INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

ProQuest Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

UMI®
THE EFFECTS OF MESSAGE FRAMING AND MESSAGE PROCESSING ON
COGNITIVE AND BEHAVIORAL OUTCOMES: AN EXAMINATION OF
BREAST SELF-EXAMINATION MESSAGES

by

Laura Ruth Umphrey

A Dissertation Submitted to the Faculty of the
DEPARTMENT OF COMMUNICATION
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF PHILOSOPHY
In the Graduate College
University of Arizona

2001
As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Laura Ruth Umphrey entitled The Effects of Message Framing and Message Processing on Cognitive and Behavioral Outcomes: An Examination of Breast Self-Examination Messages and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Chris Segrin

Date: 7/3/01

Michael Dues

Date: 6/13/01

Robin Nabi

Date: 6/13/01

Kyle Fusing

Date: 6/13/01

Bryan Williams

Date: 6/13/01

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director

Chris Segrin

Date: 7/3/01

Michael Dues

Date: 6/13/01
STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Laura Ruth Umphrey
ACKNOWLEDGEMENTS

I would like to extend a warm thank you to my committee for your support and encouragement on this research project. I hope to provide my future students with the same valuable research experience that I received from you. I would also like to thank my husband, Ken, for your patience during this time consuming process. I love you very much. Finally, a special thank you to my parents for supporting my goals to finish my Ph.D. Your support has been invaluable throughout graduate school. Of course, I will never forget struggling through core courses and comprehensive exams with Norah Dunbar! Norah, thanks for being such a good friend.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Figures</td>
<td>9</td>
</tr>
<tr>
<td>List of Tables</td>
<td>10</td>
</tr>
<tr>
<td>Abstract</td>
<td>11</td>
</tr>
<tr>
<td>1. Introduction and Rationale</td>
<td>12</td>
</tr>
<tr>
<td>Breast Cancer and Breast Self-Examinations</td>
<td>12</td>
</tr>
<tr>
<td>Breast Self-Examination Messages</td>
<td>13</td>
</tr>
<tr>
<td>Communication and Health Messages</td>
<td>14</td>
</tr>
<tr>
<td>Message Framing</td>
<td>15</td>
</tr>
<tr>
<td>Prospect Theory</td>
<td>17</td>
</tr>
<tr>
<td>Health behavior functions</td>
<td>18</td>
</tr>
<tr>
<td>Frame Construction</td>
<td>20</td>
</tr>
<tr>
<td>Effectiveness of Gain and Loss Frames</td>
<td>23</td>
</tr>
<tr>
<td>Prevention behaviors</td>
<td>25</td>
</tr>
<tr>
<td>Detection behaviors</td>
<td>26</td>
</tr>
<tr>
<td>Rationale for this study based on previous research</td>
<td>29</td>
</tr>
<tr>
<td>Cognitive Responses to Messages</td>
<td>29</td>
</tr>
<tr>
<td>Elaboration Likelihood Model</td>
<td>30</td>
</tr>
<tr>
<td>Heuristic-Systematic Model</td>
<td>32</td>
</tr>
<tr>
<td>Defensiveness and health</td>
<td>34</td>
</tr>
<tr>
<td>Defensiveness and cancer</td>
<td>36</td>
</tr>
<tr>
<td>Issue involvement and cognitive reactions</td>
<td>38</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS—Continued

Hypotheses..................................................................................................................42

2. METHODS ...............................................................................................................46

Design.........................................................................................................................46

Experimental message development.........................................................................46

Pilot Study ..................................................................................................................50

Participants ................................................................................................................50

Pre-Test Measures ....................................................................................................51

   Attitude about breast self-examination.................................................................51
   Previous breast self-examination behaviors........................................................51
   Related preventive health behaviors......................................................................51

Post-Test Measures ....................................................................................................52

   Threat and efficacy.................................................................................................52

Potential Confounding Variables .............................................................................55

   Message comprehensibility...................................................................................55
   Message intensity...................................................................................................56
   Argument quality ....................................................................................................56
   Negative emotional reactions.................................................................................57

The Main Study ..........................................................................................................57

Participants ................................................................................................................57

Procedures ..................................................................................................................58
TABLE OF CONTENTS—Continued

Pre-Test Measures ............................................................................................................. 60
   Breast cancer knowledge ............................................................................................... 60
   Previous breast cancer behaviors ................................................................................. 60
   Breast self-examination attitudes ................................................................................ 61
   Breast self-examination behaviors .............................................................................. 61
   Issue involvement ...................................................................................................... 61

Post-Test Measures .......................................................................................................... 62
   Demographic information ........................................................................................... 62
   Message processing ..................................................................................................... 62
   Threat and efficacy measures .................................................................................... 66
   Behavioral intentions ................................................................................................. 67

Follow up survey ............................................................................................................. 67

3. RESULTS ....................................................................................................................... 68

Previous Knowledge and Behaviors ............................................................................... 68
   Breast care behaviors ................................................................................................. 68
   Awareness .................................................................................................................... 68
   Breast cancer knowledge ........................................................................................... 68

Pre-test attitudes by message frame .............................................................................. 69

Hypotheses ....................................................................................................................... 70
   Hypothesis 1 .............................................................................................................. 70
   Hypothesis 2 .............................................................................................................. 71
TABLE OF CONTENTS—Continued

Hypothesis 3a and 3b ................................................................. 72
Hypothesis 4 .............................................................................. 75
Hypothesis 5 .............................................................................. 75
Additional Statistical Analyses .................................................. 75

4. DISCUSSION ........................................................................... 78

Summary of Research Findings .................................................. 78
Issue Involvement and Message Processing ......................... 78
Self-Efficacy and Message Processing .................................... 81
Message Framing and Message Processing ............................ 82
Attitudes, Behavioral Intentions, and Behaviors ..................... 86

Limitations .............................................................................. 87
Directions for Future Research ............................................... 88
Conclusions ............................................................................. 91

APPENDIX A: HUMAN SUBJECTS APPROVAL .......................... 94
APPENDIX B: MESSAGE MANIPULATIONS ......................... 96
APPENDIX C: WOMEN'S HEALTH MESSAGE SURVEY .......... 101
REFERENCES ........................................................................... 117
LIST OF FIGURES

Figure 1, Health frame message processing model..........................................................45

Figure 2, Adjusted post-test mean attitude scores for high involvement participants as a
function of message processing (objective or defensive) and message framing
(gain or loss frame) (covariate: pre-test attitudes) .........................................................73

Figure 3, Unadjusted pre-test and post-test mean attitude scores for high involvement
participants by message processing (objective or defensive) and message
framing (gain or loss frame).........................................................................................74
LIST OF TABLES

Table 1, Behavior change and consequence valence of gain and loss frame messages... 21
Table 2, Developing frames by manipulating attainment and outcome ....................... 22
Table 3, Health message framing effects: Prevention and detection .......................... 23
Table 4, BSE message manipulations ........................................................................ 48
Table 5, Items, factor loadings and communalities for perceived severity, perceived
susceptibility, response efficacy and self-efficacy ......................................................... 54
Table 6, Items, factor loadings and communalities for the message processing scale .... 65
Table 7, Correlation matrix of pre and post test variables ............................................. 77
ABSTRACT

This study examined the effects of message framing, message processing and issue involvement on breast self-examination attitudes and behaviors. A health frame message processing model was developed and tested in the context of a detection behavior based on prospect theory (Tversky & Kahneman, 1981) and the heuristic-systematic model (HSM) (Chaiken, 1980). Participants were exposed to either a gain frame message emphasizing the consequences of performing breast self-examinations or a loss frame message emphasizing the consequences of not performing breast self-examinations. Women who were classified as defensive processors displayed maladaptive responses in the form of minimization or denial of the health issue in a thought-listing task following exposure to the message stimuli.

The results of the study indicated that (a) women with less self-efficacy engaged in maladaptive responses; (b) there were no framing-related differences in attitudes for high involvement women who processed the messages objectively; (c) high involvement women who engaged in defensive processing responded more negatively to the loss frame message than the gain frame message; (d) attitudes were significant predictors of behavioral intentions; (e) behavioral intentions were significant predictors of behaviors; and (f) low involvement women who received loss frame messages felt more susceptible to breast cancer than low involvement women who received gain frame messages.

Limitations, suggestions for future research, and implications for health care professionals are discussed.
Chapter 1

Introduction and Rationale

Breast Cancer and Breast Self-Examinations

One in eight American women will develop breast cancer in her lifetime and one in 28 will die from the disease (American Cancer Society, 1999). Among American women, breast cancer is the second leading cause of cancer-related death behind lung cancer. In 1999, 175,000 women were diagnosed with breast cancer in the United States (American Cancer Society, 1999) and approximately 46,000 women die annually from the disease.

The etiology of breast cancer remains a mystery. Currently, the best approach to decreasing mortality rates is through early detection (Carter, Feldman, & Tiefer, 1985; Ellis, Slavin, & Pinch, 1990). In addition to having mammograms (beginning yearly at the age of 40) and annual clinical breast examinations, the American Cancer Society recommends that women over the age of 20 perform monthly breast self-examinations. The practice of breast self-examinations functions to (a) familiarize a woman with her breasts, which can assist her in identifying any changes from what is considered her normal breast tissue; (b) establish good early health practices; and (c) improve a woman’s diagnosis and prognosis through early detection (Budden, 1995). When women perform the procedure regularly and correctly, they tend to be diagnosed with earlier stages of the disease (Huguley & Brown, 1981; Morra, 1985). Women who are diagnosed with breast cancer have an 82% five-year survival rate if the tumor is diagnosed in situ (i.e., has not spread to other parts of the body) (American Cancer Society, 1996); however, only 47%
of women diagnosed with breast cancer are in Stage I (the earliest stage) (Rudolph, 1984). Therefore, to decrease mortality rates, it is critical that women become familiar with their breasts by conducting regular breast self-examinations.

Breast Self-Examination Messages

The dissemination of information concerning breast cancer and, more specifically, breast self-examinations (BSE) began in the early 1950s (Kline & Mattson, 2000). In fact, the most frequently used source of information used by women concerning breast cancer and breast self-examination is the “pamphlet” (Budden, 1995; Johnson, Meischke, Grau, & Johnson, 1992; Kline & Mattson, 2000; Meyerowitz & Chaiken, 1987; Trotta, 1980). Breast cancer pamphlets typically describe general statistics about survival rates and risk factors, suggest breast self-examination as an efficacious means of detecting breast cancer, and present procedures for conducting breast self-examinations (Kline & Mattson, 2000). While breast cancer information is freely available to the population and women are aware that they should perform regular breast self-examinations, reportedly, only 30-40% of American women actually perform monthly breast self-examinations (Rudolph & McDermott, 1987). One study found that although 97% of women were aware of the benefits of breast self-examination, 56% did not practice regular breast self-examination (Kenney, Hovell, Newborn, & Elder, 1989); another study reported that only 27% of participants performed regular breast self-examinations (Dittmar, Haughey, O'Shea, & Brasure, 1989).

Because early detection of breast cancer is considered essential to increase survival rates and because breast self-examinations help increase the chance of early
detection, this research suggests the need to understand the impact that different message designs have on compliance. What is clear is that while women are knowledgeable about breast cancer and have the information they need to comply with these health messages, adherence with these recommendations remains low. The low percentages highlight the need to develop effective messages to enhance compliance with recommendations. Therefore, this study proposes to examine the impact that different message features have on compliance with breast self-examination recommendations.

**Communication and Health Messages**

The study of communication provides rich opportunities to understand both the processes and outcomes related to the design of health messages. Understanding the impact that message designs may have on psychological processes, perceptions, and behavioral outcomes is essential for developing our knowledge base on the effects of health campaign messages. One approach to manipulating messages is message framing. Message framing refers to selecting how a topic will be presented. Behavioral health researchers have long been interested in the effects of designing health messages either focusing on the benefits or costs associated with engaging in a health behavior. Assessments have been made on the impact that gain and loss frames have on behavioral outcomes.

Another line of research examines the impact that message processing has on persuasion (Chaiken, 1980; Petty & Cacioppo, 1986). Some research has examined the impact that issue involvement has on message frames; however, no research to date has delineated the combined impact of message framing and message processing on
persuasive outcomes. This study combines these two lines of research to arrive at a model of health frame message processing.

Message Framing

In deciding what perspective to take when designing a message is an issue about how a message should be framed. A broad body of literature on framing has developed in the past several decades (Entman, 1991, 1993; Goffman, 1974; Kahneman & Tversky, 1979, 1982). Different programs of research focus on ways to frame messages and the impact that these frames have on outcomes. To frame a message is to “select some aspect of a perceived reality and make them more salient in a communicating text in such a way as to promote a particular definition, causal interpretation, moral evaluation, and/or treatment recommendation” (Entman, 1993, p. 53). Whether consciously or unconsciously, all messages are framed. Whether a framing effect occurs depends on whether a recipient of a message experiences changes in judgments due to salient attributes of a message, including its organization, selection of content, or thematic structure (Price, Tweksbury, & Powers, 1997; Semetko & Valkenburg, 2000). Overall, how an issue is framed is thought to shape how recipients think about the issue. While an issue can be framed a certain way, the message itself may also undergo framing in terms of word choices made. Experiments have found that certain word choices can have an impact on risk perceptions (Kahneman & Tversky, 1982). The impact of word choices on framing is discussed further.

One program of research on message framing examines how different logically equivalent choice situations influence preferences. For example, describing a surgery
procedure as having a ten percent mortality rate is factually equivalent to characterizing the same procedure as having a ninety percent survival rate. Framing research focuses on the impact that these factually equivalent descriptions have on subsequent decisions (e.g., Will patients decide to undergo surgery more often if the surgery is described as having a 90% survival rate versus a 10% mortality rate?). These different framing manipulations can affect how people encode messages relative to their psychological reference point (e.g., in the case of health messages the reference point is usually their current health) (Banks, Salovey, Greener, Rothman, Moyer, Beauvais, & Epel, 1995). Although the information may be factually equivalent, subsequent decisions are influenced by the type of frame received. As stated by Holtgrave, Tinsley and Kay (1995), “What may appear to be arbitrary choices of wording—even altering wording with the same underlying meaning—can have profound impacts in terms of the decisions and behaviors they elicit from the target audience” (p. 32) (emphasis added). Understanding the underlying theoretical mechanisms responsible for these differences is essential.

Several decision-making theories, all derivations of the subjective expected utility model, have been proposed to explain the impact of health messages on health-related behaviors. These theories include the extended parallel process model (Witte, 1992), health belief model (Becker, 1974) and theory of reasoned action (Fishbein & Ajzen, 1975). While these theories suggest a framework for understanding attitudes, it is beyond their theoretical scope to provide precise specification of how the manipulation of message valence and consequences can impact cognitive responses and behavioral outcomes (Wilson, Purdon, & Wallston, 1988). However, prospect theory (Kahneman &
Tversky, 1979, 1982) provides a theoretical framework to explain the impact that framing outcomes, in terms of gains or losses, have on subsequent behaviors.

