-experiment given that the majority of study participants were not randomly assigned to either the control or the experimental group. The study sought to determine the impact of the *independent variable*; whether or not participants receive both the educational brochure and the motivational telephone call; on the *dependent variable*; whether or not participant women attended their mammography appointments. The directional hypothesis that this study aimed to test was: *“Advanced motivational and educational telephone call and brochure will increase free screening mammography appointment-keeping rates among Latina women”*

A total of 191 (N=191) participants were selected throughout the six-month period of study implementation. Study participants were originally randomized into either the control group or the experimental group using an online random number generator approach. However, assignment of participants into the study groups changed to a non-randomized assignment due to low participation rates and time constraints to complete the study. By the end of the study implementation, a total of 69 participants were assigned to the control group. Of these, two participants were excluded because they failed to meet the criteria for participation. Similarly, a total of 122 participants were selected for the experimental group; 60 of them, however, were excluded because they failed to meet the selection criteria for participation in the study. Therefore, the final study sample consisted of 67 participants in the control group (n=67) and 62 participants in the experimental group (n=62).

Participants in the experimental group received both components of the study: an informational, educational brochure and a motivational telephone call (See Appendices B

& C). Participants in the control group did not receive such intervention. The 1-page, 2-sided informational, educational brochure contained information on breast cancer among the Latina population, the importance of mammograms in the early detection of breast cancer, a brief description of what happens during a mammography appointment, a few recommendations to consider before going to a mammography appointment, several motivational phrases designed to encourage women to attend their appointments and contact information for Inner Images, Inc. and other available resources. This brochure was sent to selected participants 10 to 7 days prior to their scheduled appointment to receive a free mammogram with Inner Images, Inc.

The second component of this study, a motivational telephone call, went over the contents of the brochure putting a strong emphasis on the motivational phrases on the document. This call was placed to the same participants within 4 to 7 days prior their appointments. There were two additional call attempts for each participant that did not respond to the telephone call on the first attempt. Telephone calls were mostly placed during the after-work hours of the day. It is worth mentioning that since participants in the experimental group were contacted by phone without any previous notification, the author followed an IRB approved script designed to request oral consent to participate in the study (See Appendix D). After an affirmative consent for participation was provided, the author proceeded to implement the contents of the motivational call, which will be discussed on a later section on this chapter.

### **Research Instruments**

Both the motivational telephone call script and the educational brochure were selected based on available literature that supports the efficiency of direct-contact

strategies and printed materials for education among the study sample population. The contents of the brochure and telephone call script addressed the following points that are considered by previous research and field experts to be accepted barriers to mammography adherence among Latina women:

1. Lack of knowledge about breast cancer
2. Lack of knowledge about mammography
3. False beliefs regarding self perceived risk
4. Fatalistic beliefs
5. Lack of motivation to adhere to mammography
6. Fears related to mammography: pain and radiation

It was the intention of Inner Images, Inc.'s administrators that the contents of both the brochure and the telephone call address these important topics; therefore information on the final draft of both brochure as well as the telephone call included the following:

1. Information on breast cancer
2. Information on breast cancer among Latina women
3. The importance and benefits of having a mammography
4. Mammography screening guidelines
5. Tips to consider for mammography appointment
6. Mammography procedure steps: What happens during a mammogram procedure?
7. Fears associated with mammography: pain and radiation.
8. Words of empowerment and motivation to adhere to mammography recommendations

9. Resources available for information about breast cancer and mammography.

Both study instruments were created by the author under the supervision of content experts including Deborah Wright and Louis Pugliese, M.A. in Educational Psychology. Deborah Wright, Inner Images, Inc.'s President and founder has over 25 years of experience in mammography and women's care services, has served as the President of the American Cancer Society's Los Angeles Unit, and is a member of the advisory board of the National Consortium of Breast Centers. Louis Pugliese, M.A. Educational Psychology has 15 years experience in education and is currently Inner Images, Inc.'s Chief Financial Officer.

The brochure was a one-page double-sided document created following recommendations listed on the Simply Put: A Guide for Creating Easy-to-Understand Materials by the U.S. Department of Health and Human Services and the Centers for Disease Control and Prevention (CDC) as well as the Toolkit for Making Written Material Clear and Effective by the U.S. Department of Health and Human Services' Centers of Medicare & Medicaid Services. The telephone call script was created based on the contents of the brochure as it was Inner Images, Inc.'s administrators' desire that the telephone call reviewed and mirrored the contents on the brochure putting a lot of emphasis on the motivational messages contained on the brochure. Both the brochure and the telephone call script were originally created in English and then translated into Spanish using a "two-way" or "back translation" approach to ensure equivalence between both versions.

Next, the author wanted to ensure an optimal readability level for the brochure and an ideal level of understanding for the telephone call script among the study's

Spanish-speaking participants. This was successfully achieved as readability levels for both materials used in this study were obtained using the Fernandez-Huerta readability formula for texts in Spanish. Scores for the brochure and the telephone call script were 84.7 and 92.6 respectively. The brochure scored “*easy*” showing a 6<sup>th</sup> grade readability level while the telephone call script scored “*very easy*” showing a 5<sup>th</sup> grade readability level.

The brochure and the telephone call script were evaluated prior to implementation through a pilot study. The pilot study was conducted among several Spanish-speaking women that matched the characteristics of the study sample population. During the pilot study, the brochure was presented and the person was allowed time to read it thoroughly. The test given to the participants on the pilot study to evaluate the brochure was the Sustainability Assessment of Materials (SAM) instrument (See Appendix E). This instrument rates materials containing health-related information based on content, literacy demand, graphics, layout and type, learning stimulation and motivation, and cultural appropriateness (Aspirus Medical Library, 2008). In regards of the telephone call script, after the SAM tests were collected the author proceeded to simulate the telephone call in order to get feedback and suggestions on the contents of the script as well as the call’s time duration.

Changes were made to the original instruments based on the information collected on these pilot tests and resubmitted to the content experts for additional approval. Once the study research instruments were finalized and approved, the author submitted them along with the proposal for the study to the Institutional Review Board (IRB) at California State University, Northridge for approval. IRB approval was received for the

implementation of this study including both instruments on March 1<sup>st</sup>, 2013 (See Appendix F)

### **Implementation**

Once the study groups were established, it was originally intended that the participants in the experimental group receive the educational brochure approximately two weeks before their scheduled appointment to receive a free screening mammogram with Inner Images, Inc. To access the necessary appointment logs, however, the author relied on the good will and support of the participant clinics. Even though the author did her best to collect this information on time, delays occurred and receiving the logs on time was not always possible. For this reason, the majority of participants received the brochure within 10 to 7 days before their appointment instead. Due to such challenges with delayed appointment logs, the telephone calls were placed 4 to 7 days before the appointment and not consistently a week before as originally intended. There were two additional attempts to contact patients that did not respond to the telephone call on the first attempt. These two extra attempts were made during the following two consecutive days after the first attempt. Participants that did not answer the phone by the third attempt were not considered in the study.

The telephone call had an approximate duration of 10 – 12 minutes. Following a script, the author:

- Introduced herself
- Gave a brief description of the reason for the call
- Stated that participation in the call was voluntary
- Stated the duration of the call

- Assured that no personal information were going to be collected
- Requested oral consent to participate in the call

After agreeing to participate, the author asked participants to provide confirmation of having received the brochure previously sent to them. After this was confirmed, the author gave a motivational, educational talk covering the following topics also contained in the brochure (See Appendix B)

- Breast cancer
- Breast cancer among Latina women
- The importance and benefits of having a mammography
- Mammography screening guidelines
- Tips to consider for mammography appointment
- Mammography procedure steps: What happens during a mammogram procedure?
- Fears associated with mammography: pain and radiation.
- Words of empowerment and motivation to adhere to mammography recommendations
- Resources available for information about breast cancer and mammography.

If participants expressed that they did not received the brochure, the author proceeded to implement the educational, motivational call as described; however, since the goal of the present research study is to measure the impact of both motivational telephone call and educational brochure on mammography appointment-keeping, these participants were ultimately not considered in the study.

If during the call participants had questions or concerns about breast cancer or mammography procedures other than the ones covered in the brochure, the author provided contact information on available educational and counseling services such as Susan G. Komen for the Cure, the American Cancer Society's National Cancer Information Center and Inner Images, Inc.'s trained mammography radiologist, Deborah Wright who has over 25 years of experience in mammography and women's care services. Similarly, if during the call participants had questions regarding their appointments, the author suggested them to contact the clinic with which they had their appointment.

No further contact with participants occurred after the distribution of the brochure and the motivational, educational telephone call. Subsequent to participants' mammography appointment dates, participating clinics provided Inner Images, Inc., and the author with the appointment attendance logs in order for the author to check the selected participant's attendance records. This information was collected for both the control group and the experimental group.

### **Data Analysis**

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) 20.0 software. Table 1 shows the proposed statistical analysis for this study. Participants' identities were replaced with a code before starting the data analysis. Frequency tests were run first to get information on participants' demographics. Due to the limited amount of personal information provided by the clinics participating in this study – full name, address, telephone number and date of birth - frequencies were only run on participants' age, city and the clinic they originally had the appointments with. In

order to better analyze study participants in terms of age, age categories were created. Such categories were: 40 to 49, 50 to 59, 60 to 69, 70 to 79 and >80.

Table 1

*Proposed Statistical Analyses*

<b>Study's Hypothesis</b>	<b>Variable</b>	<b>Statistical Analysis</b>
Control/Experimental Group + Kept/Did not keep mammography appointment	Dichotomous + Dichotomous	Chi- Square
Age + Kept/Did not keep mammography appointment (Within control group)	Categorical + Dichotomous	Chi- Square
Age + Kept/Did not keep mammography appointment (Within experimental group)	Categorical + Dichotomous	Chi- Square
Age + Kept/Did not keep mammography appointment (Within both study groups)	Categorical + Dichotomous	Chi- Square
Clinic + Kept/Did not keep mammography appointment (Within experimental group)	Categorical + Dichotomous	Chi-Square
Clinic + Kept/Did not keep mammography appointment (Within control group)	Categorical + Dichotomous	Chi-Square

A chi-square test for independence was ran to test the study's hypothesis and determine the impact of the *independent variable*; whether or not participants receive both the educational brochure and the motivational telephone call; on the *dependent variable*; whether or not participants kept their mammography appointments.

Chi-square one-sample tests were also conducted for each of the study groups in order to compare observed and expected outcomes. Mammography appointment-keeping rates

among Latina women attending the clinics participating in the study were observed from December 2012 to May 2013 and the implementation of the study started in June 2013. Historical data for the three participating clinics show that an average of 68% of Latina women scheduled to receive a mammogram with Inner Images, Inc. keep and attend their appointments while an average of 32% do not attend their mammography appointments. These outcomes for the three participating clinics were, then, compared to the outcomes observed among the study groups.

Chi-square tests were also conducted to see if there was an association between age and mammography appointment-keeping behavior. Given the low number of participants ages 60 to 69, 70 to 79 and 80 and over, these age groups were recoded into one category before conducting these tests. Thus, the final age categories considered for these tests were, 40 to 49, 50 to 59 and 60+. Chi-square tests were also conducted to see if there was an association between clinic location and mammography appointment-keeping rates.