**Prospect Theory**

Prospect theory (Kahneman & Tversky, 1979, 1982) is an extension of the subjective expected utility model that incorporates framing postulates into the theoretical framework. The framing postulate of prospect theory states that individuals will respond differentially to factually equivalent messages based on how the messages are framed. In prospect theory, frames are differentiated in terms of potential gains and potential losses (Tversky & Kahneman, 1981).

The concept of risk is considered central to the theoretical framework of prospect theory. The theory assumes that people are risk averse (i.e., avoid taking risks) when presented with gain-frame messages and risk-seekers when presented with loss-frame messages. If a message is framed with potential losses made salient, an individual is more willing to take risks to avoid the loss, whereas if the same option is framed in terms of potential gains, the individual is less likely to take risks and will select a more conservative option (Tversky & Kahneman, 1981). For example, in a seminal study on the manipulation of gain and loss framed messages in a public health context, 155 participants were given the following scenario and asked to select one of the two possible options:

"Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume the exact scientific estimate of the
consequences of the programs are as follows:” (Tversky & Kahneman, 1981, p. 453).

Participants in the gain-frame manipulation were provided with two scenarios: “If Program A is adopted, 200 people will be saved. If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved. Which of the two programs would you favor?” (Tversky & Kahneman, 1981, p. 453). Participants in the loss-frame manipulation read the following two scenarios: “If Program C is adopted 400 people will die. If Program D is adopted there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die. Which of the two programs would you favor?” (Tversky & Kahneman, 1981, p. 453). The information contained in scenario A and C is factually equivalent. In each case, out of 600 people, 200 will be saved and 400 will die. In Program B and D the information conveyed is also factually equivalent. Therefore, any differences in the selection of the program would be attributed to the framing of the message. As hypothesized, the results suggested that for the gain-frame manipulation, 72% of participants selected the less risky option, Program A. For the loss-frame manipulation, 78% of participants indicated that they would choose Program D, the option more associated with risk. However, the Asian disease study is focused more at a broad, public health-level while the present research study is interested in risk perceptions at the individual level. Therefore, message framing will be discussed further in terms of individual health behavior functions (e.g., prevention and detection behaviors) and the level of risk associated with each function.

Health behavior functions. Health behavior functions have been classified into
three general types of behaviors called (a) prevention behaviors (primary prevention), (b) detection behaviors (secondary prevention) and (c) treatment behaviors (tertiary prevention — or the prevention of morbidity after the diagnosis) (Rothman & Salovey, 1997). Prevention behaviors function to prevent the onset of a health problem (Rothman & Salovey, 1997) and are performed to minimize future risk (Banks, Salovey, Greener, Rothman, Moyer, Beauvais, & Epel, 1995). Behaviors of this nature include fastening seatbelts to avert injury, wearing a condom to prevent the transmission of sexually transmitted diseases, and wearing sunscreen to prevent skin cancer. Detection behaviors function to ascertain the existence of a health problem (Rothman & Salovey, 1997) or discover early signs of a disease (Banks et al., 1995). Detection behaviors can be either health-affirming or illness-detecting depending on the results of the screening. Detection behaviors include HIV-AIDS screenings, cancer screenings (e.g., testicular and breast exam screenings), cardiovascular and bone density screenings. Finally, treatment behaviors function to cure or treat an existing health problem (e.g., a breast cancer patient selecting alternative drug treatments). An individual who is diagnosed with a disease will choose among various treatment options.

Each of these health behavior functions is associated with different levels of perceived risk. Risk refers to the evaluation of the subjective probability of an outcome multiplied by the severity of the consequences (Douglas, 1985). Prevention behaviors are not considered risky because the behavior focuses on maintaining one’s health status (Rothman & Salovey, 1997), rather than detection behaviors where the primary objective is identifying a potential health problem. In terms of breast cancer, women perform breast
self-examinations to detect cancer as opposed to prevent cancer (Meyerowitz & Chaiken, 1987). The decision to perform breast self-examinations involves risking the possibility of finding a lump in the short term to obtain long-term gains such as living a longer, healthier life. Immediate costs associated with non-adherence include fear or nervousness about finding a lump (cancer phobia), feelings of vulnerability to the disease, and embarrassment about touching oneself (Olson & Morse, 1996). Taken together, based on prospect theory, detection health behaviors are considered risky and under risky circumstances individuals are more willing to take risks and engage in the advocated health behavior when losses are made salient.

Frame Construction

The manipulation of message frames can occur in the (a) behavioral change (i.e., if change behavior or not change behavior) and (b) consequence valence (i.e., positive or negative consequence) of that behavior (Wilson, Purdon, & Wallston, 1988) (see Table 1). A framing effect is measured by the comparison of the rate of compliance with recommendations. Typically researchers manipulate the frame but hold the consequence constant (i.e., discuss the gains or losses associated with the same consequence).

Researchers have acknowledged that there are different ways to construct gain and loss framed messages (Rothman & Salovey, 1997). Goal-framing messages have been developed along two dimensions: goal attainment and desirability of outcome (see Table 2). Note that there are two ways to construct gain and loss frame messages: by using negation or changing the terminology (Levin, Schneider & Gaeth, 1998). Gain frame messages can be developed as attainment of desirable outcomes (cell 1) or not
attaining undesirable outcomes (cell 4). Loss frame messages have been conceptualized as attaining an undesirable outcome (cell 2) or not attaining a desirable outcome (cell 3). For illustrative purposes, Detweiler, Bedell, Salovey, Pronin, and Rothman (1999) designed gain and loss frame sunscreen promotion message for each of the two dimensions resulting in four messages. The attain-desirable outcome gain frame message stated, "Protect yourself from the sun and you will help yourself stay healthy." The not-attain undesirable gain frame message was, "Don’t expose yourself to the sun and you won’t risk becoming sick." On the other hand, the attain-undesirable loss frame message was, "Expose yourself to the sun and you will risk becoming sick." The not-attain-desirable loss frame message was, "Don’t protect yourself from the sun and you won’t help yourself stay healthy."

Table 1

<table>
<thead>
<tr>
<th>Behavioral Consequences</th>
<th>Gain (negation)</th>
<th>Gain (negation)</th>
<th>Loss (negation)</th>
<th>Loss (negation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result involves receiving a positive consequence</td>
<td>If change to a new behavior</td>
<td>If change to a new behavior</td>
<td>If continue old behavior</td>
<td>If continue old behavior</td>
</tr>
<tr>
<td>Result involves not receiving a negative consequence</td>
<td>Result involves not receiving a negative consequence</td>
<td>Result involves not receiving a negative consequence</td>
<td>Result involves not receiving a negative consequence</td>
<td>Result involves not receiving a negative consequence</td>
</tr>
</tbody>
</table>
Table 2

Developing frames by manipulating attainment and outcome

<table>
<thead>
<tr>
<th>Desirable Outcome</th>
<th>Undesirable Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attain</td>
<td>Cell 1: obtain gain</td>
</tr>
<tr>
<td>Not Attain</td>
<td>Cell 3: forego gain</td>
</tr>
<tr>
<td></td>
<td>Cell 2: suffer loss</td>
</tr>
<tr>
<td></td>
<td>Cell 4: avoid loss</td>
</tr>
</tbody>
</table>

Some researchers argue that it is the general quality of the gain and loss frames that are the important feature of messages (Detweiler et al., 1999; Petty & Wegner, 1991). This suggests that researchers would not find any differences in outcomes related to the two dimensions within each of the gain and loss frames. For example, the attain-desirable outcome and not-attain undesirable outcome would both be equally persuasive at increasing sunscreen use and the attain-undesirable outcome and not-attain desirable outcome would be equally less persuasive.

This study will examine the impact that these two-dimensional qualities of “attainment” and “desirability of outcomes” have on message-related outcomes. The not attain-desirable outcomes and not-attain undesirable outcomes may be confusing to read and may reduce message comprehensibility. Therefore, this study will test the level of message comprehensibility for each dimension in a pilot test.

Provided that there are no differences in the “attainment” and “desirability” dimensions, the general effects of loss versus gain frame messages can be discussed.
following section presents relevant research on gain and loss frames followed by a review of the cognitive responses related to each of these frames.

**Effectiveness of Gain and Loss Frames**

There is an abundance of research that can support the persuasive effects (e.g., attitude change, behavioral intentions and behavior change) of both gain and loss frame messages. There were 10 studies found in the literature that directly compared gain versus loss goal frames in the health context (Table 3). In terms of health behavior functions, five of the studies were detection behaviors (mammography screenings, blood cholesterol tests, testicular and breast self-examinations, and skin cancer screenings) and two were prevention behaviors (exercise promotion, skin cancer prevention). Two of the studies contained two experiments; one contained two prevention studies (STDs and skin cancer prevention) and the other article contained one prevention (skin cancer prevention) and one detection study (skin cancer screenings).

<table>
<thead>
<tr>
<th>Author(s), (Year)</th>
<th>Health Topic</th>
<th>Framing effects</th>
<th>Dependent Variable(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevention Behaviors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block &amp; Keller (1995)</td>
<td>Avoiding STD (Study 1)</td>
<td>Framing by efficacy interaction</td>
<td>A, BI</td>
</tr>
</tbody>
</table>
Table 3—Continued

<table>
<thead>
<tr>
<th>Author(s), (Year)</th>
<th>Health Topic</th>
<th>Framing effects</th>
<th>Dependent Variable(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millar &amp; Millar (2000)</td>
<td>Safe driving behaviors</td>
<td>Framing by involvement</td>
<td>A, BI</td>
</tr>
<tr>
<td>Robberson &amp; Rogers (1988)</td>
<td>Exercise among nonexercisers</td>
<td>Message by frame interaction</td>
<td>BI</td>
</tr>
<tr>
<td>Rothman et al., (1993) (Study 1)</td>
<td>Skin cancer prevention with sunscreen</td>
<td>Framing by gender interaction</td>
<td>BI</td>
</tr>
<tr>
<td><strong>Detection Behaviors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block &amp; Keller (1995) (Study 2)</td>
<td>Skin cancer</td>
<td>Framing by efficacy interaction</td>
<td>A, BI</td>
</tr>
<tr>
<td>Lalor &amp; Hailey (1990)</td>
<td>Breast self-exam</td>
<td>No framing effect</td>
<td>BI, B</td>
</tr>
<tr>
<td>Maheswaran &amp; Meyers-Levy (1990)</td>
<td>Blood cholesterol test</td>
<td>Framing interaction with involvement</td>
<td>B</td>
</tr>
<tr>
<td>Rothman et al., (1993) (Study 2)</td>
<td>Skin cancer screenings</td>
<td>Framing by gender interaction</td>
<td>BI</td>
</tr>
<tr>
<td>Steffen et al., (1994)</td>
<td>Testicular self-examinations</td>
<td>No framing effect</td>
<td>B</td>
</tr>
</tbody>
</table>

**Note.** A = attitudes; BI = behavioral intentions; B = behaviors.

*p < .05.
Prevention behaviors. Among the prevention studies, the gain frame was more effective for sunscreen use (Detweiler et al., 1999), whereas Robberson and Rogers (1988) found a message by frame interaction for exercise behaviors, and Rothman, Salovey, Antone, Keough, and Martin (1993) found a framing by gender interaction for sunscreen use.

In a prevention study, Detweiler et al., (1999) examined sunscreen behaviors at a beach using both gain and loss framed messages. Participants were beach-goers who agreed to fill out a questionnaire regarding relevant attitudes and behaviors and read pamphlets about sunscreen and skin protection. Each participant received one of four possible message manipulations; gain-frame (attain-desirable or not attain-undesirable outcome) or loss-frame (attain-undesirable or not attain desirable outcome) messages embedded within the pamphlet promoting the use of sunscreen to protect the skin. The researchers found no significant differences within the manipulations and, therefore, statistical analyses were conducted on the general gain and loss frames. The gain frame manipulation resulted in more requests for samples of sunscreen and greater intentions to repeatedly apply sunscreen.

Robberson and Rogers (1988) examined the impact that gain and loss frames have on intentions to engage in physical exercise among sedentary individuals. In this study, the value of the outcome of the health behavior was framed in terms of a gain or loss (negation of the gain frame) of the resulting positive health consequences of physical exercise. In addition to manipulating the framing of the message, the consequences of engaging in physical exercise were also manipulated in terms of appeals to health
(increased stamina, greater lung capacity, and better cardiovascular fitness) or self-esteem (increased self-esteem by performing better at work). In the gain-frame self-esteem message manipulation, arguments were made that exercise is a way to increase self-esteem. However, the equivalent loss frame message stated that a lack of exercise would decrease self-esteem. In this example, the negation of the effects of exercise on self-esteem does not produce factually equivalent information. Not surprisingly, the results suggested that the gain-frame message was more effective than the loss frame message. However, a contrary effect was found in the physical health condition such that the loss frame and the loss plus gain-frame messages produced greater intentions to engage in physical exercise compared with the control group. This suggests that the content of the message in conjunction with the negation of the gain frame may be contributing to the differences in outcomes and may have resulted from message incomprehensibility.

**Detection behaviors.** Among the detection behaviors, no framing effect was found for men and testicular self-examinations (Steffen, Sternberg, Teegarden, & Shepard, 1994). While framing effects were found for breast self-examinations in one study (Meyerowitz & Chaiken, 1987), another study on breast self-examinations failed to identify a framing effect (Lalor & Hailey, 1990). Another detection study identified a frame by involvement interaction with regard to blood cholesterol tests (Maheswaran & Meyers-Levy, 1990). The interaction suggested that high involvement participants responded more positively to loss frame messages and low involvement participants responded more positively to gain frame messages.
Meyerowitz and Chaiken (1987) examined the effects of gain and loss goal framed messages on compliance with breast self-examination recommendations. Overall, the authors assumed that engaging in breast self-examinations was considered a risky behavior designed to detect cancer (as opposed to prevent cancer) that can produce immediate adverse consequences if an abnormality is found. Provided that breast self-examinations are perceived as risky, consistent with prospect theory, individuals will choose risky behavioral choices when messages are framed in terms of losses (Meyerowitz & Chaiken, 1987). A sample of the message manipulations are as follows:

By [not] doing BSE now, you (can) [will not] learn what your normal, healthy breasts feel like so that you will be (better) [ill] prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do [do not] BSE have (an increased) [a decreased] chance of finding a tumor in the early, more treatable stage of the disease. You can (gain) [lose] several potential health benefits by (spending) [failing to spend] only 5 minutes each month doing BSE. (Take) [Don’t fail to take] advantage of this opportunity. (Meyerowitz & Chaiken, 1987, p. 504).

The results indicated that post-test scores of participants in the loss frame condition indicated no difference in immediate attitudes and behavioral intentions towards breast self-examinations compared to the gain, no argument, or control group. In terms of behaviors in the four months following the study, participants in the loss frame stimuli condition reported performing breast self-examinations more times than participants in the other conditions.
In the other BSE framing study, the researchers hypothesized that women who felt that they were not susceptible to breast cancer would respond with greater behavioral intentions and behaviors and more favorable attitudes (Lalor & Hailey, 1990). It was argued that by reading the loss frame message, perceived susceptibility would increase. No significant main effects or interactions were found for susceptibility and framing. However, post hoc tests revealed significant relationships between BSE behaviors and pre-intervention variables including feeling informed, perceived BSE effectiveness, prior instruction in BSE, and confidence in performing BSE correctly. High levels of perceived susceptibility were also positively correlated with participants' follow up behaviors (Lalor & Hailey, 1990).

In another detection behavior study, researchers tested the effectiveness of gain-versus loss framed messages on mammography utilization on a sample of women over 40 employed in a large utility company (Banks et al., 1995). Sample text was as follows:

We will show that (detecting) [failing to detect] breast cancer early can (save) [cost] you your life. Although all women are at risk for breast cancer, there is something you can do to increase your (chances of surviving it) [risk of dying from it]. For this reason, when you (get) [avoid getting] a mammogram, you are (taking advantage) [failing to take advantage] of the best method for detecting breast cancer early. (Banks et al., 1995, p. 180).

The results, consistent with prospect theory, suggest that the loss frame message was more effective than the gain-frame message at inducing behavior change. A higher percentage of participants in the loss frame condition reported getting a mammogram
within 12 months of the intervention compared to those who were exposed to a gain frame message. No differences were found for behavioral intentions or attitudes immediately following the intervention.

Overall, these studies on framing effects are inconsistent in their findings suggesting that certain moderating variables may be accounting for these inconsistencies. More specifically, issue involvement appears to contribute to our understanding of the effectiveness of framing prevention and detection messages. This variable is discussed later within the context of a cognitive response perspective.

Rationale for this study based on previous research. In summary, there is research to support the claim that gain and loss frames are persuasive in different circumstances. Overall, beyond the conflicting findings in previous research, two points indicate the need for further research in this area. First, it is disappointing to find that the operationalizations of frames are highly inconsistent in the literature. Second, while prospect theory provides a theoretical rationale for framing effects, incorporating the cognitive responses to these different frames within the theoretical umbrella would be a major contribution to our understanding of responses to these different message frames.

Cognitive Responses to Messages

A number of theoretical models of cognitive responses have been developed to explain reactions to and evaluations of persuasive messages. Cognitive responses are “units of information pertaining to an object or issue that are the results of information-processing activity” (Cacioppo, Harkins, & Petty, 1981, p. 53). Stated simple, cognitive responses are thoughts. A cognitive response approach to persuasion suggests that
message persuasiveness is a function of the thoughts generated in response to exposure to a persuasive message (Petty & Cacioppo, 1981). When exposed to a persuasive message, it is argued that individuals will relate that information to preexisting held beliefs and knowledge. This process of evaluating the message relative to currently held beliefs produces self-generated cognitive responses in the form of attitude congruent, discongruent, or irrelevant cognitions. Cognitive responses that are supportive or favorable toward the message will tend to produce agreement. If a message produces antagonistic cognitive responses, such as counterarguments, minimal agreement with the advocated position is expected. This perspective suggests that the cognitive responses to messages will largely determine the amount and direction of attitude change.

**Elaboration Likelihood Model**

Among the most noteworthy cognitive response theories is the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986). The model suggests that there are two routes to attitude change: central and peripheral. The central route involves careful consideration of the issues and arguments embedded in and related to a message. Individuals who change their attitude following central processing are believed to have more enduring attitude change. However, attitude change occurs via the peripheral route when individuals consider non-issue relevant information. Non-relevant information may include the evaluation of the credibility or attractiveness of the source and the desire to manage impressions. Persuasion that occurs via the peripheral route is considered less enduring and will be upheld to the extent that the peripheral cues responsible for attitude change remain salient. Based on the ELM, it is argued that two factors, motivation and
ability, determine the route to persuasion. Motivation implies a willingness and
determination to carefully consider the arguments in a message. Research suggests that,
among other variables, motivation increases when a topic is considered highly relevant.
Ability involves being physically and mentally capable to scrutinize a message. Examples
of where ability might be hindered are fatigue, distraction, the medium of the message
(e.g., written messages are easier to process carefully than audio), and lack of argument
comprehension. The theory predicts that individuals who have both the motivation and
the ability will use the central route to persuasion. Consequently, the theory predicts that
individuals who are low on either motivation and/or ability will rely on peripheral cues to
make judgments about the message.

While numerous studies have produced empirical support for the ELM, it
continues to suffer from several shortcomings (Stiff, 1986). First, the research on the
model has been limited to a small range of topics; most notably, the argument that seniors
in college should be required to take comprehensive exams. Second, the model does not
account for dual processing of messages. In other words, the model suggests that
individuals use either central or peripheral processing, however, the model does not allow
for their co-occurrence. The model is also considered non-falsifiable because it does not
suggest a priori predictions for when an individual will process either centrally or
peripherally. Finally, the definition of argument strength is tautological because messages
are not rated a priori and inconsistent findings are attributed to misperceptions of
argument strength. However, the Heuristic-Systematic Model, another dual-processing
model, offered researchers a more clearly delineated explanation for cognitive responses to messages (Chaiken, 1980, 1987).

Heuristic-Systematic Model

The Heuristic-Systematic Model (HSM) (Chaiken, 1980) is a dual-processing model that explains the impact that cognitive processing has on persuasion. Fundamental assumptions of the model include that individuals want to hold accurate attitudes (Eagly & Chaiken, 1993) and will exert the least amount of cognitive effort necessary to obtain correct attitudes (i.e., individuals are cognitive misers and will process information to the extent that they feel confident that they have received a sufficient amount of judgment-relevant information). The discrepancy in the level of desired versus actual confidence in a judgment is based on the sufficiency principle. Provided that a gap exists between desired and actual confidence, individuals are motivated to reduce this gap until desired and actual confidence are commensurate.

Chaiken (1980) argues that there are two modes of message processing, systematic and heuristic, that may occur simultaneously. Systematic processing is a more effortful form of cognitive processing that involves accessing, scrutinizing, and integrating information in a message (Zuckerman & Chaiken, 1998). Systematic processing is consistent with central processing in the ELM. However, the HSM (Chaiken, 1980) departs from the ELM in the conceptualization of peripheral cues or “heuristics”. According to HSM, heuristics are simple decision rules or schemata. Examples of simple decision rules include statements such as, “Credible people are correct,” or “The more arguments the better.” According to the theory, individuals will
use a heuristic to the extent that they feel that the heuristic provides sufficient information to form accurate and confident judgments. However, the use of a heuristic depends on whether a cue is available and accessible. Availability and accessibility refers to the extent to which a cue is stored in memory and can be easily retrieved.

Systematic processing occurs when confidence based on a heuristic is considered insufficient and a heuristic alone is incapable of increasing confidence. Systematic processing is considered a more effective means for obtaining sufficient confidence. Based on this discussion, it seems logical that a framing effect would occur when individuals are systematically processing persuasive messages. By paying close attention to the arguments in the message, the manner in which the messages are conveyed would most likely influence the recipient of the message. On the other hand, there may be circumstances where a framing effect may occur when individuals are heuristically processing a message. When a person is heuristically processing, he or she is using simple inferences that may be derived from peripheral cues associated with or embedded in the message. Evidence suggests that how a message is framed may function as a cue (Petty, Cacioppo, & Schumann, 1983). Maheswaran and Meyers-Levy (1990) found that when individuals are not paying close attention to the message, positively framed messages were more effective than negatively framed messages. Therefore, the cues a recipient of a message utilizes may dictate whether or not a framing effect occurs for heuristic processors. An absence of any framing effect by people processing heuristically may occur if the message recipients are not paying attention to the gain and loss frame feature of the message (Rothman et al., 1993).
Up to this point, the HSM has been discussed under the assumption that people want to arrive at accurate conclusions when processing messages. However, depending on the nature of one's underlying motives, an alternative assumption suggests that biased processing may occur. This alternate form of processing will be discussed in the context of health.

Defensiveness and health. The mental representations that individuals have concerning their own health plays an important role in their health-related adjustments and behaviors (Croyle, Sun, & Hart, 1997). For the most part, individuals conceptualize health as both a value and a goal (Croyle et al., 1997). The U.S. society places a high value on being healthy, disease-free, and able-bodied (Johnston, 1997). As such, people strive to achieve personal health goals that are consistent with these health values. When encountering health information that is inconsistent with personal goals, defensive motivation may occur in the form of bias or systematic variations in judgments (Croyle et al., 1997). Defensive motivation is defined as "the desire to hold attitudes and beliefs that are congruent with existing self-definitional attitudes and beliefs" (Zuckerman & Chaiken, 1998, p. 633). Self-definitional attitudes are based on personal attributes (e.g., "healthfulness", "intelligent", etc.) (Zuckerman & Chaiken, 1998). Both accuracy and defensive motivation are determined by the discrepancy between actual and desired confidence levels. However, under biased circumstances, the recipient of a message assesses the gap between actual and desired confidence levels in reinforcing self-definitional attitudes (Zuckerman & Chaiken, 1998).

Individuals who engage in biased directional reasoning are thought to search for
relative cognitions that lend support to their desired conclusions (Kunda, 1990). This type of defensive processing involves the biased retrieval of goal-relevant supportive conclusions. In other words, people who are processing a message that is counter to their attitude and who do not want to change that attitude will develop justifications (or excuses) for their desired conclusion. If they are able to find justification for their desired conclusion then attitudes and/or behaviors will remain the same. As stated by Kunda (1990), “people will come to believe what they want to believe only to the extent that reason permits” (p. 483).

In terms of health issues and biased processing, earlier research has found that defensive reactions to threatening messages can result in several self-protective behaviors including (a) deny having risk factors (denial), (b) inattention to the message, (c) aggression toward the communicator and/or questioning the validity of instrumentation, and (d) minimize the significance of a health issue if they admit to having risk factors (Eagly & Chaiken, 1993; Hovland, Janis, & Kelley, 1953; Liberman & Chaiken, 1992; Weinstein, 1982, 1987). Rather than engaging in objective processing, the data suggests that individuals have a tendency to focus on evidence-confirming information. Several studies suggest that people tend to see themselves in a positive light (Brown, 1991), evaluate their abilities and traits as better than average (e.g., they are less lonely than others) (Brown, 1986), take credit for successes and blame failures on temporary situations (Mullen & Riordan, 1988), and minimize the significance of a health problem if it is self-relevant (Liberman & Chaiken, 1992). For example, smokers minimize the significance of the effects of smoking compared to non-smokers (Eiser, Sutton, & Wober,
People told that they have high blood pressure will regard it as a less serious health threat than people with low blood pressure (Croyle, 1990). After having a cholesterol screening, people will dispute the validity of the instrumentation if the test results are higher than desired (Croyle, Sun, & Louie, 1993). One study found that participants who were highly involved in a topic (e.g., heavy coffee drinkers) engaged in greater biased processing of both a high and low threat health-related message (in the form of a research report) that linked the relationship between caffeine consumption and fibrocystic disease than low involvement participants (Lieberman & Chaiken, 1992).

People also have a tendency to believe they are healthy until overwhelming evidence suggests otherwise (Croyle et al., 1997). Overall, based on the evidence that people value their health and that receiving health-related messages that are inconsistent with value-related health goals, this causes individuals to minimize the importance of such information and biased message processing may occur. These biased responses to health messages are manifested in several self-protective ways in the form of defensive or biased message processing that are evidenced in statements that reflect their defensiveness (e.g., “It won’t happen to me,” “I would rather not know if I have breast cancer,” “I’m not at risk.”).

**Defensiveness and cancer.** Cancer is a “word that strikes fear in the hearts and minds of most individuals” (Cameron, 1997, p. 291). Cancer-related decision-making can have substantial personal consequences for individuals. In general, people tend to believe that cancer is an improbable event (Cameron, 1997). This is exacerbated by the fact that cancer is a disease with an absence of symptoms. Based on the improbability of the event
and the lack of physiological symptoms, an individual's perceived need for cancer screenings is minimized (Cameron, 1997). This disease, in particular, may facilitate the utilization of the self-serving bias derived from reducing the threat that can lead to denial, avoidance, and delayed cancer screenings (Croyle et al., 1997).

Several factors may help explain health-related maladaptive responses. In reaction to relevant and threatening health messages, maladaptive responses are theorized to occur when a recipient of a message either feels that the recommended response will not alleviate a health threat or that he or she is not capable of performing the recommendations advocated in the message (Witte, 1992, 1994). Respectively, response efficacy is a person's opinion of the effectiveness of the advised action to reduce the risk associated with the threat and self-efficacy refers to the level of one's confidence in one's ability to take action (Stretcher & Rosenstock, 1997). Provided that a woman feels that she is capable of performing the advocated behavior (self-efficacy), and that she feels that the response advocated in the message will alleviate the problem (response efficacy), she will engage in adaptive responses designed to alleviate the threat by complying with the advocated recommendations (Witte, 1992). In other words, where there is both response efficacy and self-efficacy, she will engage in the recommended behavior to avert the threat. However, if she does not feel capable or feels that the response does not resolve the problem, she will engage in maladaptive responses such as defensive processing in the form of avoiding the message, denial, or minimization of the threat.

In terms of breast cancer, when done correctly, the breast self-examination is considered an effective method (complemented with clinical breast examinations and
mammograms) for the early detection of breast cancer (Pool & Judkins, 1990). The performance of breast self-examinations helps women become familiar with how their breasts normally look and feel. This is critical since women typically first detect a lump and notify their physician (Pool & Judkins, 1990). While the response efficacy of breast self-examinations may be a factor that explains some maladaptive responses to health messages, in this context, more importantly is the issue of self-efficacy.

The role of self-efficacy in promoting health behavior change has been examined in the context of sexual activity (Jemmott, Jemmott, Spears, Hewitt, & Cruz-Collins, 1991), drug use (Hays & Ellickson, 1990), smoking (Lawrence & Rubinson, 1986) and breast self-examination behaviors (Champion, 1991). Champion (1991) found that women who had low breast self-examination efficacy reported less behavioral intentions and less behaviors compared to women with high breast self-examination self-efficacy. Because all behavioral and psychological changes occur through the adjustment of an individual’s sense of ability or efficacy (Bandura, 1997), based on the previous discussion, we would expect that women who have low breast self-examination self-efficacy would engage in more maladaptive responses to breast self-examination messages compared to women with high breast self-examination self-efficacy. The next section discusses the impact that moderating variables may have on message framing.

Issue involvement and cognitive reactions. In addition to the manipulation of frames, it is important to consider potential moderators of message processing such as the impact that perceived issue involvement has on attitudinal and behavioral outcomes. Many women feel that breast cancer is something irrelevant to them (Olson & Morse,
1996). Involvement with an issue can influence how a message is processed (Maheswaran & Meyers-Levy, 1990) and, further, influence the effectiveness of the message. Therefore, the following section discusses the impact that issue involvement has on message processing and persuasive outcomes.