## **Summary**

The present was a quasi-experimental study designed to measure the impact of a motivational telephone call in conjunction with an educational brochure on free screening mammography appointment-keeping rates among Latina women scheduled to receive a free screening mammogram with Inner Images, Inc. The study was conducted among Latina women, aged 40 and over, living in the counties of Los Angeles, Orange and San Diego that had a scheduled appointment to receive a free screening mammogram with Inner Images, Inc. A total of 129 (N=129) women participated in this study. Clinics and study participants were selected using a convenience sampling method. Participants were

selected and distributed into either the experimental (n=62) or the control group (n=67). Participants in the experimental group received the informational, educational brochure and a motivational telephone call while participants in the control group did not received such intervention.

Both study instruments were designed under the supervision of content experts and translated to Spanish using a “back translation” approach. Readability level was ensured using the Fernandez-Huerta readability formula for texts in Spanish. Both instruments included information on breast cancer among Latina women, the importance and benefits of having a mammography, tips to consider before and during mammography appointment, fears associated with mammography such as pain and radiation and multiple words of encouragement and motivation to adhere to mammography recommendations and attend their scheduled appointments. Information provided in the brochure and the telephone call also included resources available for information about breast cancer and mammography. A pilot study was conducted among Spanish-speaking women that matched the characteristics of the study sample population to evaluate the brochure and the telephone call script. This pilot study was conducted before submitting these instruments for final approval from the content experts and the California State University of Northridge Institutional Review Board.

Data analysis for this study was conducted using Statistical Package for the Social Sciences (SPSS) version 20.0. Frequency tests were conducted to get information on participants’ demographic characteristics. A chi-square test for independence was conducted to testing of the study’s hypothesis. One-sample chi-square tests were run to compare mammography appointment-keeping rates observed and expected outcomes

using participating clinics' historical data. Finally, chi-square tests were also conducted to see if there was an association between age and mammography appointment-keeping and clinic location and mammography appointment-keeping among the study sample.

The following chapter will describe the results of these analyses.

## **CHAPTER FOUR**

### **Results**

#### **Introduction**

This quasi-experimental research study was designed to measure the impact of a motivational telephone call in conjunction with an educational brochure on free screening mammography appointment-keeping rates among Latina women. The study utilized the resources of Inner Images, Inc., a mobile mammography clinic. Three clinics served by Inner Images, Inc. in the counties of Los Angeles, Orange and San Diego participated in this study. A total of 129 (N=129) Latina women participated in this study. The study consisted of assigning women into either a control (n=67) or experimental group (n=62). The experimental group received an educational brochure in conjunction with a motivational telephone call, while the control group did not receive any of these components. A chi-square test was conducted to analyze the impact of this implementation on mammography appointment-keeping behavior. The following chapter will cover results obtained for 1) demographic characteristics of the sample population, 2) the testing of the study's hypothesis 3) additional observations and 4) the association between age and mammography appointment-keeping.

#### **Study Population and Demographic Characteristics**

From the original 191 participants selected for the study, a total of 62 were excluded because they did not meet the criteria for participation. The study population consisted of a total of 129 participants (N=129): 67 in the control group (n=67) and 62 in the experimental group (n=62).

Due to the limited amount of participants' personal information provided by the clinics participating in this study – full name, address, telephone number and date of birth – descriptive statistics were only ran on participants' age, city and the clinics in which they were scheduled to receive their free mammogram with Inner Images, Inc. Participants' age ranged from 40 to 83 years with a mean age of 51 years and a median age of 50 years (Table 2). The majority of participants fell into the 40 to 49 years of age category for both the control and the experimental groups with 52.2% and 45.2% respectively (Table 3).

Table 2

*Study Participants by Age*

<b>Category</b>	<b>Minimum – Maximum</b>	<b>Mean</b>	<b>Median</b>
Age	40 – 83	51	50

Table 3

*Age Distribution among Study Groups*

<b>Category</b>	<b>Control Group (n=67)</b>	<b>Experimental Group (n=62)</b>	<b>Total (N=129)</b>
Age			
40 – 49	35 (52.2%)	28 (45.2%)	63 (48.8%)
50 – 59	20 (29.9%)	27 (43.5%)	47 (36.4%)
60 – 69	10 (14.9%)	6 (9.7%)	16 (12.4%)
70 – 79	1 (1.5%)	1 (1.6%)	2 (1.6%)
80 - over	1 (1.5%)	0	1 (0.8%)
<b>Total</b>	<b>67 (51.9%)</b>	<b>62 (48.1%)</b>	<b>129 (100%)</b>

Frequencies were also run to measure the age distribution of participants based on their compliance with their scheduled mammography appointment (Table 4).

Table 4

*Age and Mammography Appointment-Keeping among Study Groups*

Category	Attended Mammography Appointment		Did not Attend Mammography Appointment	
	Exp. Group	Control Group	Exp. Group	Control Group
Age				
40 – 49	22 (78.6%)	22 (62.9%)	6 (21.4%)	13 (37.1%)
50 – 59	25 (92.6%)	14 (70%)	2 (7.4%)	6 (30%)
60 – 69	4 (66.7%)	8 (80%)	2 (33.3%)	2 (20%)
70 – 79	-	1 (100%)	1 (100%)	-
80 - over	-	-	-	1 (100%)
<b>Total</b>	<b>51</b>	<b>45</b>	<b>11</b>	<b>22</b>

A total of three Inner Images, Inc.’s client clinics agreed to participate in this study. These clinics were:

- Consultorio Medico Latino in Los Angeles County,
- Hurtt Family Health Center Inc. in Orange County, and
- Linda Vista Health Center in San Diego County

From the total 129 study participants, distribution between these clinics was 104 participants (81%) from Consultorio Medico Latino in Los Angeles County, 16 participants (12%) from Hurtt Family Health Center Inc. in Orange County and 9 participants (7%) from Linda Vista Health Center in San Diego County (Table 5).

Table 5

*Total Number of Participants Provided by Clinics*

<b>Participating Clinics</b>	<b>Counties</b>	<b>N of Participants</b>	<b>%</b>
Consultorio Medico Latino	Los Angeles	104	81%
Hurt Family Health Center Inc.	Orange	16	12%
Linda Vista Health Center	San Diego	9	7%
<b>Total</b>		<b>129</b>	<b>100%</b>

In terms of cities, the majority of study participants had addresses in the cities of Compton (24%) and Paramount (16.3%). This statement applies when we look at the study groups separately and collectively. Participants from these two specific cities attended Consultorio Medico Latino to receive their free mammogram with Inner Images, Inc. (Table 6).

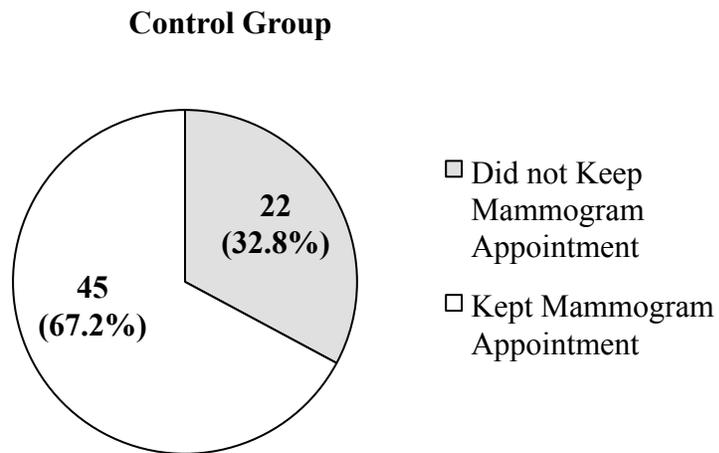
Table 6

*Total Number of Participants by Cities among Study Groups*

<b>City</b>	<b>Exp. Group</b>	<b>Control Group</b>	<b>N. of Part.</b>	<b>%</b>	<b>County</b>
Compton	14	17	31	24%	Los Angeles
Paramount	12	9	21	16.3%	Los Angeles
Lynwood	5	9	14	10.9%	Los Angeles
Bellflower	3	2	5	3.9%	Los Angeles
Long Beach	4	7	11	8.5%	Los Angeles
South Gate	4	3	7	5.4%	Los Angeles
Downey	3	3	6	4.7%	Los Angeles
Norwalk	1	2	3	2.3%	Los Angeles
Carson	1	0	1	0.8%	Los Angeles
Whittier	0	1	1	0.8%	Los Angeles
Santa Ana	1	7	8	6.2%	Orange
Tustin	1	5	6	4.7%	Orange
Costa Mesa	0	1	1	0.8%	Orange
Gardena	0	1	1	0.8%	Los Angeles
Los Angeles	3	0	3	2.3%	Los Angeles
Huntington B.	1	0	1	0.8%	Orange
San Diego	9	0	9	7.0%	San Diego
<b>Total</b>			<b>129</b>		

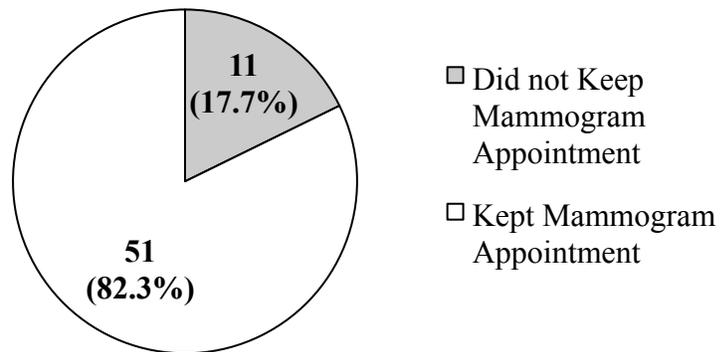
## Hypothesis Testing

Appointment-keeping percentages among both the control and the experimental group showed that from the 67 study participants in the control group, 67.2% (45) attended their mammography appointment while 32.8% (22) did not attend their appointments. Similarly, from the 62 study participants in the experimental group, 82.3% (51) attended their mammography appointment while 17.7% (11) did not attend their appointments (Figure 2 and 3). Table 7 shows a comparison of these percentages for each study group.



*Figure 2. Mammography Appointment Attendance in the Control Group*

**Experimental Group**



*Figure 3. Mammography Appointment Attendance in the Experimental Group*

Table 7

*Mammography Appointment Attendance among Study Groups*

<b>Category</b>	<b>Kept Mammography Appointment</b>	<b>Did not Keep Mammography Appointment</b>	<b>Total</b>
Control Group	45 (67.2%)	22 (32.8%)	67
Experimental Group	51 (82.3%)	11 (17.7%)	62

A chi-square test for independence was conducted to test the study’s hypothesis and determine the impact of the *independent variable*; whether or not participants received both the educational brochure and the motivational telephone call; on the *dependent variable*; whether or not participant women attended their mammography appointments. Results obtained showed that the relationship between these variables was significant given that  $X^2 (1) = 3.854, p=.05$ . Phi and Cramer’s V values were also

obtained to measure the strength of this association. It was observed that Phi and Cramer's V=.173 with a  $p=.05$  (Table 8).

Table 8

*Hypothesis Testing Results*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	3.854	1	.050	$p<.05$
Phi	.173	-	.050	$p<.05$
Cramer's V	.173	-	.050	$p<.05$

As observed in Table 8, results are on the borderline of statistical significance even though when we look at the results in terms of observed cases, a significant increase in appointment-keeping rates is evident. In attempting to explain this, we will now look at these outcomes compared to historical data.

**Observed Outcomes vs. Historical Data**

A chi-square goodness-of-fit test was conducted, using Inner Images, Inc.'s historical data specific to the three clinics participating in this study. Appointment-keeping rates among Latina women scheduled to receive a mammogram with Inner Images, Inc. in these clinics were observed for a total of six months prior to study implementation. Historical data showed that an average of 32% Latina women scheduled to receive a mammogram with Inner Images, Inc. do not attend their appointments.