A distinct body of research suggests that a person’s perceived level of issue involvement affects the degree to which a message is processed and, in turn, affects its persuasive impact (Johnson & Eagly, 1989, 1990; Petty & Cacioppo, 1986). Issue involvement has been defined as “the extent to which the attitudinal issue under consideration is of personal importance” (Petty & Cacioppo, 1979, p. 1915). As explained earlier, several cognitive response models of persuasion, such as the ELM (Petty & Cacioppo, 1986) and the HSM (Chaiken, 1980, 1987), make predictions about the impact that message-related and irrelevant thinking have on message persuasiveness. Issue involvement is a factor that influences the degree to which a message is processed. From a cognitive response standpoint, high involvement with an issue is thought to increase the message recipients’ motivation to engage in greater message-related thinking (Chaiken, 1980; Johnson & Eagly, 1989; Petty & Cacioppo, 1979). Research testing message processing has generally supported the argument that highly relevant topics are processed systematically (Johnson & Eagly, 1989). Ultimately, persuasion is mediated by the valence (positive or negative) and quantity of message recipients’ relevant thoughts (Johnson & Eagly, 1989). Topics that are highly involving motivate greater message-related thinking (i.e., recipients are thought to carefully consider each component of the message). To the extent that arguments are strong and compelling, individuals who
process messages systematically are considered more susceptible to the message recommendations and are believed to have more enduring attitude change (Petty & Cacioppo, 1986). Highly involving topics that contain weak arguments are thought to produce more negatively-valenced thoughts in contradiction with message recommendations.

Even though breast cancer is a potential concern for all women, perceived issue involvement is not always considered high (Olson & Morse, 1996). Younger women typically do not perceive breast cancer as an involving issue. According to the American Cancer Society, breast cancer risk progressively increases with age such that by age 30, one out of 2,000 women in that age group will be diagnosed with breast cancer; by age 40, one out of 233 women will be diagnosed; by age 50, one out of 53 women will be diagnosed and by the age of 60, one out of every 22 women in that age bracket will be diagnosed with breast cancer. Overall, given current trends, there is a one in eight chance of a woman developing breast cancer in her lifetime.

The extent to which women are overly optimistic about their health affects their perceived susceptibility to health risks, such as breast cancer, and may reduce perceived relevance of the issue. Healthy individuals are believed to possess optimism biases, positive self-evaluations, and overly confident levels of control of their health (Taylor & Brown, 1988; Weinstein, 1982, 1987; Zuckerman & Chaiken, 1998). One study found that when asked about perceived risk of breast cancer, women have a tendency to underestimate risk that may subsequently reduce perceived issue involvement (Ruda, Bourcier, & Skiff, 1992). A more recent study found that women’s optimism was
determined by experience with breast cancer such that women who have first degree relatives with breast cancer demonstrate less of an optimism bias compared to women who have some other relative, knowing somebody else or knowing nobody with breast cancer (Absetz, Aro, Rehnberg, & Sutton, 2000).

Three studies have examined the effects of issue involvement on message framing in the context of a health issue (Maheswaran & Meyers-Levy, 1990; Millar & Millar, 2000; Rothman et al., 1993). Rothman et al., (1993) (Experiment 1) examined the effects of issue involvement on gain and loss frame messages to promote skin cancer detection screenings. The authors hypothesized that women would perceive skin cancer as a more involving issue compared to men. Participants were exposed to either a gain or loss frame message emphasizing the consequences of getting a skin cancer screening or not getting a skin cancer screening, respectively. Results suggested that the loss frame messages were more effective at inducing greater intentions to seek skin cancer screenings among women.

In a study on detection of heart disease problems advocating diagnostic blood testing, it was hypothesized that (a) under high involvement, a negatively framed message would be more persuasive than a positively framed message; (b) that under low involvement conditions, a positively framed message would be more persuasive than a negatively framed message; and (c) the generation of message related cognitions would be higher under high involvement conditions (Maheswaran & Meyers-Levy, 1990). The results of the study supported each hypothesis suggesting that involvement may moderate the effects of message framing.
In a prevention study designed to promote safe driving behaviors, it was hypothesized that gain frame messages would be more persuasive than loss frame messages for individuals who are highly involved in the issue and that no framing effect would appear for low involvement participants (Millar & Millar, 2000). Participants were classified as either high or low involvement based on a subjective examination of their driving behaviors (e.g., wearing seatbelts, tailgating, driving over speed limit, etc.), age, and number of traffic accidents. The results supported their hypotheses such that a framing effect occurred for high involvement participants and no framing effect was found for low involvement participants.

Overall, issue involvement has been found be a factor that can further help explain reactions to persuasive health messages. Issue involvement is a factor that moderates message processing such that women with high issue involvement are believed to carefully consider arguments in a message, whereas women with low issue involvement will not scrutinize messages as carefully. Based on the theoretical premise, it would be expected that a framing effect would occur for women who are carefully considering the arguments in a message.

Hypotheses

Based on the previous discussion, predictions are set forth in terms of message framing, self-efficacy, issue involvement, and message processing. Figure 1 contains a diagram of the proposed health frame message processing model.

When an issue is considered more relevant to a person, according to the HSM, they are thought to read messages on the topic more carefully (Chaiken, 1980). Based on
this assumption, the following hypothesis is proposed in the context of breast cancer and breast self-examinations:

**H1**: Women who are high in breast cancer involvement will process the breast cancer messages more systematically than women who have low breast cancer involvement.

When reading a health message, women who do not feel that they are capable of performing the health recommendation will use maladaptive coping mechanisms such as avoidance, minimization of the health threat, and denial (forms of defensive processing). Based on this assumption, the following hypothesis is set forth:

**H2**: For high involvement women, compared to women with high self-efficacy, women with low self-efficacy will process breast self-examination messages more defensively than objectively.

As previously indicated, research has discovered that the type of message processing demonstrates a strong influence on cognitive and behavioral outcomes after reading a persuasive message. Specifically, when a person defensively processes a message, there is more counter-arguing (avoidance, denial, source derogation, and minimization) that occurs compared to objective processors. Therefore, a main effect for message processing on attitudes is expected such that defensive processors will have less attitude change than objective processors. Provided that breast self-examinations are a disease detection behavior that may result in finding cancer, based on prospect theory, the loss frame message is considered more effective at promoting behavior change than the gain frame message. Based on this rationale, an interaction effect is expected such that
for objective processors, loss frame messages will be more effective than gain frame messages. For high involvement women, both a main effect for message processing and an interaction for message processing by message framing are predicted.

**H3a**: Objective message processors will produce more favorable attitudes towards breast self-examinations than defensive message processors.

**H3b**: Women who objectively processed the BSE message will respond with greater attitude change to loss frame messages than to gain frame messages.

Based on previous literature, the following two hypotheses predict that attitudes will predict behavioral intentions and, subsequently, behavioral intentions will predict behaviors (Fishbein & Ajzen, 1975).

**H4**: Women with more positive attitudes toward breast self-examinations will have greater behavioral intentions to perform breast self-examinations.

**H5**: Women with greater behavioral intentions will engage in more breast self-examination behaviors than women with low behavioral intentions.
Figure 1. Health frame message processing model

- **Health Message**: The first step in the model is the presentation of a health message.
- **Motivation to process?**: The recipient decides whether to process the message. If not, the message is rejected.
- **Nature of Processing**: Depending on the recipient's motivation, the processing is either heuristic (quick, rule-based) or systematic (slow, analytical).
- **Ability to process?**: The recipient's capability to process the message.
- **Health Risk Perceptions**: The recipient's perception of the health risk associated with the message.
- **Message Framing**: The framing of the message (gain or loss) affects the motivation to avoid losses or obtain gains.
- **Motivation to avoid losses**: Higher motivation to avoid losses leads to acceptance.
- **Motivation to obtain gains**: Higher motivation to obtain gains leads to acceptance.

**Notes:**
1. Topics of health messages can include STDS, breast cancer, diabetes, skin cancer, etc.
2. Motivation to process is moderated by message involvement.
3. Ability to process is affected by distraction, fatigue, etc.
4. Heuristic processing involves attention paid to peripheral cues associated with the message and the use of simple decision rules based on health schemata.
5. Systematic processing involves careful consideration (accessing and scrutinizing) of the message.
6. Defensive processing involves selective perception, denial, and minimization (low self-efficacy increases defensiveness).
7. Health topics can be described in terms of detection or prevention behaviors. Detection behaviors are associated with high risk. Prevention behaviors are associated with low or no risk. In high-risk situations (e.g., detection), individuals are risk-avoiders when losses are made salient and will avoid taking risks when gains are made salient.
8. Message Framing: Loss frame messages describe the negative outcomes of not engaging in a health behavior. Gain frame messages describe the positive outcomes of engaging in a health behavior.
9. Loss frame messages increase motivation to avoid losses associated with health detection behaviors.
10. Gain frame messages increase motivation to obtain gains associated with health prevention behaviors. Individuals may also be motivated to avoid a potential health problem.

**Message Acceptance**
- **TEMPORARY**

To the extent that the recipient of the message attends to the valence (positive or negative) associated with framing cues, gain frame messages will be more effective than loss frame messages.
CHAPTER 2

METHODS

Design

This study was a 2 (gain vs. loss) x 2 (objective vs. defensive) design. In addition to these independent variables in the study design, several potential moderating variables were examined including marital status, ethnicity, and level of education. The following psychological variables that may moderate the relationship between message frames and attitude change were also measured: issue involvement, perceived severity, perceived susceptibility, response efficacy, and self-efficacy. Dependent variables were health attitudes and behavioral intentions. Breast self-examination behaviors were assessed as a dependent variable in the follow-up survey.

Experimental Message Development

The experimental messages were described as a brochure for “Women’s Health” and the article entitled, “Breast Self-Examination and the Early Detection of Breast Cancer.” The messages were three paragraphs long, single spaced, and contained approximately 350 words. Information on statistics and procedures for conducting breast self-examinations was gathered from the American Cancer Society (American Cancer Society, 1999). The pamphlets contained four sections: (a) Breast cancer facts, (b) Breast cancer recommendations (e.g., women 20 and older should perform breast self-examinations), (c) the reasons why breast self-examinations should be performed (manipulations occurred here with the frame and consequences), and (d) guidelines for performing breast self-examinations. A generic template was created for the messages
that contained threat (severity and susceptibility), and response efficacy information. It is noted that breast self-examination pamphlets place a disproportionate emphasis on the threat of breast cancer rather than the efficacy of breast self-examinations (Kline & Mattson, 2000); therefore, this study made sure to include efficacy statements. Following Rothman, Salovey, Antone, Keough, and Martin (1993), same consequence manipulations (e.g., surviving vs. dying, early vs. late detection, favorable vs. unfavorable prognosis) were used throughout the messages.

Message framing was manipulated with the development of the breast cancer and breast self-examination messages. More specifically, unframed sections of the brochure included (a) American Cancer Society recommendations, and (b) guidelines for performing breast self-examinations. The center section of the pamphlet, the reasons why breast self-examinations should be performed, contained eight manipulated sentences. Arguments for conducting breast self-examinations focused on the physiological (life expectancy) and psychological (have confidence) consequences. The gain-frame versions were constructed followed by the loss frames. Descriptions of each frame manipulation appear in Table 4.
Table 4

**BSE message manipulations**

<table>
<thead>
<tr>
<th>Attain Desirable Outcome (Gain 1)</th>
<th>Attain Undesirable Outcome (Loss 1)</th>
<th>Not-attain Desirable Outcome (Loss 2)</th>
<th>Not-attain Undesirable Outcome (Gain 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The early detection of breast cancer can save your life.</td>
<td>Late detection of breast cancer can end your life prematurely.</td>
<td>Late detection of breast cancer can prevent you from saving your life.</td>
<td>The early detection of breast cancer can prevent you from ending your life prematurely.</td>
</tr>
<tr>
<td>By doing BSE monthly, you will know what your normal healthy breast feels like and you will be able to recognize any changes in your breast tissue.</td>
<td>By not doing BSE monthly, you will not know what your normal healthy breast feels like and you will be unaware of any changes in your breast tissue.</td>
<td>By not doing BSE monthly, you will not know what your normal healthy breast feels like and you will not be able to recognize any changes in your breast tissue.</td>
<td>By doing BSE monthly, you will know what your normal healthy breast feels like and you will not be unaware of any changes in your breast tissue.</td>
</tr>
<tr>
<td>Research shows that women who do BSE increase their chances of detecting a lump early, when it is smaller and has not spread (in situ).</td>
<td>Research shows that women who do not perform BSE increase their chances of detecting a lump when it’s too late, when it is larger and may have spread.</td>
<td>Research shows that women who do not do BSE decrease their chances of detecting a lump when it’s too late, when it is larger and may have spread.</td>
<td>Research shows that women who do BSE decrease their chances of detecting a lump early, when it is smaller and has not spread (in situ).</td>
</tr>
</tbody>
</table>
Table 4--Continued

<table>
<thead>
<tr>
<th>Attain Desirable Outcome (Gain 1)</th>
<th>Attain Undesirable Outcome (Loss 1)</th>
<th>Not-attain Desirable Outcome (Loss 2)</th>
<th>Not-attain Undesirable Outcome (Gain 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimately, by engaging in BSE you may be increasing your chances of surviving breast cancer.</td>
<td>Ultimately, by not engaging in BSE you may be increasing your chances of dying from breast cancer.</td>
<td>Ultimately, by not engaging in BSE you may be decreasing your chances of surviving from breast cancer.</td>
<td>Ultimately, by engaging in BSE you may be decreasing your chances of dying from breast cancer.</td>
</tr>
<tr>
<td>The earlier the detection, the more likely you will have a favorable prognosis and successful treatment.</td>
<td>The later the detection the more likely you will have an unfavorable prognosis and unsuccessful treatment.</td>
<td>The later the detection the less likely you will have a favorable prognosis and successful treatment.</td>
<td>The earlier the detection, the less likely you will have an unfavorable prognosis and unsuccessful treatment.</td>
</tr>
<tr>
<td>This knowledge you will gain can only help you.</td>
<td>This lack of knowledge can only hurt you.</td>
<td>This lack of knowledge can not help you.</td>
<td>This knowledge you will gain can not hurt you.</td>
</tr>
<tr>
<td>Remember, early detection can save your life.</td>
<td>Remember, late detection can end your life prematurely.</td>
<td>Remember, late detection of breast cancer can prevent you from saving your life.</td>
<td>Remember, early detection can prevent you from ending your life prematurely.</td>
</tr>
</tbody>
</table>
Pilot Study

A pilot study was conducted to test the four messages to determine whether potential confounding variables might influence outcomes. Tests for potential confounding variables included: (a) message comprehensibility, (b) argument quality and (c) message intensity. In addition to testing the messages, the pilot test allowed an initial assessment of the measurement instrument reliabilities. More specifically, measures included attitude toward BSE, threat measures (severity and susceptibility), and efficacy measures (response efficacy and self-efficacy).