When comparing these numbers to the outcomes observed in the control group, no statistical significance was found given that  $X^2(1) = .022, p>.05$ . The p-value was calculated to be .883 showing no statistical significance since  $p>.05$ . Results for the experimental group, however, indicated statistical significance given that  $X^2(1) = 6.121,$

$p < .05$ . The p-value was calculated to be .013 showing statistical significance since  $p < .05$ . (Table 9)

Table 9

*Observed vs. Expected Outcomes for Study Groups*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Control Group	.022	1	.883	$p > .05^*$
Experimental Group	6.121	1	.013	$p < .05$

*\*Indicates no statistical significance*

These results show evidence that no significant difference was seen between the average appointment-keeping rates observed in the historical controls and the study's control group. The historical controls showed that an average of 32% Latina women did not attend their mammography appointment with Inner Images, Inc. in the six month prior to study implementation. Similarly, 32.8% of women in the study's control group did not attend their mammography appointment (Table 10). In the case of the experimental group, results showed that 17.7% of women in this group did not attend their mammography appointments. This shows a substantial 14% decrease in appointment no-show rates compared to the historical controls (Table 10).

Table 10

*Mammography Appointment Attendance among Study Groups and Participating Clinics*

	<b>Attended Mammography Appointment</b>	<b>Did not Attend Mammography Appointment</b>
Consultorio Medico, Hurtt Family Center & Linda Vista Health Center Historical Data	68%	32%
Study's Control Group	67.2%	32.8%
Study's Experimental Group	82.3%	17.7%

Aside from the differences among the observed outcomes for both study groups and historical data from the participating clinics, it is worth mentioning that comparison between both study groups alone also showed differences in appointment-keeping rates. It was observed that appointment-keeping percentages in the experimental group (82.3%) was 15% higher when compared to percentages in the control group (67.2%)(Table 10).

**Age and Appointment-Keeping**

Statistical tests were conducted to see if there was a relationship between age and mammography appointment keeping for both the experimental group and the control group and for the study group as a whole. Due to the low number of participants aged 60 to 69, 70 to 79 and 80 and over, these age groups were recoded into one category before conducting these tests. Therefore, the final age categories considered for these tests were 40 to 49, 50 to 59 and 60+. Results showed no significant relationship between these variables. This statement applies when we look at the study groups separately and collectively (Table 11-13).

Table 11

*Age and Appointment-Keeping within the Control Group*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	.701	2	.704	<i>p</i> >.05*
Phi	.102	-	.704	<i>p</i> >.05*
Cramer's V	.102	-	.704	<i>p</i> >.05*

*\*Indicates no statistical significance*

Table 12

*Age and Appointment-Keeping within the Experimental Group*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	5.262	2	.072	<i>p</i> >.05*
Phi	.291	-	.072	<i>p</i> >.05*
Cramer's V	.291	-	.072	<i>p</i> >.05*

*\*Indicates no statistical significance*

Table 13

*Age and Appointment-Keeping within Study Groups*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	2.861	2	.239	<i>p</i> >.05*
Phi	.149	-	.239	<i>p</i> >.05*
Cramer's V	.149	-	.239	<i>p</i> >.05*

*\*Indicates no statistical significance*

**Clinic and Appointment-Keeping**

Statistical tests were also conducted to see if there was a relationship between the clinics where participants were scheduled to receive mammogram services and mammography appointment-keeping behavior for both the experimental group and the

control group. Results showed that the relation between these variables was not significant in any of these instances (Table 14 & 15).

Table 14

*Clinic and Appointment-Keeping within the Control Group*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	.031	1	.860	<i>p</i> >.05*
Phi	.022	-	.860	<i>p</i> >.05*
Cramer's V	.022	-	.860	<i>p</i> >.05*

*\*Indicates no statistical significance*

Table 15

*Clinic and Appointment-Keeping within the Experimental Group*

	<b>Value</b>	<b>df</b>	<b>Sig.</b>	<b><i>p</i></b>
Pearson Chi-Square	1.093	2	.579	<i>p</i> >.05*
Phi	.133	-	.579	<i>p</i> >.05*
Cramer's V	.133	-	.579	<i>p</i> >.05*

*\*Indicates no statistical significance*

**Summary**

The present research study's population consisted of a total of 129 participants (N=129): 67 in the control group (n=67) and 62 in the experimental group (n=62).

Demographic information showed that the majority of participants fell into the 40 to 49 years of age category and that the overall mean age was 51. It was also observed that the majority of participants in this study were provided by a health clinic in Los Angeles County and resided mostly in the cities of Compton and Paramount.

A chi-square was the main statistical analysis used to test the study's hypothesis: *advanced motivational and educational telephone call and brochure will increase free screening mammography appointment-keeping rates among Latina women who are scheduled to receive a free screening mammogram with Inner Images, Inc.* Results showed that the relationship between the study's *independent variable*; whether or not participants receive both the educational brochure and the motivational telephone call; and the *dependent variable*; whether or not participant women attended their mammography appointments, was significant.

Mammography appointment-keeping averages for the three clinics participating in the study were observed for six months prior to study implementation. This observation showed that in these three specific clinics, an average of 68% Latina women scheduled to receive a mammogram attend their appointments and an average of 32% do not. Results showed no significant difference between this average and the average observed in the study's control group (67.2% attendance rate and 32.8% non-attendance rates) during the six months of study implementation. A significant difference, however, was observed between the historical controls appointment attendance rates and the rates from the experimental group (82.3% attendance rate and 17.7% non-attendance rates).

Comparisons also revealed an evident increase in appointment-keeping rates in the experimental group when compared to the control group. Results showed a 15% increase in the number of participants from the experimental group that attended their appointments when compared to those in the control group. The author also ran tests to see if there was a relationship between age and appointment-keeping behavior. No statistical significance was found. Also, similar results were found when running tests to

measure the relationship between clinic and appointment keeping. The following chapter will discuss and analyze the results in more detail and in relation to prior research relevant to the present study.

## CHAPTER FIVE

### Discussion

#### Introduction

The present research study was aimed to analyze the impact of a motivational telephone call and an educational brochure on free screening mammography appointment-keeping rates among Latina women. Results showed a statistically significant association between the study's *independent variable*; whether or not participants receive both the motivational telephone call and the educational brochure; and the *dependent variable*; whether or not participant women attended their mammography appointments. This association was supported when a significant difference was observed when comparing these historical controls to the study's experimental group. Observed outcomes also revealed a 15% increase in the number of participants from the experimental group that attended their appointments when compared to those in the control group. This chapter will discuss the results obtained after analyzing the data collected during the implementation of this study. This section, therefore, will include 1) an overview of study participants' demographic characteristics, 2) hypothesis findings and 3) association between participants' age and as well as the association between clinic and mammography appointment-keeping behavior.

#### Demographic Characteristics

The study population consisted of 129 (N=129) Latina women aged 40 and over attending three health centers in the counties of Los Angeles, Orange and San Diego to receive a free mammogram with Inner Images, Inc. In regards of age, the mean age between study participants was 51 with a mean age of 50. It was observed that age groups

were similarly represented in both the experimental and the control group with the majority of participants falling on the 40 to 49 years of age category for both groups (52.2% and 45.2% respectively).

Frequencies were conducted to measure the age distribution of participants based on their compliance with their scheduled mammography appointment. When looking at the appointment-keeping rates among the different age categories, it was noticed that participant women between the ages of 50 to 59 had higher appointment attendance percentages compared to their younger counterparts. This observation goes in accordance with a study by Graves, et al. (2008) that found that Latina women between the ages of 43 and 50 were less likely to follow mammography recommendations when compared with women 50 years and older.

The three clinics served by Inner Images, Inc. that provided study participants were all located in urban areas within Los Angeles, Orange and San Diego counties. Consultorio Medico Latino in Los Angeles County provided the majority of participants for the study (104 total, 81%) compared to Hurtt Family Clinic in Orange County (16 total, 12%) and Linda Vista Health Center in San Diego County (9 total, 7%). It was shown that the majority of study participants resided in either the city of Compton or the city of Paramount where Consultorio Medico Latino is located. It is important to mention that despite this uneven distribution of participants, criteria for eligibility to receive free mammograms with Inner Images, Inc. provides a safe ground to assume that the study participants share similar social characteristics in terms of socioeconomic status and access to screening mammography.

The noticeable higher number of study participants provided by Consultorio Medico Latino might be the result of a high demand for mammography services among this clinic's female patients, especially those living in the cities of Compton and Paramount, where the majority of study participants resided. For instance, one of the conditions for eligibility to receive a free mammogram with Inner Images, Inc. is that these women have to be considered low income and live at or below the federal poverty level threshold. Population in the cities of Paramount and Compton reflect this characteristic as statistics show that more than 20% of the population for either one of the mentioned cities, meets this condition (U. S. Census Bureau, 2013). In regards to insurance status, both cities belong to the Service Planning Area 6, which currently reports a 38.2% of adults 18 to 64 who are uninsured (Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology, 2013). Furthermore, the key criterion for study participation: to be Latina, might also help explain the high participation rate in Consultorio Medico Latino given that both cities have populations that are predominantly Latino: 65% and 79% for Compton and Paramount respectively (Healthy City, 2010).

In terms of mammography appointment attendance rates among the groups, it was observed that from the 67 study participants in the control group, 45 (67.2%) attended their mammography appointment while 22 (32.8%) did not attend their appointments. Similarly, from the 62 study participants in the experimental group, 51 (82.3%) attended their mammography appointment while 11 (17.7%) did not attend their appointments.

## **Hypothesis Findings**

The study aimed to measure the relationship between the *independent variable*; whether or not participants receive both the educational brochure and the motivational telephone call; on the *dependent variable*; whether or not participant women attended their mammography appointments. Statistical test's results found this relationship to be statistically significant ( $p=.05$ ). The hypothesis is therefore sustained. In other words, there is an indication of a positive association between the implementation of the study components; educational brochure and the motivational telephone call; and mammography appointment-keeping behavior among Latina women.

The information delivered by both study components: the educational brochure and the motivational telephone call, was intentionally focused on addressing previously identified barriers to mammography adherence among Latina women discussed in the literature review. These barriers include lack of knowledge about breast cancer and mammography, false beliefs regarding self-perceived risk, fatalistic beliefs related to cancer, and fears related to mammography screening. The results obtained by this study might have been influenced by this information given that the literature review shows that interventions that focus on addressing barriers to mammography tend to be successful in increasing mammography adherence.

Both the informational brochure and the telephone call script were designed to increase knowledge about breast cancer and mammography as it has been found that lower breast cancer knowledge was associated with lower rates of mammography screening among Latina women (Graves, et al., 2008). By increasing knowledge and providing information regarding breast cancer and mammography, the instruments also

addressed misconceptions and erroneous beliefs known to be common among Latina women and that usually act as barriers to mammography utilization (Luquis & Villanueva Cruz, 2006). Such misconceptions include the idea that mammography is only needed when symptoms are present and that if there is no breast cancer in the family one is not at risk for the disease (Magai, Consedine, Neugut, & Hershman, 2007). Fatalistic beliefs related to cancer also create misconceptions, as it leads Latina women to believe that cancer is a death sentence and that once you have the disease, nothing can be done to avoid death (Lopez-McKee, McNeill, Bader, & Morales, 2008). Motivational and encouragement phrases were designed to address concerns about pain given that thoughts about mammography being a painful procedure can have a negative effect on mammography screening (Schueler, Chu, & Smith-Bindman, 2008). Findings in the literature review indicate that fear related to breast cancer and mammography can either encourage or prevent Latina women to get a mammogram, however fear is significantly present among studies observing psychological barriers to mammography use among the Latino population.

The study's positive findings might have been a result of the selected study's instruments. Prior studies have proven that educational interventions using printed materials are effective to improve cancer screening tests use (Denberg, et al., 2006). The study's brochure had the intention to increase awareness and knowledge about breast cancer and mammography, which has been found to have an impact on mammography appointment adherence among Latina women (Boling, Laufman, Lynch, & Weinberg, 2005). In this study, the information provided in the brochure was subsequently reinforced with the telephone call. Previous findings have shown that direct-contact

approaches are effective to improve mammography appointment adherence among Latina women. The literature confirms that educational messages targeting low-income women is more effective when given directly (Bailey, Delva, Gretebeck, Siefert, & Ismail, 2005).

Telephone counseling has been proved to be an effective method to increase mammography utilization and appointment-keeping behavior. However, health care providers with limited resources might not be able to afford this approach given that it requires not only special training in order for staff to learn how to appropriately address specific barriers presented by the patient receiving the call, but also more time on the phone for implementation (Taplin, et al., 2000). This study's educational and motivational call did not address specific needs by women receiving the implementation. However, it addressed factors identified as barriers for mammography utilization among this population. Tailored messages incorporate sociocultural factors that have been shown to improve mammography use. Participants were also given information on available resources they could use if they had questions or concerns. The study telephone call thus, offered participants less than a telephone counseling call but more than a reminder call. It was hoped that the nature of the telephone call removed the opportunity for participant women to feel pressured to share their concerns and opinions about breast cancer and mammography use.

In regards to the time when participants received both the brochure and the telephone call in relation to their appointments, the study's original intention was for patients to receive the brochure approximately two weeks before their appointments and the telephone call approximately one week before their appointment. Time constraints and delays in getting patients lists from participating clinics, forced this time period to be

shortened to 10 to 7 days for the brochure and 4 to 7 days for the telephone call. Prior studies have found, however, that the time elapsed between implementation to increase appointment-keeping rates and the actual appointments, does not have any effect on appointment adherence (Hasvold & Wooton, 2011).

### **Inner Images, Inc.**

To analyze what the study results represent for Inner Images, Inc., statistical tests were conducted to compare observed and expected mammography appointment-keeping outcomes using historical data. Mammography appointment-keeping rates among Latina women attending the clinics participating in the study were observed for six months prior to study implementation. Historical data for these clinics showed that an average of 68% of Latina women scheduled to receive a mammogram with Inner Images, Inc. keep and attend their appointments while an average of 32% do not attend their mammography appointments. These patients are not attending their free mammography appointment, losing the valuable opportunity to get screened, find a problem early and possibly survive breast cancer in the future.

The statistical analysis ran to measure any significant difference between the outcomes obtained from the clinics' historical controls and the study's control group showed no statistical significance. This implies that women in the control group in this study are no different in terms of mammography appointment-keeping behavior than the average Inner Image, Inc.'s patient scheduled to receive a free mammogram at anytime. The statistical analysis ran to measure if there was any significant difference between the outcomes obtained from the historical controls and the study's experimental group, however, did show a statistical difference. These results give the study a strong level of

validity given that aside from the study's components: the brochure and telephone call; there is no other known variable that could have drastically changed or influenced women in the experimental group to behave differently during the six months of study implementation. The results in this study are strengthened if we observe the outcomes numbers in both study groups and compare them to each other. A significant increase of 15% in appointment-keeping rates is seen in the experimental group compared to the control group, as 82.3% of participants in the experimental group and 67.2% of participants in the control group kept and attended their free mammography appointments. As it has been explained, these two observations together with the results obtained by the statistical analysis give more strength to the indication that the study's educational brochure and motivational telephone call in fact influence mammography appointment-keeping behavior among Latina women.

### **Additional Findings**

Even though age has been identified as a factor influencing mammography adherence among Latina women, no statistical significance was found between these variables in this study population. Tests to find this association were conducted within the control group, the experimental group and using the study population as whole with no significance in any of these instances ( $p=.704$ ,  $p=.072$  and  $p=.239$  respectively). These results showed that age was not a factor directly influencing mammography appointment-keeping behavior among participants in this study. This might have been a result of unequal representation of women 60 years of age and older among the study population.

Given that the three participating clinics were all located in three different counties, the author also ran tests to see if there was an association between clinic/clinic

location and appointment-keeping within both the control and the experimental group. Results showed no statistical significance in any of these instances ( $p=.860$  and  $p=.579$  respectively), which means there is no relationship between the clinics where study participants were scheduled to receive a free mammogram, and appointment-keeping rates. It is important to consider that the fact that neither of these additional variables were associated with mammography appointment-keeping, only reinforces and supports the study's hypothesis testing results that showed an association between study implementation and appointment-keeping among Latina women.

### **Study Limitations**

The present study has several limitations and shortcomings that are worth mentioning:

1. An important methodological limitation is that related to the study's sample size. Clinic participation was difficult to attain. It was observed that many clinics were not willing to release patient's information despite the author's certification of completion of HIPAA training. Once the clinics agreed to participate, the author did not have automatic access to mammography appointment logs. Instead, the author relied on the support of participant clinics, which in turn affected study sample size and slowed study implementation. Even though statistical significance was found for the main hypothesis testing, generalizability and representativeness of the population is limited due to the small sample size.
2. Internal validity threats are "experimental procedures, treatments, or experiences of the participants that threaten the researcher's ability to draw

correct inferences from the data about the population in an experiment” (Creswell, 2013, p. 162). One type of internal validity threat applicable to this study is that related to the selection of participants. Selection of study participants was not conducted in a random manner; a characteristic that reduces internal validity and that also established the research study as a quasi-experimental design. A low participation rate was experienced on the clinics part, which took the selection method to change from random selection to a convenience approach.

3. Another threat to internal validity is that related to the Hawthorne effect. The components of this study represented situations that were not present among study participants prior to the study implementation. For instance, the author requested an oral consent from all women participating in this study. The contents of the oral consent request script for this study might have clued study participants of the nature of the call potentially influencing their decision to attend their free mammography appointment and affecting the study results.
4. An additional threat to internal validity is the presence of a confounding variable. A confounding variable is a variable that is not observed as part of the study, but could “explain the relationship between the independent and the dependent variables” (Creswell, 2013, p. 51). In this case, appointment reminder calls placed by the clinics to their patients might have had an effect in appointment-keeping rates among study participants. Nonetheless, this type of call is not specific for mammography appointments. It was not possible to

determine the degree to which appointment-keeping was influenced by the study components versus the reminder call placed by the participant clinics.

5. External validity threats refer to “incorrect inferences from the sample data to other persons, other settings, and past or future situations” (Creswell, 2013, p. 162). Threat to generalizability is a factor in this study especially those related to the selection of participants. Given that there are specific requirements that must be met in order for these women to be eligible to participate in this study, results obtained cannot be generalized to the entire women population. For instance:

- a. Study was implemented among Latina women only; therefore study results cannot be generalized to other ethnic groups since appointment-keeping behavior may be different among other populations.
- b. Women participating in the study were eligible for free mammography screening given that they met the criteria for low socioeconomic status and limited or no insurance coverage for mammography services. Mammography use might be different among Latinas with no access to this free service.
- c. Study participants came from clinics located in urban areas, which means that results might not be generalized to Latina women living in other areas such as rural, suburban and/or inner city areas. As it was shown, that Los Angeles county was over represented in this study as the majority of study participants were scheduled to receive their free mammogram at Consultorio Medico Latino (81%) compared to those with mammography

appointment in San Diego and Orange counties (12% and 7% respectively). It is important to mention however, that despite this uneven distribution of participants, criteria for eligibility to receive free mammograms with Inner Images, Inc. provides a safe ground to assume that the study participants share similar social characteristics in terms of socioeconomic status and access to screening mammography.

- d. An additional threat to external validity is caused by the fact that participant clinics were selected exclusively from clinics served by Inner Images Inc. Study results might be different among women attending other medical settings.

## **CHAPTER SIX**

### **Conclusion**

#### **Introduction**

The following chapter will provide 1) a summary of the study and the results obtained, 2) conclusions based on study findings and 3) recommendations for future research and for Inner Images, Inc. or other mammography providers servicing Latina women.

#### **Summary**

The present was a quasi-experimental research study designed to measure the impact of a motivational telephone call in conjunction with an educational brochure on free screening mammography appointment-keeping rates among Latina women. The study also aimed to contribute to the existing literature regarding mammography appointment-keeping approaches among Latina women. In order to test the study's hypothesis: Advanced educational brochure and motivational telephone call will increase free screening mammography appointment-keeping rates among Latina women, Inner Images Inc.'s resources were used. The study, thus was conducted among low socioeconomic status Latina women, aged 40 and older, living in the counties of Los Angeles, Orange and San Diego that had a scheduled appointment to receive a free screening mammogram with Inner Images, Inc.

A total of 129 (N=129) women participated in this study: 67 in the control group (n=67) and 62 on the experimental group (n=62). Participants in the experimental group received the informational, educational brochure and a motivational telephone call while participants in the control group did not received such intervention. Results found a

positive association between study variables. In other words, there is an indication that the implementation of the educational brochure and the motivational telephone call had a positive impact on Latina women mammography appointment-keeping behavior.

Historical data obtained with a six-month observation period of the three participating clinics showed that an average of 68% of Latina women scheduled to receive a mammogram with Inner Images, Inc. keep and attend their appointments while an average of 32% do not attend their mammography appointments. When comparing mammography appointment-keeping rates observed in the study and historical appointment-keeping rates among Latina patients recorded for the three participating clinics only results from the experimental group showed to be statistically different. Results obtained from the study's experimental group showed that 82.3% of participants kept their appointments, which is a noticeably higher compliance percentage than that observed among these three clinics (68% attendance rates).

Results obtained from the study's control group showed that 67.2% of participants kept their appointments, which is a very similar appointment-keeping percentage than that observed among the three participating clinics (68% attendance rates). Since no statistical difference was found between the outcomes obtained from the historical controls and the study's control group, it is assumed that women in the control group in this study were no different than the average Inner Image, Inc.'s patient scheduled to receive a free mammogram at any time in terms of mammography appointment-keeping behavior. These findings, therefore, noticeably strengthen the indication that educational brochure and motivational telephone call in fact influenced mammography appointment-keeping among Latina women.

Study results also showed a significant increase of 15% in appointment-keeping rates in the experimental group compared to the control group. Results showed that from the 62 study participants in the experimental group, 82.3% (51) attended their mammography appointment while 17.7% (11) did not attend their appointments. Results for the control group, on the other hand, showed that from the 67 study participants in this group, 67.2% (45) attended their mammography appointment while 32.8% (22) did not attend their appointments.