Participants

Ninety-four female college students from the University of Arizona were randomly assigned to receive one of the four messages. These students participated in this study in exchange for extra credit in the class from which they were recruited. The participants’ age ranged from 19 to 50 with a mean of 21.5 years old (SD = 3.91). In terms of ethnic origin, 73% were Caucasian, 20.2% were Hispanic, 3.2% were Asian/Pacific Islander, and 3.2% were African-American. In terms of marital status, 89.4% were single, 4.3% were married, 5.3 were co-habitating, and 1.1% were divorced. Participants were instructed to complete the packet containing the pre-test, message stimulus, and post-test survey and return it the following class to the principal investigator. Each of the participants read one of the manipulations and was asked to complete measures assessing all of the independent and dependent variables.
Pre-Test Measures

Pre-test measures included attitudes about breast cancer and breast self-examination, breast self-examination behaviors, and related preventive health behaviors.

Attitude about breast self-examinations. A measure for attitudes about breast self-examinations was created by the principal investigator following Maheswaran and Meyers-Levy (1990). Four 5-point semantic differential items: “not at all useful/extremely useful,” “extremely unfavorable/extremely favorable,” “extremely bad idea/extremely good idea,” and “not at all important/extremely important.” A mean score index was calculated for the four items. Although the Maheswaran and Meyers-Levy (1990) attitude scale was for a different topic (blood cholesterol screenings) the reliability for the measure in their study was .82. In this pilot test, the alpha reliability for the measure was .78.

Previous breast self-examination behaviors. To assess breast self-examination behaviors, following Meyerowitz and Chaiken (1987), participants were asked the following question: “Please indicate the number of times in the past 12 months that you have performed breast self-examinations (not including doctor visits). If you have never performed a breast self-examination, put zero.”

Related preventive health behaviors. In addition to information about breast self-examinations and breast cancer, additional questions were asked to assess general health behaviors such as brushing teeth, wearing a seatbelt, eating healthy foods, smoking status and frequency of exercise.
Post-Test Measures

Post-test measures included demographic information (age, education level, marital status and ethnicity), the same measure for attitudes about breast cancer and breast self-examination as in the pre-test, breast self-examination behavioral intentions, perceived severity, perceived susceptibility, response efficacy, self-efficacy, and three potential confounding variable measures (message comprehensibility, message intensity, and message quality).

Threat and efficacy. To measure threat (severity and susceptibility) of breast cancer and efficacy (response and self) of BSE, a 16-item scale was adapted from the risk behavior diagnosis scale to pertain to the specific context of breast cancer and breast self-examination (Witte, Cameron, McKeon & Berkowitz, 1996). Respondents were asked to rate their perceived threat and efficacy concerning breast cancer and breast self-examinations with 16-items on a 5-point Likert-type scale ranging from Strongly Disagree (1) to Strongly Agree (5). This analysis employed a principal component factor analysis using a varimax rotation (with an eigenvalue of 1 or greater). Four factors emerged from the 16-item scale (see Table 5 for items, factor loadings and communalities). Items included in each factor were selected based on whether they loaded .60 or above on one factor and less than .40 on other factors. Overall, the items loaded well on distinct factors.

The first factor, severity (pilot study alpha = .88), was comprised of five items demonstrating the severity of breast cancer. Factor loadings ranged from .78 to .83. To measure perceived severity, items included, “I believe that breast cancer is a severe
disease.” “I believe that breast cancer is a serious disease.” “I believe that breast cancer is significant.” “Breast cancer is a frightening disease.” “Breast cancer is a dangerous disease.”

The second factor, self-efficacy, initially contained five items and demonstrated an individual's level of perceived ability to detect breast lumps by doing BSE. Factor loadings ranged from .42 to .89. The item with the excessively low loading, .42, was removed from the scale leaving a final four item scale (pilot study alpha = .88). The scale consists of the following items: “I feel confident that I can perform breast self-examinations effectively.” “I am confident in my ability to detect changes in my breasts.” “I am confident that I know the correct procedures for conducting breast self-examinations.” “I feel well informed about how to perform breast self-examinations.”

The third factor, response efficacy, contained three items demonstrating the effectiveness of BSE to detect breast cancer. Factor loadings ranged from .84 to .85. Items were as follows: “Breast self-examinations are highly effective in the detection of breast cancer.” “Performing breast self-examinations could significantly affect one's medical outcome.” “Breast self-examination is an effective method for the early detection of breast cancer.” (pilot study alpha = .85).

The fourth factor, susceptibility, initially contained three items demonstrating one’s perceived susceptibility to breast cancer. Factor loadings for this factor ranged from .65 to .86. Susceptibility items for the scale were, “I am highly susceptible to breast cancer.” “It is likely that I will get breast cancer.” and “It is possible that I will get breast cancer.” Cronbach’s alpha for the 3-item scale was .66. By removing the last question the
reliability increased to .73. Therefore, two items were used to assess susceptibility. An additional 4 items were generated for the main study to increase the reliability of this particular measure.

Table 5
Items, factor loadings and communalities for perceived severity, perceived susceptibility, response efficacy and self-efficacy

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast cancer is a serious disease.</td>
<td>.83</td>
<td>.07</td>
<td>.32</td>
<td>.07</td>
<td>.80</td>
</tr>
<tr>
<td>Breast cancer is a frightening disease.</td>
<td>.83</td>
<td>-.06</td>
<td>.01</td>
<td>-.05</td>
<td>.69</td>
</tr>
<tr>
<td>Breast cancer is a dangerous disease.</td>
<td>.82</td>
<td>-.12</td>
<td>.03</td>
<td>-.02</td>
<td>.70</td>
</tr>
<tr>
<td>I believe that breast cancer is a severe disease.</td>
<td>.80</td>
<td>.14</td>
<td>.29</td>
<td>.06</td>
<td>.74</td>
</tr>
<tr>
<td>I believe that breast cancer is significant.</td>
<td>.78</td>
<td>.01</td>
<td>.20</td>
<td>.12</td>
<td>.66</td>
</tr>
<tr>
<td>I am confident that I know the correct procedures for conducting BSEs.</td>
<td>-.09</td>
<td>.89</td>
<td>.02</td>
<td>-.02</td>
<td>.80</td>
</tr>
<tr>
<td>I feel confident that I can perform BSE effectively.</td>
<td>-.00</td>
<td>.85</td>
<td>.15</td>
<td>-.05</td>
<td>.75</td>
</tr>
<tr>
<td>I am confident in my ability to detect changes in my breasts.</td>
<td>-.09</td>
<td>.85</td>
<td>.12</td>
<td>-.06</td>
<td>.74</td>
</tr>
<tr>
<td>I feel well informed about how to perform BSE.</td>
<td>.08</td>
<td>.82</td>
<td>.00</td>
<td>-.00</td>
<td>.69</td>
</tr>
<tr>
<td>Performing BSE would enable me to detect a lump in my breast.</td>
<td>.21</td>
<td>.42</td>
<td>.32</td>
<td>.06</td>
<td>.33</td>
</tr>
</tbody>
</table>
Table 5--Continued

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSEs are highly effective in the detection of breast cancer.</td>
<td>.19</td>
<td>.03</td>
<td>.85</td>
<td>.01</td>
<td>.75</td>
</tr>
<tr>
<td>Performing BSE could significantly affect one's medical outcome.</td>
<td>.19</td>
<td>.16</td>
<td>.84</td>
<td>-.02</td>
<td>.76</td>
</tr>
<tr>
<td>BSE is an effective method for the early detection of breast cancer.</td>
<td>.19</td>
<td>.14</td>
<td>.84</td>
<td>.04</td>
<td>.75</td>
</tr>
<tr>
<td>It is likely that I will get breast cancer.</td>
<td>.13</td>
<td>-.12</td>
<td>.09</td>
<td>.86</td>
<td>.78</td>
</tr>
<tr>
<td>I am highly susceptible to breast cancer.</td>
<td>-.00</td>
<td>.08</td>
<td>-.22</td>
<td>.82</td>
<td>.73</td>
</tr>
<tr>
<td>It is possible that I will contract breast cancer.</td>
<td>-.01</td>
<td>-.04</td>
<td>.13</td>
<td>.65</td>
<td>.44</td>
</tr>
<tr>
<td><strong>Alpha reliability</strong></td>
<td>(.88)</td>
<td>(.88)</td>
<td>(.85)</td>
<td>(.73)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Underlined factor loadings indicate an item loaded on that particular factor.

**Potential Confounding Variables**

Before the initial study could take place, it was important to rule out any potential confounding variables that may account for differences after randomization. Three potential confounding variables were message comprehensibility, message intensity, and message quality.

**Message comprehensibility.** The measure for message comprehensibility consisted of a 3-item 5-point Likert-type scale (alpha = .89). Items included, “The message was confusing.” “The message was easy to understand.” “The message was clearly written.” The first item was reverse-coded.
Message intensity. The measure for message intensity consisted of a 5-item 5-point semantic differential scale (alpha = .82). To determine whether one frame was perceived as having more intense language than other frames, message intensity was assessed with the following 7 item 5-point semantic differential items: “very emotional-not emotional at all,” “very vivid-very pallid,” “very passive-very active,” “not intense at all-very intense,” “very arousing-not at all arousing,” “not at all passionate-very passionate,” “very inspirational-not inspirational at all.”

Argument quality. The measure for argument quality consisted of a 5-item 5-point semantic differential scale (alpha = .80). To assess argument quality, participants were asked to respond to the following statement: “The center section of the pamphlet contained some reasons for doing breast self-examinations. Please evaluate these reasons based on the following pairs: “good/bad,” “strong/weak,” “persuasive/unpersuasive,” “believable/unbelievable,” and “true/untrue.”

To test whether the gain and loss framed messages differed by argument quality, message comprehensibility and message intensity, a 2 (attainment: attain vs. not attain) x 2 (type of outcome: desirable vs. undesirable) MANOVA between-groups design was conducted with the three dependent variables. The analysis did not reveal a significant multivariate effect for attainment [Wilks lambda = .98, F (3, 87) = .52, ns], type of outcome [Wilks lambda = .99: F (3, 87) = .12, ns], nor an interaction effect [Wilks lambda = .97: F (3, 87) = .69, ns]. These results indicate that the gain and loss frame messages were not significantly different based on argument quality, message comprehensibility, and message intensity.
**Negative emotional reactions.** Some research suggests that loss frame messages should generate more negative emotions than gain frame messages. To assess negative emotional reactions to the health messages, following Meyerowitz and Chaiken (1987), participants were asked the following question: “Some women experience some form of emotional reactions to the materials (pamphlet). Please describe the extent to which you felt the following emotions associated with the pamphlet. The message I read made me feel: “frightened,” “anxious,” “uncomfortable,” “nauseated,” “angry,” and “guilty.” The alpha reliability for the scale was .72. The univariate 2 (attainment: attaining vs. not attaining) x 2 (type of outcome: desirable vs. undesirable) ANOVA with negative emotions as the dependent variable yielded no significant main effects for attainment [F (1, 90) = .06, ns], nor type of outcome [F (1, 90) = .03, ns] and no significant interaction [F (1, 90) = .24, ns]. This suggests that the messages did not differ in the level of negative emotions generated.

Based on the results of the pilot test, the message manipulation was successful in controlling for potential confounding variables. Results suggested that there were no differences between the gain and loss frame messages based on message comprehensibility, message intensity, and argument quality. Therefore, the messages were retained for the main study.

**The Main Study**

**Participants**

The sample for this study was derived from two independent sources. First, female participants were recruited from classes within the Department of Communication
at the University of Arizona. Other participants were drawn from the general female adult population at the Pima County Jury Commissioner's Office when reporting for jury duty. Data collected from these two sources occurred during the same week.

Three hundred-eight women participated in this study (220 from the jury pool and 88 from an undergraduate communication class). The mean age of participants across samples was 36.8 (SD = 15.35) with a range from 18 to 72 years old. In terms of ethnicity, 81.2% were Caucasian, 13.3% were Hispanic, 3.2% were African American, 1% were Asian/Pacific Islander, .6% were Native American, and .6% indicated “Other.” In terms of education level, 12.3% completed high school, 2.6% had a vocational degree, 49.7% had completed some college, 16.6% had completed college, 12.7% had received a Master's/Ph.D. degree, and .3% had a professional degree. In terms of marital status, 43.2% were married, 42.2% were single, 7.8% were divorced, 3.6% were co-habitating, and 3.2% were widowed.

Procedures

Each participant in the study was provided a packet containing (a) pre-intervention measures, (b) one message manipulation, and (c) post-intervention measures. After answering the pre-test measures, participants were instructed to read one of the four possible message manipulations (see Appendix C). Once the messages were read, participants were instructed to answer the post-test questionnaire concerning their beliefs, attitudes, and behavioral intentions (see Appendix D). Upon completion of the packet, participants were instructed to return the completed packet to the researcher in the provided envelope.
Jury duty participants in this research project were solicited from the jury pool at the Superior Court of Pima County in Arizona. This sample is drawn from a pool of registered voters who hold a valid drivers license and are residents of the county. Jury duty participants were approached at the beginning of jury duty. The participants were asked if they would like to participate in a study on Women’s Health Messages. They were informed that their participation was strictly anonymous, voluntary and confidential. In terms of incentives for participation, women were informed that they would learn valuable information about a women’s health topic and would be debriefed following completion of the survey. If a woman agreed to participate in the study, she was provided a packet containing the pre-test, manipulation, and post-test measures. No further contact with the jury pool participants was sought.

In terms of the student population sample, the research investigator attended class and distributed the packets in manila envelopes. Students were informed that participation in this study was voluntary and confidential. If any students had participated in the pilot study they were invited to participate in a different research study. Participants were assigned extra credit for participation in each phase of the study. Students were instructed to return the packets at the following class. Approximately two months after the completion of the packet, the researcher contacted each student participant to complete a follow-up survey to assess behaviors. Fifty-eight packets were returned out of a possible 88 resulting in a 66% response rate. In the follow-up questionnaire, questions addressing general health were asked, including breast self-examination attitudes and behaviors. A comparison of the pre-test data was conducted
with a t-test on people who returned the survey versus people who did not return the
second survey. This was done to determine if there were certain biased characteristics
about the individuals who did not complete the follow-up survey. Results of the analysis
revealed no significant differences in terms of age, behavioral intentions, previous
behaviors, attitudes, severity, susceptibility, response efficacy, and self-efficacy for those
individuals who completed the follow-up survey and those individuals who did not.
Therefore, this suggests that the participants who complete the follow-up survey were not
systematically different on any particular characteristic from the participants who did not
complete the follow-up survey.

Pre-Test Measures

Pre-test measures for the main study included all of the variables from the pilot
test including breast cancer knowledge, previous breast cancer behaviors, issue
involvement, and breast self-examination attitudes.

Breast cancer knowledge. Following Morman (1998), a version of the Breast
Cancer Awareness Survey was adapted to assess women’s initial understanding of breast
cancer. There were seven multiple-choice questions designed to assess the participants’
knowledge of breast cancer and breast self-examinations. Questions addressed risk
factors (age and ethnicity), who initially discovers breast lumps (physician or patient),
whether most tumors are malignant or benign, and breast cancer symptoms. A knowledge
index was created by adding the correct number of answers for each participant for the
purposes of seeing if knowledge differed by message frame.

Previous breast cancer behaviors. Breast cancer behaviors were assessed by
asking about physician visitations (i.e., clinical breast examinations), previous breast self-examination behaviors, and whether the participants had a mammogram in the past. Each question was assessed with either a yes, no, or uncertain response options.

**Breast self-examination attitudes** were assessed with an overall 6-item 5-point semantic differential scale (2 additional items were included from the pilot test because the addition of the items increased reliability). The measure was comprised of the following items: “not at all useful/extremely useful,” “worthless/worthwhile,” “not worth my time/worth my time,” “useless/useful,” “extremely bad idea/extremely good idea,” and “not at all important/extremely important.” A mean score index was calculated for the six items (pre-test alpha = .86).

**Breast self-examination behaviors** were measured with the same single item as in the pilot test: “Please indicate the number of times in the past 12 months that you have performed breast self-examinations (not including doctor visits). If you have never performed a breast self-examination, put zero.”

**Issue involvement** was measured with two items utilizing a 5-point scale (alpha = .86): “How important is this issue to you today?” (not important-very important) and “How relevant is this issue to you today?” (not relevant-very relevant). A 3.0 split was utilized to differentiate high and low involvement participants. Women who scored 3.0 or above were treated as more involved in the issue (N = 205). Women who scored 2.99 or below were treated as low involvement (N = 101). A chi-square test revealed that forty-three percent of high involvement participants and 23% of low involvement participants reported that a family member was diagnosed with breast cancer (p < .05). In addition, a
\[ t\text{-test with involvement (high and low) as the independent variable and age as the dependent variable found that high involvement participants (}M = 39.6, SD = 15.4\) were significantly older than low involvement participants (}M = 31.0, SD = 13.4\); \( t(1, 305) = -4.9, p < .01. \)

**Post-Test Measures**

Post-test measures included demographic information, message processing, attitudes, threat (perceived severity and susceptibility) and efficacy (response and self-efficacy) and behavioral intentions.

**Demographic information.** To assess demographic information, four questions were asked regarding age, education level, marital status, and ethnicity. Attitude toward BSE was measured using the same scale as the pre-test (post-test alpha = .91).

**Message processing.** Message processing was not manipulated; rather, it was a measured variable. There are several methods commonly used to assess depth (amount and type of cognitive activity) of message processing. These methods include the thought listing technique, amount of time spent reading, and a scale of message processing (Petty & Cacioppo, 1986). All of these methods were used in the present study.

The thought listing procedure of message elaboration was measured following the procedures described by Eagly and Chaiken (1993). Participants in the study were asked to complete open-ended responses immediately following the intervention. The instructions read as follows: “Please write down all of the thoughts that crossed your mind and how you were feeling as you read the pamphlet. Please NUMBER your thoughts when you have listed all of them.”
The responses to the measure were (a) coded separately by two independent coders (unaware of the objective of the study) for the jury pool data and (b) self-rated by participants and an independent coder. For the jury pool data, each coder underwent training of a modified coding scheme proposed by Cacioppo, Harkins and Petty (1981). The coders received a transcript of all of the participants’ responses and practiced coding with the coding scheme until they felt comfortable with the process. The coding scheme involved (a) counting the number of unique statements made by each participant and (b) coding the valence of the message in terms of message related cognitions (e.g., “Doing a breast self-examination would help me to detect a breast lump.”) and irrelevant cognitions (e.g., “I wonder what the men in jury duty think about the women completing a survey?”). The more message-related cognitions listed suggested greater systematic processing. Message related cognitions were also classified in terms of (a) objective (e.g., facts or procedures) or (b) defensive cognitions (e.g., “I don’t like to think about it,” “I’m not a doctor,” “It won’t happen to me.”). Each of the statements made was summed to obtain the total number of thoughts elicited. Inter-coder reliability was assessed comparing the valence of statements coded by each coder. Inter-coder reliability between the two coders was acceptable (Cohen’s Kappa = .80) for the jury pool data and any discrepancies were resolved through discussion.

In terms of the student sample, participants were requested to evaluate the valence of their own statements upon completion of the post-test survey. Several students did not complete this task. Under this circumstance, the principal investigator coded their statements. One of the coders who coded the jury pool data also coded the student
population data. Intercoder reliability for this set of the data was relatively high (Cohen’s Kappa = .90) for the independent coder and the participants’ self-ratings. Discrepancies in the data were resolved by using the participant’s rating. Based on this coding scheme, depth of message processing was measured as the total, positive, neutral and negative number of message-related thoughts generated. Defensive processing was treated as a dichotomous variable. No one in the sample wrote defensive statements exclusively. Based on the open-ended responses, those who generated arguments that reflected minimization of the issue, denial or avoidance of the issue were coded as biased processors (N = 62) and those who only generated statements in favor of the message were coded as objective processors (N = 244).

A 13 item 5-point Likert scale of message processing was also used to measure message elaboration (i.e., motivation and ability). A principal component factor analysis was conducted on the scale with a varimax rotation. The varimax rotation assumes that the factors are related. To retain an item in a factor, the item needed to load at .60 or higher and .40 or less on all other factors. Motivation to process had nine items load on the first factor (alpha = .88). Factor loadings ranged from .61 to .73. Ability to process had four items load on the second factor (alpha = .82). Factor loadings ranged from .72 to .82. The alpha reliability for the overall scale was .91. The 13 items were used to assess the depth of message processing. Table 6 contains the factor loadings and communality scores for the message processing scale.
Table 6

Items, factor loadings, and communalities for the message processing scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The issue discussed in the message was interesting to me.</td>
<td>.73</td>
<td>.15</td>
<td>.55</td>
</tr>
<tr>
<td>10r. I didn’t really care what the author had to say about the topic.</td>
<td>.73</td>
<td>.24</td>
<td>.58</td>
</tr>
<tr>
<td>8r. I wasn’t all that motivated to read the message.</td>
<td>.71</td>
<td>.29</td>
<td>.59</td>
</tr>
<tr>
<td>7r. I didn’t find the issue addressed in the message very interesting.</td>
<td>.68</td>
<td>.32</td>
<td>.56</td>
</tr>
<tr>
<td>4. I was interested in what the author had to say.</td>
<td>.68</td>
<td>.29</td>
<td>.54</td>
</tr>
<tr>
<td>14r. I didn’t pay close attention to the author’s arguments.</td>
<td>.67</td>
<td>.40</td>
<td>.61</td>
</tr>
<tr>
<td>13r. I didn’t concentrate very hard on the arguments made by the author.</td>
<td>.62</td>
<td>.38</td>
<td>.53</td>
</tr>
<tr>
<td>2. While reading, I concentrated on the arguments the author made.</td>
<td>.62</td>
<td>.03</td>
<td>.40</td>
</tr>
<tr>
<td>12. I was motivated to read the message.</td>
<td>.61</td>
<td>.38</td>
<td>.52</td>
</tr>
<tr>
<td>11. My mind did not wander as I read the message.</td>
<td>.14</td>
<td>.82</td>
<td>.68</td>
</tr>
<tr>
<td>9r. While reading the message, thoughts about other things kept popping up in my head.</td>
<td>.20</td>
<td>.78</td>
<td>.65</td>
</tr>
<tr>
<td>Item</td>
<td>Factor 1</td>
<td>Factor 2</td>
<td>$h^2$</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>6. While reading, I didn't let myself get distracted from focusing on the message content.</td>
<td>.28</td>
<td>.74</td>
<td>.62</td>
</tr>
<tr>
<td>3r. My mind kept wandering as I read the message.</td>
<td>.36</td>
<td>.72</td>
<td>.64</td>
</tr>
</tbody>
</table>

**Alpha reliability**

| Note. Item numbers indicate order of presentation in questionnaire. “r” indicates item was reverse coded. Underlined factor loadings indicate an item loaded on the factor. |

**Threat and efficacy measures. Severity** of breast cancer was measured using an adaptation from the pilot test questions (alpha = .80): “Breast cancer is a frightening disease.” “Breast cancer is a dangerous disease.” “Finding a lump in your breast is frightening.” “I believe that breast cancer is a severe disease.” “I believe that breast cancer is significant.” “I believe that breast cancer is a serious disease.” **Susceptibility** items were used and adapted from the pilot study and included the following 4 items (alpha = .81): “I am highly susceptible to breast cancer.” “It is likely that I will get breast cancer in the next few (3) years.” “It is possible that I will get breast cancer in the next few (3) years.” “It is likely that I will get breast cancer in my lifetime.” **Response efficacy** was measured using the same 3 items from the pilot study (alpha = .70): “Breast self-examinations are highly effective in the detection of breast cancer.” “Performing breast self-examinations could significantly affect one’s medical outcome.” “Breast self-
examination is an effective method for the early detection of breast cancer.” Self-efficacy was measured using the same items as in the pilot study (alpha = .90).

Behavioral intentions. To assess behavioral intentions, participants were asked the following question: “How many times do you realistically intend to perform breast self-examinations this year? Circle one response.” Response options ranged from 0 to 12 times (reflecting the ACS recommendation to perform monthly BSE).

In addition, behavioral intentions were assessed utilizing a 3-item Likert-type scale (alpha = .88) with items including “I will perform BSE in the next 8 weeks”, “I will perform a BSE in the next couple of months”, and “I will NOT perform a BSE in the next 8 weeks.” The final item was reverse-coded.

Follow-Up Survey

Breast self-examination behaviors were measured by asking the participant the number of times she had performed BSE in the previous two months. BSE attitudes (alpha = .85), behavioral intentions (alpha = .92), self-efficacy (alpha = .91), response-efficacy (alpha = .66), severity (alpha = .82), susceptibility (alpha = .81) were measured with the same measure as in the pre and post-test survey.
CHAPTER 3
RESULTS

Previous Knowledge and Behaviors

Breast care behaviors. Breast care behaviors were assessed by asking about physician visitation, BSE behaviors and mammograms. The following section presents the responses: 90.3% of the sample indicated that a medical doctor had previously examined their breasts, 48.4% of the sample had a mammogram in the past, and 17.9% indicated that they had had previous medical problems with their breasts. When asked if they had ever heard of breast self-examinations (BSE), 99.4% indicated that they had heard of the procedure and 90.3% indicated that they had been previously taught how to perform a BSE. In terms of BSE performance, participants indicated that they had performed BSE 4.1 times (S.D.= 4.32) in the past 12 months with a range from 0 to 12 times (27% had never performed BSE while 15.6% performed it monthly as recommended).

Awareness. In terms of breast cancer, 30% had family members who have had breast cancer, 2.6% of the participants had breast cancer, and 52.3% have known friends or co-workers who have had breast cancer. Thirty-nine % of the sample had talked about breast cancer with a doctor.

Breast cancer knowledge. The results from the breast cancer knowledge questions indicated that women, in general, are fairly knowledgeable about breast cancer and associated factors. When asked about the highest risk age group, 65% of women incorrectly believed that women 35-50 were at highest risk, followed by 26.4% correctly
indicating 50 years and up, and 7.5% indicating 20-34. In terms of ethnic origin as a predictor of breast cancer, 81.5% of women incorrectly believed that Caucasian women were at highest risk, 11.6% correctly indicated African American, 4.3% indicated Hispanic American, and 2.6% indicated Asian American. When asked who discovers breast lumps, 58.5% of women correctly indicated that the patient either by accident or by self-exam, 23.9% indicated that the doctor finds the lump by using a mammogram and 17.6% indicated that lumps are found by the doctor at yearly physical examinations. When asked how often one should perform a breast self-examination, 80.2% of the sample correctly indicated once a month, followed by 8.8% believing it was once a week, 8.1% believed it was every 6 months, and 2.9% thought the BSE should be performed yearly. When a lump is found, 74.4% of women correctly indicated that it is typically benign (non-cancerous), while 20.1% believed that it was 50-50 (malignant and benign), and 5.5% believed that it would be malignant (cancerous). Ninety-one percent of participants correctly indicated that a common symptom of breast cancer is a lump in the breast while 5.5% indicated a pain in the breast and 2.9% believed that swollen or enlarged breasts were indicative of breast cancer.

Pre-test attitudes by message frame. To assess whether pre-test attitudes differed by message frame before the treatment, a 2 x 2 ANOVA was conducted with the attainment (attain and not attain) and type of outcome (desirable and undesirable) dimensions. The results suggested that attitudes did not differ by message frame before the treatment [attainment: $F (1, 304) = .52$, ns; type of outcome: $F (1, 304) = .74$, ns; interaction: $F (1, 304) = 1.27$, ns]. A $t$-test was also conducted with gain and loss frame
messages (2 levels) as the independent variable and pre-test attitudes as the dependent variable. The results suggested that there were no significant differences in pre-test attitudes comparing gain frame messages ($M = 4.60, SD = .55$) to loss frame messages ($M = 4.52, SD = .66$) [$t (1, 306) = 1.11, ns$]. Because there were no significant differences on pre-test attitudes by message frame, it was assumed that the random assignment was successful.

Because there were no significant differences based on the “attainment” and “type of outcome” dimensions, “attaining a desirable outcome” and “not attaining an undesirable outcome” were classified as “gain frame messages.” In addition, “attaining an undesirable outcome” and “not attaining a desirable outcome” were classified as “loss frame messages” in order to discuss the general effects of message framing.

**Hypotheses**

**Hypothesis 1.** Hypothesis 1 predicted that women with high issue involvement would process breast cancer messages more systematically than women with low issue involvement. To test this hypothesis, a $t$-test was conducted with involvement as the independent variable and the total number of message-related cognitions as the dependent variable. The results of this test did not indicate a difference in the number of message-related cognitions between high involvement ($M = 3.77, SD = 1.70$) and low involvement women ($M = 3.76, SD = 1.68$); $t (1, 304) = -.06, ns$. However, women who had high issue involvement produced significantly more positive statements ($M = 2.50, SD = 1.76$) compared to low issue involvement women ($M = 2.12, SD = 1.39$); $t (1, 304) = -2.04, p < .05$. In addition, women who were low involvement produced significantly more negative
statements ($M = .41$, $SD = .73$) than high involvement participants ($M = .26$, $SD = .60$); $t(1, 304) = 1.74$, $p < .05$. In addition, participants recorded when they began and finished reading the pamphlet providing an indicator of how long they took to read. A $t$-test with high and low involvement as the independent variable and number of minutes reading as the dependent variable, found no significant differences between high involvement ($M = 2.51$, $SD = 1.49$) and low involvement ($M = 2.72$, $SD = 1.55$) participants; $t(1, 306) = 1.12$, ns.

Finally, a $t$-test was conducted with involvement as the independent variable and the mean index score of the message processing scale as the dependent variable. The results of this test revealed a significant difference in depth of processing between high involvement ($M = 4.00$, $SD = .60$) and low involvement women ($M = 3.85$, $SD = .63$); $t(1, 306) = -2.10$, $p < .05$. High involvement women paid significantly more attention to the health message compared to low involvement women. Based on the message processing scale, hypothesis 1 was supported.