## **Conclusions**

The following conclusions were drawn from the study findings:

1. The study met the main objective of measuring the impact of motivational telephone call and educational brochure on free screening mammography appointment keeping among Latina women. Given that obtained results also support the study's hypothesis, it can be concluded that a motivational telephone call in conjunction with an educational brochure will likely increase mammography appointment-keeping rates among Latina women.
2. Supporting this finding are the comparisons done between historical data on mammography appointment-keeping rates from participating clinics' and the observed outcomes in the study. When looking at the clinics' appointment attendance rates for a six-month period prior to study implementation it was found that an average of 68% of Latina women keep their mammography appointments and an average of 32% do not. No statistical difference was found between the historical data and the results obtained in the control group, which shows that the study's control group successfully represented these

clinics' typical observations. This in turn provides strength to the implementation of the study given that a significant difference was observed between the clinics' historical data and the experimental group. A substantial 14% increase was found in the experimental group. Furthermore, the differences in appointment-keeping rates between the experimental and the control group are clear. More than 80% of women in the experimental group kept their appointments after study implementation compared to 67% of women in the control group.

3. The educational brochure used in this study proved to be not only an effective but also an affordable tool. The motivational call was also an important instrument since it provided the direct-contact component without using additional time or money resources known to be needed when implementing other approaches such as telephone counseling. It was noted by the author that participants receiving the telephone call expressed gratitude as they indicated that being called by a person representing their health provider and speaking their language was encouraging.
4. The results obtained by this study might have been influenced by the information provided by the brochure and the telephone call, which was designed to address identified barriers to mammography adherence among Latina women. Similarly, the study's findings might provide support to prior studies that prove that direct-contact approaches and educational interventions using printed materials are effective to improve mammography appointment adherence among Latina women.

5. There was no relationship between age and mammography appointment-keeping behavior shown in this study. In other words, age was not a factor directly influencing mammography appointment-keeping among participants in the study groups. There is awareness that this might have been a result of the small sample size and of the unequal representation of women 60 years of age and older among the study population. Observations within a larger sample group might be needed. Similar results were found when testing results for an association between clinic and appointment-keeping within the study groups. No such association was found, which means there is no relationship between the clinics study participants were scheduled to receive a free mammogram/their location and the likelihood to attend the appointments.
6. The study also met its remaining objectives given that results obtained contribute to the existing literature regarding approaches to increase mammography appointment-keeping rates among Latina women. Results will also help Inner Images, Inc. and similar organizations providing mammography services improve future outreach efforts with the purpose of not only increase mammography appointment-keeping rates among Latina women but also help detect breast cancer at earlier stages consequently reducing breast cancer and potentially saving more lives among this population and women in general.

### **Recommendations for Future Research**

The present research study was aimed to analyze the impact of a motivational telephone call and an educational brochure on free screening mammography

appointment-keeping rates among Latina women. The following are recommendations for future research directions:

1. An important recommendation for future direction is to observe the effects of the implementation of the components of this study using a bigger sample size, which would provide a greater representation of the study population. Also, it would be interesting to see the results obtained after implementing the components of this study among a study group with age categories that are equally represented.
2. It was observed in this study that while the majority of participants fell into the 40 to 49 years of age category, this group did not show the highest mammography appointment-keeping rates, it is important for future implementations to focus efforts aimed to increase mammography adherence and appointment-keeping among women in this age group.
3. As it was mentioned before, all clinics that participated in this study had a system in place that involved calling patients to remind them of their mammography appointments. During these calls, a clinic staff member only reminded patients of the date and time of their appointments without providing any other educational or motivational information. It was not possible to determine the degree to which mammography appointment-keeping was influenced by the study components versus the reminder call placed by the participant clinics. It would be noteworthy to conduct research to observe this relationship.

4. It would be important to observe the long-term effects of the implementation of the components of this study: educational brochure and motivational telephone call on mammography adherence among Latina women. Even though the results were positive, this study only observed the immediate effects since the intervention was implemented only days before patients' scheduled appointment to receive a mammography. Longitudinal analysis might provide interesting results.
5. This study was implemented among Latina women only. Results, therefore, might be different if conducted among women from other ethnic groups. Similarly, mammography services were free for women participating in this study given that they met the criteria for low socioeconomic status. Future research can look address the effect of educational brochure and motivational telephone call on mammography appointment-keeping behaviors among Latina women who do not have access to free mammography services. In addition, participants attended clinics that were located in urban areas. Women living in rural areas might respond differently to the components used in this study. Furthermore, participant clinics, from where study participants were selected, were chosen exclusively from clinics served by Inner Images Inc. Study results might be different among women attending other medical settings.
6. Clinic participation rates were extremely low in this study. It is important for clinics and health centers providing screening mammography services to understand their role in mammography appointment-keeping behavior among

women. Future research should consider analyzing the effects of clinics' breast cancer and mammography awareness on patients' mammography appointment keeping rates.

### **Recommendations for Inner Images, Inc. and Providers of Mammography Services**

The following are the author's recommendations for organizations providing mammography service, including Inner Images, Inc.:

1. Further consider implementation of this study's outreach strategies into their operations. Although the study did not include a large number of participants, eligibility to receive free mammograms with Inner Images, Inc. ensured similarities among participants in this study in terms of socioeconomic status and access to screening mammography. There is no reason to believe that positive results will not be obtained if implemented among all of Inner Images Inc.'s Latina patients.
2. Continuously increase and strengthen relationships with client clinics in order to encourage clinic involvement in efforts to increase mammography appointment-keeping rates among women. It is crucial for mammography service providers to educate clinic's staff informing them about the knowledge delivered by this and previous studies on mammography appointment-keeping among Latina women and women in general. Increasing appointment-keeping rates might not only benefit women receiving their screening mammography test but it might also help clinics increase business and productivity.
3. Continuously educate Latina patients about breast cancer and the importance of early detection through mammography use in order to eliminate potential

barriers to mammography adherence, especially those related to lack of knowledge, false beliefs regarding self-perceived risk, fatalistic beliefs related to cancer, and fears related to mammography screening. By increasing knowledge and addressing misconceptions and erroneous beliefs known to be common among Latina women, mammography adherence and mammography appointment-keeping rates can also be increased.

4. Given that this organization works with more than 80 health centers and community clinics throughout the entire state of California, it is recommended that a study be conducted among women from other ethnic backgrounds and compare obtained results with those from this study. Also, since this organization's client clinics are located in different living areas other than the one represented in this study, analyzing differences among women attending clinics in urban areas and those attending clinics in rural areas might yield interesting results.

In conclusion, the use of a motivational telephone call in conjunction with an educational brochure will likely increase mammography appointment-keeping rates among Latina women. Educating Latina patients about breast cancer and the importance of early detection through mammography use is crucial to improve mammography appointment-keeping rates. The study provided additional information to support the existing literature regarding approaches to increase mammography adherence among Latina women. It is hoped that the results observed in this study help organizations providing mammography services improve future outreach efforts aiming to not only increase mammography appointment-keeping rates but also help detect breast cancer at

earlier stages, consequently reducing breast cancer and potentially saving more lives among Latina women.

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## Appendix A: Introductory Letter and Author's HIPAA Certification

Inner Images, Inc.

April 2013

### **REQUESTING CONSENT TO CONDUCT MAMMOGRAPHY EDUCATIONAL INTERVENTION**

To whom it may concern,

My name is Marleni DePhilippis; I am a Master of Public Health candidate at California State University Northridge and a volunteer at Inner Images Inc. I wish to conduct a research project in your organization that will be of great benefit to women's health as well as the primary focus of my Master thesis. The title of my research project is "**Impact of Motivational, Educational Outreach on Mammography Appointment-keeping**". This project involves sending an educational, informational brochure to patients in your organization who have a scheduled mammogram with Inner Images Inc. A telephone call will follow with the intention of encouraging and motivating patients to attend their appointment. Subsequent observation of attendance rates will then be conducted to measure the impact of this intervention.

The intended objectives of this project are as follow:

- (1) To measure the impact of a motivational telephone call and an educational brochure on mammography appointment-keeping
- (2) To help detect breast cancer at earlier stages, consequently reducing breast cancer rates among women living in Los Angeles County.

I am seeking your consent to conduct this project among patients in your organization who have appointments for a mammogram with Inner Images, Inc. Results obtained from this project will potentially help raise mammography appointment attendance rates in the future.

This project will be conducted under the supervision of Debora Wright, President of Inner Images Inc. I have provided you with the brochure and telephone call script to be used in this project. If you require any further information, please do not hesitate to contact me at the listing below.

Yours sincerely,

Marleni DePhilippis  
Inner Images Inc.  
Email address: mardeph79@gmail.com  
Tel. Number: (818) 6188663  
Fax Number: (818) 4765877

# Certificate Of Completion

AWARDED TO

Marleni DePhilippis

FOR SUCCESSFULLY COMPLETING HIPAA EXAMS, INC. TRAINING  
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WITH NATIONALLY RECOGNIZED ADVANCED HIPAA TRAINING, AND HIPAA EXAMS, INC. STANDARDS AND CERTIFICATION  
TERMS AND CONDITIONS. FOR MORE INFORMATION VISIT [HIPAAEXAMS.COM](http://HIPAAEXAMS.COM)

21270404

Certification Number

4/15/2013

Certification Date (Exp: 1 years)

HIPAA Exams, Inc.  
Digital Signature

## Appendix B: Educational Brochure

California State University, Northridge

### Impact of Motivational Phone Call and Educational Brochure on Free Mammography Appointment-keeping

*Educational and Motivational Information for Brochure – English*

*(Outside view)*

<p><b>Do you have some fears about getting a mammogram?</b></p> <p><b>A mammogram DOES NOT CAUSE cancer! A mammogram DETECTS IT!</b></p> <p>◊ <b>Is it painful?</b> <i>No, it is uncomfortable, but not painful.</i></p> <p>It is a good idea to schedule your mammogram <b>two or three days after your period.</b></p> <p>◊ <b>What about radiation?</b> Exposure is <b>very small compared to the benefit of finding breast cancer early.</b></p> <p><b>Many women are taking control of their health and getting mammograms EVERY DAY!</b></p> 	<p><b>Do you need more information or have any concerns or questions about breast cancer and mammograms?</b></p> <p>If you need more information about breast cancer and mammograms please contact :</p> <p><b>Inner Images, Inc.</b></p> <p>(310) 586 – 3000</p> <p><b>Susan G. Komen for the Cure</b></p> <p>1-877 GO KOMEN 1-877-465-6636</p> <p><b>American Cancer Society's</b></p> <p><b>National Cancer Information Center</b></p> <p>1-800-227-2345</p> <p><b>TAKE ACTION NOW!</b> <b>Get a Mammogram!</b></p>	<p><b>Mammograms can Save YOUR Life!</b></p>  <p><b>Your BEST Protection against Breast Cancer is EARLY DETECTION!</b></p> <p>Inner Images, Inc.</p>
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## Impact of Motivational Phone Call and Educational Brochure on Free Mammography Appointment-keeping

### *Educational and Motivational Information for Brochure – English*

#### *(Inside View)*

**Breast cancer among Latina women**

Did You know that...

- ◊ Breast cancer is the **most common cancer among women in the United States** and the **leading cause of cancer deaths among Latina women.**
- ◊ Breast cancer in Latina women **can be more aggressive** when compared to other racial groups.
- ◊ Many Latina women do not know they have breast cancer until it is **very advanced.**
- ◊ Breast cancer **can be cured more than 95% of the time if it is found early!**



**That is why THE BEST PROTECTION against breast cancer is EARLY DETECTION!**

**DON'T TAKE ANY CHANCES with your health!**

**Mammograms can save YOUR life!**

**What is a mammogram?**

**Early detection is your best defense against breast cancer! And it can save your life!**

- ◊ A mammogram is a picture of the breast that **detects breast cancer early.**

**Mammograms CAN SAVE YOUR LIFE! by detecting breast cancer early, when it is treatable.**

- ◊ Many women **live long, healthy lives after being diagnosed with breast cancer** at an early stage.