**Hypothesis 2.** Hypothesis 2 predicted that, compared to high involvement women with high self-efficacy, high involvement women with low self-efficacy would process breast self-examination messages more defensively than objectively. As discussed earlier, high issue involvement participants scored higher than a 3.0 (on a 5-point scale) on the issue involvement scale. To test hypothesis 2, a point-biserial correlation was used with self-efficacy as a continuous variable and message processing (defensive = 1 and objective = 2) as a dichotomous variable. Hypothesis 2 was supported. The results revealed a significant correlation between self-efficacy and message processing; $r = .35$, $p$
suggesting that high involvement defensive processors had less breast self-examination self-efficacy than high involvement objective processors.

**Hypothesis 3a and 3b.** Hypothesis 3a predicted that high involvement objective message processors would produce more favorable attitudes towards breast self-examinations than high involvement defensive message processors. Hypothesis 3b predicted that compared to those who engaged in defensive processing of BSE messages, women who objectively processed the BSE message will respond with greater attitude change to loss frame messages than to gain frame messages.

To test these two hypotheses, an ANCOVA was used with post-test attitudes as the dependent variable, message processing (objective and defensive) and message framing (gain and loss) as the independent variable and pre-test attitudes as the covariate. The results revealed pre-test attitudes as a significant covariate; $F(1, 200) = 349.82, p < .01$, $\eta^2 = .63$. The results also indicated a significant main effect for message processing (defensive and objective); $F(1, 200) = 5.45, p < .05$, $\eta^2 = .02$. An examination of the adjusted cell means indicates that defensive processors ($M = 4.69, SD = .50$) had less favorable attitudes towards breast self-examinations than objective processors ($M = 4.79, SD = .50$). In addition, a significant interaction was found between message processing and message framing; $F(1, 200) = 4.52, p < .05$, $\eta^2 = .02$. In terms of objective processors, the data suggest that there were no significant differences in post-test attitudes by gain ($M = 4.79, SD = .55$) and loss ($M = 4.78, SD = .43$) frame messages; $F(1, 200) = 2.75, ns$. However, defensive processors had significantly better post-test attitudes in response to gain frame ($M = 4.72, SD = .46$) messages compared to gain
frame (M = 4.66, SD = .55) messages. Figure 2 contains the adjusted post-test mean attitude scores and Figure 3 contains the unadjusted pre and post-test mean attitude scores for each group. Therefore, hypothesis 3a and 3b were not supported. In fact, significant findings were in the opposite direction predicted.

Figure 2. Adjusted post-test mean attitude scores for high involvement participants as a function of message processing (objective or defensive) and message framing (gain or loss frame) (covariate: pre-test attitudes)
Figure 3. Unadjusted pre-test and post-test mean attitude scores for high involvement participants by message processing (objective or defensive) and message framing (gain or loss frame)
Hypothesis 4. Hypothesis four predicted that women with more positive attitudes toward breast self-examinations would have greater behavioral intentions. To test hypothesis 4, a correlation with high involvement women (N = 207) was used with behavioral intentions and post-test attitudes. The correlation analysis confirmed a significant correlation between attitudes and behavioral intentions; r = .36, p < .01. The more favorable attitudes that a person has towards breast self-examinations, the greater the behavioral intentions are to perform the behavior. Thus, hypothesis 4 was supported.

Hypothesis 5. Hypothesis five predicted that women with greater behavioral intentions would engage in more breast self-examination behaviors. Only women who completed the follow-up survey (N = 58) were utilized in this analysis. To test hypothesis 5, a correlation was used with behaviors (in the past two months) and behavioral intentions. The results confirmed a significant relationship between behavioral intentions and behaviors; r = .38, p < .01. Thus, hypothesis 5 was supported.

Additional Statistical Analyses

In addition to behaviors, a repeated-measures ANOVA was conducted to determine if attitudes would endure two months following the first part of the main study. The within subjects factor was post-test attitudes and follow-up attitudes. The results indicated a significant decay in attitudes from the post-test survey (M = 4.83, SD = .30) to the follow up survey administered two months later (M = 4.59, SD = .47); Wilks lambda = .75, F (1, 62) = 19.82, p < .01.

An additional analysis was conducted for low involvement participants to determine if the framing effect would appear. An ANCOVA was used with post-test
attitudes as the dependent variable, message processing (objective and defensive) and message framing (gain and loss) as the independent variable and pre-test attitudes as the covariate. The results revealed pre-test attitudes as a significant covariate; $F(1, 101) = 84.48, p < .01, \eta^2 = .46$. However, there was no interaction effect [$F(1, 96) = .00, \text{ns}$], nor a main effect for both message processing (objective and defensive) [$F(1, 96) = 1.75, \text{ns}$] and message framing (gain or loss) [$F(1, 96) = .30, \text{ns}$].

To test whether there were differences in perceived severity, perceived susceptibility, response efficacy and self-efficacy following exposure to the message manipulations, a $2 \times 2$ MANOVA was conducted with perceived severity, perceived susceptibility, response efficacy and self-efficacy as the dependent variables. The independent variables were issue involvement (high and low) and message framing (gain and loss). The results revealed a significant interaction between message framing and issue involvement such that low involvement loss frame participants ($M = 2.30, SD = .66$) reported feeling more susceptible to breast cancer compared to low involvement gain frame participants ($M = 2.54, SD = .64$); $F(1, 304) = 4.14, p < .05$. The results revealed a significant main effect for severity on issue involvement; $F(1, 304) = 5.08, p < .05$. High involvement participants felt that breast cancer was more severe ($M = 4.43, SD = .54$) than low involvement participants ($M = 4.27, SD = .62$). In addition, a main effect was found for perceived susceptibility; $F(1, 304) = 18.18, p < .01$. High involvement participants reported being more susceptible ($M = 2.74, SD = .60$) compared to low involvement participants ($M = 2.42, SD = .66$).

Finally, an exploratory correlation analysis was conducted with all of the pre-test
and post-test variables in the study to see how all of these variables are related to each other (n = 308). Table 7 contains the correlation and reliability scores for each variable.

Table 7

Correlation matrix of pre and post test variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-test Attitudes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Post-test Attitudes</td>
<td>.77**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Depth of Processing</td>
<td>.22**</td>
<td>.30**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Perceived Severity</td>
<td>.14*</td>
<td>.18**</td>
<td>.15**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.80)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perceived Susceptibility</td>
<td>.07</td>
<td>-.01</td>
<td>.04</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Response Efficacy</td>
<td>.37**</td>
<td>.46**</td>
<td>.34**</td>
<td>.21**</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.70)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-Efficacy</td>
<td>.33**</td>
<td>.26**</td>
<td>.24**</td>
<td>.02</td>
<td>-.00</td>
<td>.37**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.90)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Behavioral Intentions</td>
<td>.38**</td>
<td>.38**</td>
<td>.32**</td>
<td>.14*</td>
<td>.10</td>
<td>.43**</td>
<td>.49**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.88)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent the reliability score for each scale.

*p < .05. **p < .01.
CHAPTER 4
DISCUSSION

To successfully develop health messages that motivate the population to engage in health-related behaviors, it is essential to understand the potential effects that message designs may have on one's attitudes, behavioral intentions, and behaviors related to the health topic. This study set out to examine the combined effects of message framing and message processing on cognitive and behavioral outcomes. Drawing from prospect theory (Kahneman & Tversky, 1979) and the HSM (Chaiken, 1980), these two theoretical rationales presented in the first chapter were brought together to form a health frame message processing model. To test the veracity of the propositional framework, breast self-examination messages were framed in terms of gains or losses and participants in a pre-test, message exposure, post-test format were measured on cognitive and behavioral outcome variables. The findings in this study did not support predictions based on prospect theory (Kahneman & Tversky, 1979). However, several interesting findings were made concerning message processing and message framing.

Summary of Research Findings

Issue Involvement and Message Processing

Based on a cognitive response perspective, when a topic is more involving, the message recipient is thought to engage in greater systematic processing by carefully evaluating the merits of arguments embedded in the message (see Johnson & Eagly, 1989, for a review and meta-analysis). As discussed by Petty and Cacioppo (1986), "as personal relevance of a message increases, people become more likely to undertake the
cognitive work of evaluating the issue-relevant arguments presented" (p. 87). Hypothesis one predicted that high issue involvement participants would process breast self-examination messages more systematically than low issue involvement participants. In the present study, three indicators of depth of message processing were used to assess the degree to which participants engaged in systematic processing. The first assessment tool was the traditional method of having participants engage in a thought-listing task following exposure to the message stimuli. A fundamental assumption of this method is that the number and type of statements made will be an accurate reflection of the thought process that occurred during exposure to the message. In other words, individuals who paid careful attention to the arguments in the message (an indicator of systematic processing) would have a longer list of message-related thoughts compared to someone who engaged in heuristic processing of the message. The second assessment tool was based on the length of time spent reading the message. Participants were asked to write down the time immediately before and immediately following exposure to the message stimuli. Based on this method, it is assumed that individuals engaging in systematic processing of the message will spend more time reading the message than those engaging in heuristic processing. Finally, the third assessment tool was a 12 item 5-point Likert scale measure of depth of processing. Conflicting results were found for these three measurement tools. The number of thoughts generated indicated no significant differences in the depth of processing based on involvement. There were no significant differences in the amount of time spent reading the messages. Finally, the message processing scale indicated that high involvement women processed the message more
carefully than low involvement women.

The results of this study found no significant differences in the total number of message-related thoughts generated for high and low involvement participants. However, women who were highly involved in the topic generated more positive statements than low involvement participants. Conversely, low involvement participants generated more negative statements about breast self-examinations.

The finding that the total number of message-related thoughts generated was not greater for highly involved participants was inconsistent with past research findings. Maheswaran and Meyers-Levy (1990) found that in response to a message advocating blood cholesterol screenings, high issue involvement participants generated more message-related thoughts than low involvement participants. Possible explanations for why the difference was not found may be derived from the analysis of message valence and the impact of prior knowledge on the generation of responses.

This study utilized valence (positive, neutral and negative statements) as a dimension in which to analyze message-related statements. Petty and Cacioppo (1986) argue that the valence of thoughts generated may be more reflective of initial attitudes for low involvement participants. Provided that the framed messages contained strong arguments (i.e., argument quality was not manipulated), low involvement participants may not be processing the message carefully but are responding to the task based on initial attitudes (Petty & Cacioppo, 1986). This argument is consistent with the findings in this study that low involvement participants generated fewer positive statements in support of the message advocacy. In addition, high involvement participants who already
engage in breast self-examination behaviors indicated that they had previously been exposed to this information. This factor may be masking the degree of message processing between high and low involvement participants.

Overall, based on the message processing scale, high involvement women processed the message more carefully than low involvement women. However, by using issue involvement as a proxy variable for depth of processing, we are assuming that there are no variations in depth of processing within each category (i.e., high and low involvement). This assumption may be problematic because there may be an interaction with involvement on variables such as knowledge and efficacy. For example, in this study there were high involvement women who performed breast self-examinations regularly and those women who did not. These women who regularly perform breast self-examinations most likely have greater knowledge about breast cancer and the self-examination procedure. Under this circumstance, these high involvement women may not have paid close attention to the message.

**Self-Efficacy and Message Processing**

Hypothesis two predicted that high involvement women with low breast self-examination self-efficacy would process health messages more defensively than high involvement women with high breast self-examination self-efficacy. In this study, defensively processed health messages were assessed through content analysis of the thought-listing task. Defensive processing was measured by statements that were counter to the message’s recommendations and reflected denying having risk factors and minimization of the significance of a health issue (Eagly & Chaiken, 1993; Hovland,

In this sample, it was confirmed that women who generated more defensive statements had lower breast self-examination self-efficacy compared to women who processed the messages objectively. Previous research on responses to health messages suggested that low self-efficacy is a significant predictor of maladaptive responses (McMahan, Witte, & Meyer, 1998; Witte, 1992). Women with low self-efficacy engage in greater self-protective behaviors when they feel that they are unable to perform the recommendations advocated in the message. In response to low self-efficacy, recipients of the message act to reduce the fear, rather than the danger through defensive motivation (Witte, 1992). Overall, the results support predictions derived from the extended parallel process model (Witte, 1992).

Message Framing and Message Processing

Hypothesis three predicted that, regardless of message frame, defensive processors would be equally unresponsive to gain and loss framed health messages. In addition, an interaction was hypothesized such that loss frame messages would be more effective than gain frame messages for women who objectively processed the messages. Contrary to what was hypothesized, no framing-related differences appeared for objective processors. Objective processors responded positively to both gain and loss frame messages as reflected in their attitude measure. For defensive processors, an examination of the cell means suggests that they were persuaded by the messages. However, this investigation found that defensive processors responded more negatively to loss frame messages than to gain frame messages. The fact that they did not have high self-efficacy
suggests that the loss frame message may have invoked negative emotions that result in maladaptive responses.

The findings in this study did not support the predictions derived from prospect theory (Kahneman & Tversky, 1979; Rothman, & Salovey, 1997). In fact, the findings were in the opposite direction as predicted. The assumptions of prospect theory center on the motivation to perform risk-taking behaviors. In terms of breast cancer, it is considered risky to perform breast self-examinations because of the possibility of finding a lump. The theory argues that, for health detection behaviors, loss frame messages are more effective than gain frame messages at motivating attitude and behavior change. The loss frame messages promote risk-taking behaviors by virtue of describing the potential losses incurred by not performing a health-related behavior. Previous framing research has found small effects for BSE message exposure (Meyerowitz & Chaiken, 1987) to no effects (Laylor & Hailey, 1990). Possible explanations for why no effect was found are discussed below.

As discussed earlier, the original conceptualization of framing proposed by Kahneman and Tversky (1979) focused on a broad public health level. Under that scenario, participants in a study are typically asked to select their preference among two factually equivalent options. The manipulation of factually equivalent options is operationalized numerically (e.g., out of 600 people you can either save 200 people or 400 people will die). In comparison, this study operationalized factually-equivalent statements in terms of gains or losses associated with engaging in a behavior or not engaging in a behavior. Future research should be cognizant that gain and loss frame
messages may not be perceived as factually equivalent (i.e., people might give greater weight to loss frame messages than to gain frame messages). In addition to the issue of factual equivalence, this study focused on self-directed behaviors rather than messages focusing at a broad public health level. These conceptual and methodological differences are important in delineating the characteristics unique to risky choice framing (e.g., Asian disease study) and individual goal framing (e.g., self-directed health behaviors) (Levin, Schneider, & Gaeth, 1998).