**What are the recommendations for mammograms?**

The National Cancer Institute recommends that beginning at age **40**, women get mammograms **EVERY 1 or 2 years**

- ◊ On the day of your mammogram, wear a shirt that is easy to take off. They will give you a **gown to wear.**

**What happens during a mammogram exam?**



- ◊ In a **private room**, you will stand in front of the mammogram machine. The technician will put your breast on an adjustable platform.
- ◊ Your breast will be squeezed **only for a few seconds.** The whole thing only takes 20 minutes or less!
- ◊ On the day of your mammogram, remember **not to use deodorant, powder or lotions around your breasts or under your arms.**

**Remember**

**If you get a mammogram, you will be TAKING CARE OF YOUR HEALTH, you will feel GREAT, and you will be a good EXAMPLE to other females in your family!**

**Impact of Motivational Phone Call and Educational Brochure on Free  
Mammography Appointment-keeping**

*Educational and Motivational Information for Brochure – Spanish*

*(Outside View)*

**Tiene algún temor sobre las mamografías?**

La mamografía **NO CAUSA CANCER!**  
La mamografía lo **DETECTA!**

◊ **Es dolorosa?**  
**No, es incomoda pero no es dolorosa.**  
Es por eso que es una buena idea hacerse su mamografía **mas o menos dos o tres días después de su periodo.**

◊ **Y sobre la radiación?**  
La cantidad de radiación que se usa en una mamografía es **muy baja** comparada con el beneficio de encontrar un problema de cáncer del seno a tiempo.

**Muchas mujeres estan tomando el control de su salud y haciendose mamografías TODOS LOS DIAS!**



**Necesita más información o tiene alguna pregunta sobre el cáncer del seno y las mamografías?**

Si necesita más información sobre el cáncer del seno y mamografías, por favor llame a:

**Inner Images, Inc.**  
(310) 586 – 3000

**Susan G. Komen for the Cure**  
1-877 GO KOMEN 1-877-465-6636

**American Cancer Society's  
National Cancer Information  
Center**  
1-800-227-2345

**ACTUE YA!**  
Hagase una Mamografía!

**Las Mamografías pueden salvar TU vida!**



**La MEJOR Protección contra el Cáncer del Seno es DETECTARLO A TIEMPO!**

Inner Images, Inc.

## Impact of Motivational Phone Call and Educational Brochure on Free Mammography Appointment-keeping

### *Educational and Motivational Information for Brochure – Spanish*

#### *(Inside View)*

<p><b>El cáncer del seno en mujeres Latinas</b></p> <p>Sabía que...</p> <ul style="list-style-type: none"><li>◊ El cáncer del seno es <b>el cáncer más común en mujeres en los Estados Unidos</b> y es la <b>causa principal de muerte por cáncer entre las mujeres Latinas.</b></li><li>◊ El cáncer del seno puede ser <b>más agresivo en mujeres Latinas que en mujeres de otras razas.</b></li><li>◊ Muchas mujeres Latinas <b>no saben que tienen cáncer del seno</b> hasta que está <b>muy avanzado.</b></li><li>◊ El cáncer del seno <b>puede ser curado más del 95% de las veces si es detectado a tiempo.</b></li></ul>  <p>Es por eso que <b>la MEJOR PROTECCION</b> contra del cáncer de seno es <b>DETECTARLO A TIEMPO!</b> <b>NO arriesgue su salud!</b> Las mamografías pueden salvar SU <b>VIDA!</b></p>	<p><b>Que es una mamografía?</b></p> <p><b>Detectar el cáncer del seno a tiempo es su mejor defensa!</b> <b>Y puede salvarle la vida!</b></p> <ul style="list-style-type: none"><li>◊ Una mamografía es una fotografía del seno que <b>encuentra el cancer cuando recién se está formando.</b></li></ul> <p><b>La mamografía PUEDE SALVAR SU VIDA</b> detectando el cáncer del seno cuando recién se está formando y cuando es <b>más fácil de tratar.</b></p> <ul style="list-style-type: none"><li>◊ Muchas mujeres <b>a las que se les detecta el cáncer del seno cuando recién se esta formando viven más tiempo y llevan una vida saludable.</b></li></ul> <p><b>Cuales son las recomendaciones para tener una mamografía?</b></p> <p>El Instituto Nacional de Cancer recomienda que a partir de los 40 años de edad, las mujeres se hagan una mamografía <b>CADA 1 o 2 años.</b></p>	<p><b>Que pasa durante una mamografía?</b></p>  <ul style="list-style-type: none"><li>◊ El día de su mamografía, use una blusa que sea fácil de sacar. <b>Se le dará una bata para usar.</b></li><li>◊ <b>En un cuarto privado,</b> Usted se parará delante de la máquina de mamografía donde la doctora colocará su seno en una plataforma ajustable.</li><li>◊ Su seno será aplanado <b>solo por unos segundos.</b> Todo el proceso solo toma 20 minutos o menos.</li><li>◊ El día de su mamografía, <b>recuerde no usar desodorante, talco o crema alrededor de sus senos o en las axilas.</b></li></ul> <p><b>No se olvide que:</b></p> <p>Haciendose la mamografía, Usted estara <b>CUIDANDO SU SALUD,</b> se sentirá <b>BIEN,</b> y será un <b>BUEN EJEMPLO</b> para otras mujeres en su familia!</p>
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## **Appendix C: Telephone Call Script**

California State University, Northridge

### **Impact of Motivational Phone Call and Educational Brochure on Free Mammography Appointment-keeping**

#### ***Educational and Motivational Information for Phone Call –English Script***

- Thank you for accepting this call!
- You should feel proud of yourself because you are about to get very important information about a serious health issue affecting many women in the United States and information is good protection!
- Breast cancer is the most common cancer among women in the US and it is the leading cause of cancer deaths among Latina women.
- Simply being a woman and getting older puts you at risk for breast cancer.
- The older you get, the greater your chances of getting breast cancer.
- Also, you are at higher risk if your mother, sister or daughter has had breast cancer.
- Breast cancer tends to be more aggressive among Latina women.
- Many Latina women do not know they have breast cancer until it is very advanced.
- That is why the best protection is early detection! And it can save your life!
- One of the ways to detect breast cancer is through a mammography.
- A mammogram is a low-dose X-ray picture of the breast
- It is the most effective method to detect breast cancer!
- Mammography can save your life by detecting breast cancer at a very early stage, when it is treatable.

- A mammogram can show cancer that is too small for you or your doctor to find,
- Many women live long, healthy lives after been diagnosed with breast cancer at an early stage.
- The National Cancer Institute strongly recommends that beginning at age 40, women get mammograms every 1 or 2 years
- Breast cancer can be curable more than 95% of the time if it is found early before it has spread to lymph nodes or other parts of the body
- So don't take chances with your health, you need to take action and take care of yourself!
- Mammograms can save lives!
- When you are going to have a mammogram, you will be asked to undress from the waist up, but you will be given a gown to wear. You will probably be more comfortable if you wear a two-piece outfit with a top that you can change in and out of easily. In a private room, you will stand in front of the mammography machine where the technologist will position your breast on an adjustable platform. A clear plastic plate will then gradually press down on your breast, flattening it against the platform.
- Generally, two X-rays are taken of each breast: one from above and one from the side. Each time your breast will be fully compressed for only a few seconds.
- The whole procedure only takes 20 minutes and it can save your life!
- You will be taking care of yourself, you will feel good about yourself, you will be a good role model for other females in your family!

- On the day of your mammogram, remember not to use deodorant, powder or lotions around your breasts or under your arms. Some of these contain substances that can interfere with the reading of the mammogram by appearing on the x-ray film as white spots.
- In regard of what it is said about mammograms being painful, most women who have had a mammogram will tell you that breast compression is uncomfortable, but not painful. That is why it is a good idea to schedule your mammogram when your breasts are least tender, typically two or three days following the end of your menstrual cycle.
- When it comes to fears about radiation, your risk from radiation exposure is very small compared to the benefit of finding a problem early. The amount of radiation used is very low, so risk of any damage from it is extremely low as well.
- A mammography does not cause cancer! A mammography detects it!
- Many women are taking control of their health and getting mammograms every day! You can also take action and take care of yourself! Don't take chances with your health, your family would rather you didn't take chances with your health.
- Get a mammogram! You can do it! Taking action can save your live.
- Having a mammogram is a way to express your love for yourself, and for those who love you...your family!
- If you need more information about breast cancer and mammograms you can contact Inner Images, Inc. @ (310) 586 – 3000 or Susan G. Komen for the Cure @ (310) 586 – 3000 or the American Cancer Society's National Cancer Information Center @ 1-800-227-2345. Thank you for your time.

California State University, Northridge

**Impact of Motivational Phone Call and Educational Brochure on Free**

**Mammography Appointment-keeping**

*Motivational Phone Call - Spanish Script*

- Gracias por aceptar esta llamada! Usted debería estar orgullosa de si misma porque esta apunto de recibir información muy importante sobre un problema de salud muy seria que afecta a muchas mujeres en los Estados Unidos y la información es buena protección!
- El cáncer del seno es el cáncer mas comun entre las mujeres en los Estados Unidos y es la causa principal de muertes por cáncer entre las mujeres Latinas
- El simple hecho de ser mujer y envejecer implica un riesgo de padecer cáncer del seno.
- Mientras más edad tenga, mayores son las posibilidades de padecer esta enfermedad.
- Además, usted tiene un mayor riesgo si su madre, hermana o hija han tenido cáncer de seno.
- El cáncer del seno tiende a ser mas agresivo en mujeres Latinas.
- Muchas mujeres Latinas no saben que tienen cáncer del seno hasta que está muy avanzado.
- Es por eso que la mejor protección es la detección temprana! Y puede salvar su vida!
- Una de las maneras de detectar el cáncer del seno en una etapa temprana es con una mamografía.
- Una mamografía es una imagen radiográfica de baja dosis del seno.

- Una mamografía no causa cáncer. Debido a que la cantidad de radiación que se usa es tan baja, el riesgo de sufrir cualquier daño es extremadamente bajo.
- Es el método mas efectivo para detectar el cáncer del seno!
- Una mamografía puede salvar su vida detectando el cáncer del seno en una etapa temprana cuando mejor se puede tratar.
- Muchas mujeres a las que se les detecta el cáncer del seno en forma temprana pueden vivir más tiempo y llevar una vida saludable.
- El Instituto Nacional de Cáncer recomienda que las mujeres se tomen una mamografía cada 1 o 2 años a partir de los 40 años de edad.
- El cáncer del seno puede ser curado mas del 95% de las veces si es detectado temprano antes de que se expanda a los nódulos linfáticos o a otras partes del cuerpo.
- Entonces, no arriesgue su salud! Usted necesita tomar acción y cuidarse a si misma!
- Las mamografías pueden salvar vidas!
- Cuando va a hacerse una mamografía, se le pedirá que se desvista desde la cintura para arriba y se le dará una bata para usar. Se sentirá mas cómoda si en el día de su mamografía usa dos piezas de ropa de manera que le sea fácil cambiarse. En un cuarto privado, Usted se parara delante de la maquina de mamografía donde la tecnóloga colocara su seno en una plataforma ajustable. Un plancha de plástico presionara su seno gradualmente, aplanándolo sobre la plataforma.
- Generalmente, dos rayos X son tomadas de cada seno: una presionando de arriba y otra de costado. En cada una de estas oportunidades su seno estará siendo aplanado solo por unos segundos.
- Todo el proceso solo toma 20 minutos y puede salvarle la vida!

- Haciéndose la mamografía, Usted estará cuidándose a si misma se sentirá bien con Usted misma, y será un buen ejemplo a seguir para otras mujeres en su familia!
- En el día de su mamografía, recuerde no usar desodorante, talco o crema alrededor de sus senos o en las axilas. Estos productos contienen sustancias que pueden interferir con su mamografía mostrando manchas blancas en sus places de rayos x.
- Con respecto a lo que se dice sobre las mamografías que son dolorosas, la mayoría de las mujeres que han tenido una mamografía le dirá que la compresión del seno es incómodo, pero no doloroso. Es por eso que es una buena idea programar su mamografía cuando los senos están menos sensibles, por lo general dos o tres días después de terminar su ciclo menstrual. También es posible que desee tomar un analgésico para reducir el malestar antes de la mamografía.
- En lo que respecta a los temores sobre la radiación, el riesgo por exposición a la radiación es muy pequeña comparada con el beneficio de encontrar un problema de cáncer del seno a tiempo. Debido a que la cantidad de radiación que se usa es tan baja, el riesgo de sufrir cualquier daño es extremadamente bajo
- Una mamografía no causa cáncer, una mamografía la detecta!
- Muchas mujeres están tomando el control de su salud y están haciéndose mamografías todos los días! Usted también puede acción y tomar el control de su salud! No arriesgue su salud! A su familia no le gustaría que Usted arriesgue su salud!
- Hágase una mamografía! Usted puede! Tomar acción puede salvar su vida.
- Hacerse una mamografía es una manera de expresar su amor hacia Usted misma y hacia las personas que la aman...su familia!

- Si necesita mas información sobre el cáncer del seno o de mamografías, Usted puede contactar a Inner Images, Inc. @ (310) 586 – 3000 o a Susan G. Komen for the Cure @ (310) 586 – 3000 o al Centro de Información Nacional de la Sociedad Americana de Cáncer @ 1-800-227-2345. Muchas gracias por su tiempo!

## **Appendix D: Oral Consent Script**

California State University, Northridge

### **Impact of Motivational Phone Call and Educational Brochure on Free Mammography Appointment-keeping**

#### ***Consent to Act as a Human Research Participant* Oral Consent Script**

- Good morning, my name is Marleni DePhilippis and I am calling from Inner Images.
- I am calling you today to talk to you about breast cancer and the importance of your upcoming mammography appointment on .....
- Your participation in this call is completely voluntary. You are free to leave this call right now or at any time.
- This call will only take 8 to 10 minutes of your time.
- You will not be asked any questions or for any personal information, Should I proceed with the call?

#### ***Consent to Act as a Human Research Participant* Oral Consent Script – Spanish**

- Buenos días, mi nombre es Marleni DePhilippis y le estoy llamando de Inner Images. Inc.
- La estoy llamando el día de hoy para hablarle sobre el cáncer de la mama y sobre la importancia de su próxima cita el día ....
- Su participación en esta llamada es completamente voluntaria. Usted es libre de dejar esta llamada en este o en cualquier otro momento.
- Esta llamada solo tomara de 8 a 10 minutos de su tiempo.

- No le voy a hacer ninguna pregunta ni pedir información personal, puedo continuar con la llamada?

## Appendix E: Suitability Assessment of Material Test

# SAM

## Suitability Assessment of Materials for evaluation of health-related information for adults

### Content

#### Purpose

SAM, the Suitability Assessment of Materials instrument offers a systematic method to objectively assess the suitability of health information materials for a particular audience in a short time.

#### How it works

SAM guides you to rate materials on factors that affect readability (the relative difficulty of decoding the words) and comprehension (the relative difficulty of understanding the meaning).

#### SAM rates materials in these six areas

- Content
- Literacy Demand
- Graphics
- Layout and Type
- Learning Stimulation & Motivation
- Cultural Appropriateness

#### Easy Scoring

For each factor, rate the materials *Superior*, *Adequate* or *Not Suitable* based on objective criteria included in the instrument. You can calculate a score for each area and overall. For a panel of reviewers, you might average the ratings. Score the materials by assigning points as follows.

*Superior* ~ 2 points

*Adequate* ~ 1

*Not Suitable* ~ 0

#### Use SAM to:

- Measure how well materials “fit” your clients
- Compare different materials and select those most suitable for your clients
- Tailor existing materials for a particular population
- Guide development and testing of culturally and linguistically appropriate materials
- Set standards

#### Clients have the last word

SAM is an at-your-desk review. It can help you save time and money and improve program effectiveness by selecting or producing materials that your clients are likely to pick up, read, understand and act on. SAM cannot substitute for formative research and testing through which clients verify that the information is attractive, useful and persuasive to them.

#### About the Instrument

SAM was developed in 1993 by Leonard and Cecilia Doak and Jane Root, leading experts in health education for adults, under the Johns Hopkins School of Medicine project, “Nutrition for Education in Urban African Americans” funded by the National Institutes of Health. Validation was conducted with 172 health care providers from several cultures as well as students and faculty of the University of North Carolina School of Public Health and Johns Hopkins School of Medicine. For more detail see Doak C, Doak L, and Root J. *Teaching Patients with Low Literacy Skills*, 2<sup>nd</sup> Edition, Philadelphia: Lipincott 1996.

## Instructions for Evaluating *Beginnings Guides* with SAM

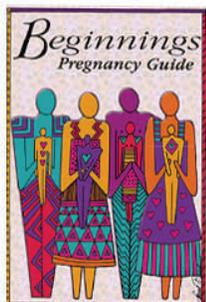
1. Read through the SAM instrument on the following pages to get a sense of the evaluation criteria.
2. Read all the way through the titles you are considering for your program. You will find the *Beginnings Pregnancy* and *Parent's Guides* are easy to read. As you read the *Beginnings* materials, keep in mind that the materials are distributed one booklet at a time—through the course of their pregnancy and/or the child's first three years. Typically there will be several weeks time between booklets. You may choose to apply SAM to the entire series or choose one booklet.
3. Use the SAM form provided here to rate the materials. For each factor, check the box that best describes your rating. Choose *Superior*, *Adequate* or *Not Suitable*. Write comments in the space provided, in the margins, on the back. Comments can be very useful to the decision makers for your material requisitions requests.

### Questions & Assistance

***Please call me with questions about your review of the *Beginnings Guides* or use of the SAM instrument.***

Sandra Smith, MPH, CHES  
*Beginnings Guides* Editor  
2821 Second Ave Suite 1601  
Seattle WA 98121

800-444-8806 [sandras@beginningsguides.net](mailto:sandras@beginningsguides.net)  
[www.BeginningsGuides.net](http://www.BeginningsGuides.net)



Please share your results with us. Your feedback will help us continue to improve the Guides.

Fax to: 206-728-1926

***Beginnings Guides***  
*It matters what a mother knows*



## Content

**Purpose:** It is important that readers readily understand the purpose of the materials. If they don't clearly perceive the purpose, they may miss main points.

- Check One:  Superior: Purpose is explicitly stated in the title, cover illustration or introduction.
- Adequate Purpose is not explicit. It is implied or multiple purposes are stated.
- Not Suitable No purpose is stated in the title, illustration or introduction.

*Comment:*

---

**Content Topics:** Adult learners usually want to solve their immediate health problem, rather than learn medical facts. The content of most interest and use to readers is behavior information that helps solve problems.

- Check One:  Superior: Thrust of the material is application of knowledge aimed at desirable reader behavior.
- Adequate At least 40% of content topics focus on desirable behaviors or actions.
- Not Suitable Nearly all topics focus on non-behavior facts.

*Comment:*

---

**Summary & Review:** A review offers readers a chance to see the key points in other words, examples or visuals and increases comprehension.

- Check One:  Superior: Summaries are included and retell key messages in different words or examples.
- Adequate Some key topics are reviewed.
- Not Suitable No summary or review is included.

*Comment:*

## Literacy Demand

**Reading Grade Level:** Text reading level is a critical factor in comprehension. Readability formulas provide a reasonably accurate measure of reading difficulty. *Beginnings* reading level is 4<sup>th</sup> grade throughout measured by the Flesch-Kincaid formula. It measures 88.1 on the Flesch Reading Ease scale. For detail see <http://www.PrenatalEd.com/readlvl.htm>.

- Check One:  Superior: 5<sup>th</sup> grade or level or lower  
 Adequate 6<sup>th</sup> to 8<sup>th</sup> grade  
 Not Suitable 9<sup>th</sup> grade or above

**Comment**

---

**Writing Style:** Conversational style and active voice are easy to understand. Passive voice, embedded information and long or multiple phrases slow reading and reduce comprehension. Example: *Take your vitamin every day* is easier to understand than *Patients are advised to take their vitamin daily*.

- Check One:  Superior: 1) Conversational style and active voice are used throughout.  
2) Simple sentences are used extensively.  
 Adequate 1) About half the text uses conversational style, active voice. 2) Less than half of sentences are complex with long phrases.  
 Not Suitable 1) Passive voice throughout.  
2) Over half of sentence have long or multiple phrases.

**Comment**

---

**Sentence Construction:** The context is given before new information. We learn new facts/behaviors more quickly when told the context first. Example: *To relieve pain* (context), *put heat on the sore spot* (new information).

- Check One:  Superior: Consistently provides context before presenting new information.  
 Adequate Provides context first about half the time.  
 Not Suitable Context is provided first or not at all.

**Comment**

**Vocabulary:** Common explicit words are used. (Example: Use *doctor* instead of *physician*). Few or no words express general terms such as categories (Example: Use *milk* instead of *dairy products*) or value judgments (Example: Use *pain that does not go away in 5 minutes* instead of *excessive pain*). Imagery words are used because these are words that people can “see”. (Example: Use *runny nose* instead of *excess mucus*).

- Check One:  Superior: All three factors: 1) common words are used all the time.  
2) Technical, concept, category, value judgment words (CCVJ) are explained.  
3) Appropriate imagery words are used.
- Adequate 1) Common words are used frequently.  
2. Technical CCVJ words are explained sometimes.  
3. Some jargon is used.
- Not Suitable 1) Two or more factors: 1) Uncommon words are used frequently instead of common words.  
2) No explanation or examples are given for technical and CCVJ words.  
3) Extensive jargon.

**Comment**

**Learning Enhanced by Advance Organizers (Road Signs):** Headers or topic captions tell very briefly what is coming next. These “road signs” make the text look less intimidating and prepare the reader’s thought process to expect the announced topic.

- Check One:  Superior: Nearly all topics are preceded by an advance organizer (a statement that tells what is next).
- Adequate About 50% of topics are preceded by advance organizers.
- Not Suitable Few or no advance organizers are used.

**Comment**

## Graphic Illustrations, Lists, Tables, Charts

**Cover Graphic:** People *do* judge a book by its cover. The cover image often is the deciding factor in a reader's attitude toward, and interest in, the materials.

- Check One:  Superior: The cover graphic:  
1) Is friendly  
2) Attracts attention.  
3) Clearly portrays the purpose of the materials
- Adequate The cover graphic has one or two of the superior criteria.
- Not Suitable The cover graphic has none of the superior criteria.

*Comment*

---

**Type of Illustrations:** Simple line drawings can promote realism without distracting details. Visuals are accepted and remembered better when they portray what is familiar and easily recognized. Viewers may not recognize the meaning of medical drawings or abstract symbols.

- Check One:  Superior: Both factors:  
1) Simple adult-appropriate line drawings/sketches are used.  
2) Illustrations are likely to be familiar to readers
- Adequate One of the superior factors is missing.
- Not Suitable None of the superior factors is present.

*Comment*

---

**Relevance of Illustrations:** Nonessential details such as room backgrounds, elaborate borders, unneeded color can distract the viewer. The viewer's eyes may be "captured" by these details. Illustrations should tell key points visibly.

- Check One:  Superior: Illustrations present key messages visually so the reader can grasp the key ideas from illustrations alone. No distractions.
- Adequate 1) Illustrations include some distractions.  
2) Insufficient use of illustrations.
- Not Suitable No illustrations or an overload of illustrations.

*Comment*

**Graphics: Lists, tables, charts, forms:** Many readers do not understand the purpose of lists and charts. Explanations or directions are essential.

- Check One:  Superior: Provides step-by-step directions with an example that will build self-efficacy (confidence).
- Adequate “How to” directions are too brief for readers to understand and use the graphic without help.
- Not Suitable Graphics are presented without explanation.

*Comment*

---

**Captions are used to “announce” or explain graphics:** Captions can quickly tell the reader what the graphic is about and where to focus within the graphic. A graphic without a caption is usually an inferior instruction and missed learning opportunity.

- Check One:  Superior: Explanatory captions with all or nearly all illustrations and graphics.
- Adequate Brief captions are used for some graphics.
- Not Suitable Captions are not used.

*Comment*

---

## Layout and Typography

**Typography:** Type size and fonts can make text easy or difficult for readers at all skill levels. For example, type in ALL CAPS slows everyone’s reading comprehension. When too many (6+) type fonts and sizes are used on a page, the appearance becomes confusing and the focus uncertain.

- Check One:  Superior: At least 3 of the following 4 factors are present:
- 1) Text type is in uppercase and lowercase.
  - 2) Type size is at least 12 point (This is 12 point type).
  - 3) Typographic cues (bold type, color, size of type).
  - 4) No ALL CAPS for long headlines and running text.

- Adequate Two of the superior factors are present.
- Not Suitable One or none of the superior factors are present.  
Or 6 or more type styles/sizes are used on one page.

**Comment**

---

**Layout:** Layout has a substantial influence on the suitability of materials.

- Check One:  Superior: At least 5 of the following 8 factors are present:
- 1) Illustrations are adjacent to the related text.
  - 2) Layout and sequence of information are consistent, making it easy to predict the flow of information.
  - 3) Visual cueing devices (boxes, arrows, shading) are used to direct attention to key content.
  - 4) pages do not appear cluttered.
  - 5) Use of color supports and is not distracting to the message. Readers need not learn color codes to understand and use the message.
  - 6) Line length is 30 to 50 characters and spaces.
  - 7) There is high contrast between type and paper.
  - 8) Paper has a non-gloss or low-gloss surface.

- Adequate At least 3 of the superior factors are present.
- Not Suitable 1) Two or fewer of the superior factors are present.  
2) Looks uninviting or hard to read.

**Comment**

---

**Subheadings and “chunking”:** Few people can remember more than 7 independent items. For those with low literacy skills the limit may be 3 or 5 items. Longer lists need to be partitioned into smaller chunks.

- Check One:  Superior: 1) Lists are grouped under descriptive subheadings.  
2) No more than 5 items are presented without a subheading.
- Adequate No more than 7 items are presented without a subheading.
  - Not Suitable More than 7 items are presented without a subheading.

**Comment**

## Learning Stimulation & Motivation

**Interaction included in text and /or graphics:** When a reader does something to reply to a question or problem, chemical changes take place in the brain that enhance retention in long-term memory. Readers should be asked to solve problems, make choices, demonstrate.

- Check One:  Superior: Problems or questions are presented for reader response.
- Adequate Question & Answer format is used to discuss problems and solutions (passive interaction).
- Not Suitable No interactive learning or stimulation is provided.

**Comment**

---

**Desired behavior patterns are modeled** or shown in specific terms: People often learn more readily when specific, familiar instances are used rather than abstract or general concepts.

- Check One:  Superior: Instruction models specific behavior and skills. Example: nutrition information emphasizes changing eating patterns, shopping, cooking.
- Adequate Information is a mix of technical and common language the reader may not easily interpret in terms of daily living. Example: *High sugar, low nutrient value foods* instead of *No fuel foods*
- Not Suitable Information is presented in non-specific or category items such as food groups.

**Comment**

---

**Motivation:** People are motivated to learn when they believe tasks and behaviors are doable.

- Check One:  Superior: Complex topics are subdivided so that readers may experience small successes in understanding or problem solving, leading to self-efficacy (confidence).
- Adequate Some topics are subdivided to improve readers' confidence.
- Not Suitable No partitioning is provided.

**Comment**

## Cultural Appropriateness

**Cultural Match — Logic, Language, Experience (LLE):** A valid measure of the cultural appropriateness of material is how well its logic, language and experience (inherent in the instruction) match the LLE of the intended audience (not the reviewer). Example: Nutrition instruction is a poor cultural match if it tells readers to eat vegetables that are rarely eaten by people in that culture and not sold in the reader’s neighborhood.

- Check One:  Superior: Central concepts of the material appear to be culturally similar to the LLE of the target culture.
- Adequate Significant match in LLE for 50% of central concepts.
- Not Suitable Clearly a cultural mismatch in LLE.

**Comment**

**Cultural Image and Examples:** To be accepted, an instruction must present cultural images and examples in realistic and positive ways.

- Check One:  Superior: Images and examples present culture in positive ways.
- Adequate Neutral presentation of cultural images and foods.
- Not Suitable Negative images such as exaggerated or caricatured cultural characteristics, actions, or examples.

**Comment**

**Suitable for your population?** Considering the socioeconomic and cultural backgrounds present in your population and your review of *the Beginnings Guides Curriculum*, would you recommend *Beginnings* for your program. Circle the number that shows the strength of your recommendation.

0	1	2	3	4	5	6	7	8	9	10
NO										YES
Definitely not recommended										Recommended without reservation

Please share your results with us. Your feedback will help us continue to improve the *Guides*.

Fax to: 206-728-1926

## Appendix F: IRB Approval

Student Researcher  
**HUMAN SUBJECTS PROTOCOL APPROVAL FORM**  
**CALIFORNIA STATE UNIVERSITY, NORTHRIDGE**

1. Title of research  
Impact of Motivational, Educational Telephone Call and Brochure on Free Mammography Appointment Keeping
2. Principal Investigator Marleni DePhilippis  
Major or Department Department of Health Science -- MPH Program
3. Home Address 4451 Vista del Monte #102 Mobile phone (818) 6188663  
Sherman Oaks, CA 91403 Email Address marleni.dephilippis.300@my.csun.edu
4. Co-Investigators: 1. \_\_\_\_\_ Student:  Faculty:   
2. \_\_\_\_\_ Student:  Faculty:
5. Name of Faculty Advisor Dr. Kathleen Young Faculty Advisor ext. 4725  
Faculty Advisor email address: kathleen.young@csun.edu
6. Projected Dates of Data Collection:  
Begin Subject Recruitment/Data Collection: Jan 2013 End Data Collection: Feb 2013
7. Course prefix and number for thesis/grad. project HSCI698B Course title Thesis Project
8. Check one:  Unfunded  Funded Name of Funding Source: Research Infrastructure in Minority Institutions - RIMI Program  
Date (to be) submitted May 2013.
9. History of Protocol:  New  Continuing (Previous Approval Date \_\_\_\_\_)
10. Existing Data: Will this study involve the use of existing data or specimens (Data/specimens currently existing at the time you submitted this project)?  No  Yes  
If Yes, attach documentation indicating the authorization to access the data if not publicly available and if accessing from an agency outside of CSUN.
11. Subjects to be recruited (Check all that apply)
  - a.  Adults (18+ years)
  - b.  Minors specify age: \_\_\_\_\_
  - c.  Cognitively or Emotionally Impaired Persons
  - e.  CSUN Students
  - f.  Others (describe) \_\_\_\_\_
  - g.  Using existing data
12. Data will include (check all variables that apply): You must specify all of this information in the Project Information form.
  - a.  names of people
  - b.  email address
  - c.  street address
  - d.  phone numbers
  - e.  age
  - f.  gender
  - g.  ethnicity
  - h.  marital status
  - i.  income
  - j.  social security number
  - k.  job title
  - l.  names of employers
  - m.  types of employers
  - n.  physical health report
  - o.  zip code
  - p.  other, specify: No data will be collected. Project entails motivational, educational telephone call and brochure.
13. Will subjects be identified by a coding system (i.e., other than by name)? YES  NO
14. Is compensation offered? YES  NO
15. If yes, describe (e.g., gift cert., cash, research credit). \_\_\_\_\_

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Committee for the Protection of Human Subjects, Revised 10/06

16. Number of Subjects: 120 total (60 for control group/60 for experimental group)

17. Method of recruiting (elaborate in Section 2 of Project Information Form): Convenient Sample Recruitment.

18. Will there be any deception (that is, not telling subjects exactly what is being tested)? YES  NO  (Provide justification for deception and explain how subjects are debriefed in Section 2 of the Project Information form)

19. Potential Risk Exposure:  Physical  Psychological  Economic  Legal  Social  Other, specify:

(Elaborate in Section 4 of the Project Information Form)

20. Data Collection Instruments (Check all that apply)

- a.  standardized tests  
b.  questionnaire  
c.  interview  
d.  other (specify) No data collection instruments will be used. Project entails motivational, educational telephone call and brochure.

22. Administered by (Check all that apply)

- a.  in person (group setting)  
b.  in person (individual)  
c.  telephone  
d.  text message  
e.  email/website  
f.  mail  
g.  other (specify): \_\_\_\_\_

21. Recorded by (Check all that apply)

- a.  written notes  
b.  audio tape  
c.  video tape/film  
d.  photography  
e.  observation

23. Findings used for (Check all that apply)

- a.  publication  
b.  evaluation  
c.  needs assessment  
d.  thesis/dissertation  
e.  other (specify): \_\_\_\_\_

24. Are drugs or radioactive materials used in this study? YES  NO

If yes, then list the drugs or radioactive materials used in Section 1 of the Project Information form and provide a detailed description of each, with justification for its use.

25. Are any medical devices or other equipment to be used in this study? YES  NO

If yes, describe in detail the medical devices or equipment to be used in Section 2 of the Project Information Form.

26. Did you attach a copy of any questionnaire(s), survey instrument(s) and/or interview schedule(s) referred to in this protocol?

YES  NO

27. Is a letter of permission for subject recruitment attached (if recruiting from an organization outside of CSUN)?

YES  NO

28. SIGNATURES:

\*\*All Signatures must be obtained prior to submission. Student projects must have faculty advisor's signature.

Faculty signature on this Protocol Approval Form indicates that:

• You and your student are familiar with the regulations for human subject research as defined by California State University, Northridge's Standing Advisory Committee for the Protection of Human Subjects (SACPHS) and you and your student intend to follow those regulations when conducting this study. You have reviewed and approve of this Protocol Approval Form and accompanying documentation. You approve of the manner in which human subjects will be involved in this study.

Signature of Faculty Advisor

Date

Student Investigator's Signature

Date

(specify grad. or undergrad.)

**FOR SACPHS AND RESEARCH OFFICE USE ONLY**

Noted, exempt  Approved, Minimal Risk  Approved, Greater than Minimal Risk  Approved, Expedited Review

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Committee for the Protection of Human Subjects, Revised 10/06