A central characteristic of loss frame messages is the description of negative outcomes that one would incur by not following health-related recommendations. While the pilot test data showed no significant differences between gain and loss frame messages in terms of negative emotional arousal, the loss frame messages were less effective than the gain frame messages in terms of positive attitude changes toward the importance of breast self-examination for defensive processors. One possible explanation for these results could be derived from the extended parallel process model (EPPM) (Witte, 1992). This dual-processing model suggests that exposure to a health message initiates a primary appraisal, otherwise called a “threat evaluation.” Women evaluate the perceived severity and perceived susceptibility of the health threat. If they feel that the threat is meaningful (i.e., both severe and that they are susceptible), they will instigate a secondary appraisal to assess the efficacy of the recommended response. When a threat is considered high, recipients of health messages can either engage in danger-control or fear control responses. According to the EPPM, should both response efficacy and self-efficacy be high, women should engage in adaptive responses by rehearsing and
following the message’s recommendations. On the other hand, fear control responses are maladaptive in nature and are manifested in defensive avoidance reactions. People with low efficacy (either self or response efficacy) will instigate fear control processes when they feel that they either cannot perform the recommended behavior or that the recommended behavior will not alleviate the threat. In this sample, there were no differences in response efficacy. Women generally felt that breast self-examinations were an effective method for detecting breast lumps. In terms of self-efficacy, as discerned in hypothesis two, women who felt they were unable to effectively perform breast self-examinations engaged in greater defensive processing.

An additional analysis was conducted to determine whether the framing effect would disappear with low involvement subjects. As discussed earlier, Petty and Cacioppo (1986) argue that low involvement participants have less motivation to process messages carefully. The lack of motivation translates into less careful scrutiny of messages. If the message-recipient is not focusing on the merits of the arguments, it is expected that the framing effect would not appear for low issue involvement participants. Maheswaran and Meyers-Levy (1990) further argue that previous research suggested that negatively framed information would be effective only if people were involved and were attending to and carefully processing the message’s ramifications. In this sample, among those women who were low involvement, there was evidence of a framing effect in terms of perceived susceptibility. Low involvement women who received a loss frame message felt more susceptible to breast cancer than low involvement women who received a gain frame message. The presence of a framing effect for low involvement women suggests
that these women may have paid attention to the “cues” associated with the message. In other words, women who do not pay careful attention to the arguments in the message may focus more peripherally on “cues” in the message (e.g., credible authors, the number of arguments, and potentially the frame used). If low involvement women are not reading the messages as carefully, the valence of the frame appears to have function as a cue.

Attitudes, Behavioral Intentions, and Behaviors

The relationship between attitudes, behavioral intentions, and behaviors has been under investigation for several decades under the theory of reasoned action (Fishbein & Ajzen, 1975). According to the theory, a person’s behavior is determined by his or her behavioral intentions. Fishbein and Ajzen (1981) argue that provided that there are no unforeseen events that result in a barrier to performance, behavioral intentions are considered the single best predictor of behaviors. Behavioral intentions are determined, in part, by a person’s attitude toward the behavior in question. In this study, based on the theory of reasoned action, hypothesis four predicted that breast self-examination attitudes would be predictive of behavioral intentions. Hypothesis five predicted that people with greater behavioral intentions would perform breast self-examinations more often than people who had weaker intentions to perform the behavior. Both of these hypotheses were supported. In this sample, women who held more positive post-test attitudes toward breast self-examinations had greater intentions to perform breast self-examinations in the future. In addition, among participants in the follow-up sample, those who performed breast self-examinations in the two months following the initial survey reported significantly greater behavioral intentions in the post-test survey. The findings in this
study were consistent with Fishbein and Ajzen's (1975) theory of reasoned action.

Limitations

There were certain limitations to this study that should be addressed in terms of the measures, the sample, and the message stimuli. Each will be discussed further.

First, research on fear appeals suggests that fear arousal will motivate the efficacy appraisal of the message. This study tried to assess the level of negative emotional arousal associated with each message in the pilot test and found no significant differences between the four types of messages (two gain and two loss). While no significant differences were found in the pilot test, it is noted that the pilot test consisted of college students rather than the jury pool. The null findings may be a result of the students' lack of threat associated with breast cancer. In other words, the women in the pilot test had lower perceived susceptibility to breast cancer compared to the main study participants. Because perceived susceptibility was lower, the consequences of not performing breast self-examinations may not have seemed as negative due to the reduced vulnerability to the disease. It would have been ideal to include a measure of arousal in the main study to confirm whether "negative emotions" or "fear" moderated the relationship between message processing and attitudes.

Second, the sample for this study came from the Pima County jury pool participants and communication student participants. Because the researcher was unable to track jury pool participants for a follow-up survey due to anonymity reasons, the results from the follow-up survey reflect only the responses from the communication student participants. It would have been better to assess follow-up attitudes, behavioral
intentions, and behaviors for the jury pool participants to better reflect a representative sample of the population.

Finally, while the manipulation of the message frames appears to have been strong enough to find framing effects, it would have been interesting to include a control group whom did not receive the framed message stimuli. By doing this, it would have been possible to determine whether message framing was an essential feature of the message.

Directions for Future Research

In addition to the suggestions for future research previously mentioned, there are several avenues that should be explored that focus on the specific health behaviors in relation to framing, the nature of biased processing, and the effects of public awareness on framing.

First, while previous research has classified health behaviors into general categories (i.e., prevention, detection, and tertiary behaviors), other more micro aspects of the health issues may also affect message processing and message framing. As suggested by Rothman et al. (1993), "...as future research is completed, it may show to be too gross a distinction between behavior types. As there are clear differences between prevention and detection behaviors in general, there are probably equally important differences that can be drawn within each of these behavioral domains" (p. 431). One dimension may be in whether the detection health behavior is performed once or repeatedly (Rothman et al., 1993). For example, detection behaviors such as breast self-examinations and testicular self-examinations are performed regularly. Other detection
behaviors are typically performed once. For example, if a person may suspect that he or she has HIV-AIDS or a sexually transmitted disease, he or she will go in for a test and receive positive or negative results. In this case, there is no need for additional tests provided that one's activities related to the health threat has not changed (e.g., no subsequent unprotected sexual activity or needle use).

In addition to the number of times a health detection behavior should be performed, another dimension may be the fate or outcome associated with the results of a test. The fate for a person who is having a cholesterol screening is significantly less compared to someone who may be having a cancer screening. The negative results of a cholesterol screening may not be perceived as consequentially life threatening compared to someone diagnosed with cancer. A person going in for an HIV-AIDS test has significantly more risk perceptions than a person being tested for a curable sexually transmitted disease.

Second, the significant findings for biased message processing warrants further investigation. In terms of defensive processing and health messages, an abundance of research suggests that individuals manifest certain biases in how they evaluate and respond to goal-relevant, health-related information. As discussed earlier, self-definitional attitudes stem from social identities such as gender, ethnicity, and one's profession; and beliefs concerning personal attributes such as intelligence, health, and social sensitivity (Chaiken, Giner-Sorolla, & Chen, 1996). Defensive processing may function to fend off thoughts of one's mortality (Solomon, Greenberg, & Pyszczynski, 1991). As stated by Croyle et al. (1997), "the biases in health-related judgments are but a
special instance of a general tendency for individuals to minimize, derogate, or forget information that threatens the self-concept” (p. 283). Previous research has found that, consciously or unconsciously, people are motivated to preserve the self-concept. In terms of health, defending the self-concept entails strengthening the idea that one’s health is not in jeopardy (Chaiken et al., 1996). Based on previous research and consistent with the current findings, the relationship between defensively biased message processing and health attitudes appears to be mediated by the level of efficacy a person maintains (Witte, 1992). This study did not attempt to discern what form of defensive processing would be utilized to maintain the health-related self-concept. Specific manifestations of defensive processing should be investigated in future research to provide insight into the cognitive responses related to goal-threatening health messages.

In terms of message processing, it would be valuable for future research to further assess the three methods of measuring depth of message processing (i.e., thought listing, reading time, and the scale). The fact that each method provided different results suggests that assessing the depth of message processing is more complicated than research has suggested in the past.

Finally, in the past decade, public awareness about breast cancer and behaviors used for the early detection of breast cancer (such as BSE) has exploded. National events such as “Breast Cancer Month” (which falls in October) and the annual “Susan G. Komen Breast Cancer Run” are events that elevate breast cancer in the public eye. In addition to these events, there has been an increase in the number of web pages on the internet that are devoted to “breast cancer” (both in terms of education/prevention and
social support groups) (Davison, Pennebaker, & Dickerson, 2000). A closer examination
of these web pages reveals that the popular media frame breast cancer and breast self-
examination messages in gain-frame language more often than loss-frame messages.
However, this evidence is anecdotal and to date there is no research that has
systematically examined this specific issue. In terms of this study, women indicated a
high awareness of the breast self-examination (99.4%) and had previously been taught
how to perform breast self-examinations (90.3%). Therefore, this pamphlet may have
functioned as a reminder to perform the behavior (i.e., bolstering already positive
attitudes) rather than initially informing participants about the health risk. Previous
research on BSE and message framing was conducted in the mid-eighties at a time when
media coverage about breast cancer and breast self-examinations was not as extensive as
it is today. Therefore, the novelty of the health issue may have contributed to producing
the framing effect in earlier investigations. This should be an important consideration for
future research testing the propositional framework.

Conclusions

Despite these limitations, this study contributes several interesting and valuable
findings. First, it was found that defensive processors had less self-efficacy for
performing BSE than objective processors. Second, this was one of the first studies that
incorporated message processing (objective and defensive) and issue involvement in
order to understand the effects of framing on a specific health-detection behavior. Third,
the study found effects consistent with the EPPM (Witte, 1992) and the theory of
reasoned action (Fishbein & Ajzen, 1975). However, there was no direct evidence of fear.
Finally, the follow-up survey found a decay in attitudes that, unfortunately, is typically found in experimentally manipulated research (Cook & Flay, 1978). Overall, these findings have important implications for the promotion of disease detection behaviors.

The implications of this research for health promotion suggest the need for practitioners to be cognizant of how they develop and present health messages. The design should be based on theory that reflects how individuals process and respond to health-threatening information. By strategically implementing messages that frame health consequences, health care professionals should be able to further obtain compliance with those recommendations. More specifically, implications of this study provide direction for high and low involvement women and women with low self-efficacy.

The research findings suggest that message framing had little impact on women who perceive breast cancer as a low involvement issue. Based on this research, women who were less involved with the issue did not read the messages as carefully. To a certain degree, all women are at risk for breast cancer. Therefore, messages targeting low involvement women should demonstrate the relevance of the issue through perceived susceptibility to breast cancer. This could be accomplished by creating pull-quotes emphasizing susceptibility. The pull-quotes will initially attract the attention of the peripheral processing readers to motivate them to further read the message. While suggestions are made for low issue involvement women, recommendations for high involvement women focus on the role of self-efficacy in message designs.

Consistent with previous research, health campaign designs should emphasize the efficacy of performing the health behavior (Rimal, 2000). The research findings here
suggest that without adequate self-efficacy, women will opt to engage in maladaptive self-protective behaviors in the form of minimization or denial of the health issue. In this study, the phrasing of the procedures was inadequate in teaching women how to effectively perform breast self-examinations for women with low self-efficacy. Bandura (1997) suggests that visual modeling in the form of visual drawings to accompany the text is one method that would enhance self-efficacy. In terms of self-efficacy and message framing, loss frame messages proved less effective for women who had low self-efficacy and no framing-related differences were found for women who had high breast self-examination self-efficacy. Based on these results, health practitioners should avoid using loss frame messages if self-efficacy in the recipient is low. Health campaign materials aimed at highly susceptible women who have little previous experience performing breast self-examinations should promote the benefits of engaging in the health behavior rather than the negative consequences of not performing the behavior. By doing this, the health care professional can avoid inducing message-related maladaptive responses. Overall, it is important to have knowledge about the target audience and their attitudes and behaviors in order to tailor effective health messages. By following these recommendations, compliance with breast self-examination persuasive messages should be enhanced.
APPENDIX A:

HUMAN SUBJECTS APPROVAL
RE: The Effects of Message Processing and Message Framing on Cognitive and Behavioral Outcomes: An Examination of Breast Self-Examination Messages

Dear Ms. Umphrey,

We received documents concerning your above cited project. Regulations published by the U.S. Department of Health and Human Services [45 CFR Part 46.101(b)(2)] exempt this type of research from review by our Committee.

Thank you for informing us of your work. If you have any questions concerning the above, please contact this office.

Sincerely,

David G. Johnson, M.D.
Chairman
Human Subjects Committee

DG/JS
cc: Departmental/College Review Committee
APPENDIX B:

MESSAGE MANIPULATIONS
The early detection of breast cancer can save your life.

Breast cancer is one of the most common cancers among women, accounting for one out of every three cancer diagnoses in the United States. The American Cancer Society recommends that all women over age 20 perform monthly breast self-examinations.

Did you know that ninety percent (90%) of breast lumps are found through breast self-examination (BSE), making this one of the best ways to find breast cancer early, when the disease is most treatable.

By doing BSE monthly, you will know what your normal healthy breast feels like and you will be able to recognize any changes in your breast tissue.

Research shows that women who do BSE increase their chances of detecting a lump early, when it is smaller and has not spread (in situ).

Ultimately by engaging in BSE you may be increasing your chances of surviving breast cancer. The earlier the detection the more likely you will have a favorable prognosis and successful treatment. This knowledge you will gain can only help you.

Remember, early detection can save your life.

Please read and follow the directions on the right to learn the American Cancer Society's instructions on how to properly perform monthly breast self-examinations.

Start by standing in front of a mirror with your shirt off and check your breasts for changes in shape and color (e.g. dimpling, skin changes, nipple discharge, and puckering).

Next, lie down on a bed with a towel under your right shoulder; raise your right arm above your head. Use the pads of the three middle fingers of the left hand and examine the entire breast area for any lumps or changes. Check from the underarm to the lower bra line, across the breast bone, up to collar bone, and back to the armpit. More than half of breast cancers are found near the armpit. Check your left breast with your right hand in the same way.

If you see or feel any lumps or changes in your breasts, tell your doctor immediately.
Breast Cancer Detection

Late detection of breast cancer can end your life prematurely.

Breast cancer is one of the most common cancers among women, accounting for one out of every three cancer diagnoses in the United States. The American Cancer Society recommends that all women over age 20 perform monthly breast self-examinations.

Did you know that ninety percent (90%) of breast lumps are found through breast self-examination (BSE), making this one of the best ways to find breast cancer early, when the disease is most treatable.

By not doing BSE monthly, you will not know what your normal healthy breast feels like and you will be unaware of any changes in your breast tissue.

Research shows that women who do not perform BSE increase their chances of detecting a lump when it’s too late, when it is larger and may have spread.

Ultimately by not engaging in BSE you may be increasing your chances of dying from breast cancer. The later the detection the more likely you will have an unfavorable prognosis and unsuccessful treatment. This lack of knowledge can only hurt you.

Remember, late detection can end your life prematurely.

Please read and follow the directions on the right to learn the American Cancer Society’s instructions on how to properly perform monthly breast self-examinations.

BSE Procedures

Start by standing in front of a mirror with your shirt off and check your breasts for changes in shape and color (e.g. dimpling, skin changes, nipple discharge, and puckering).

Next, lie down on a bed with a towel under your right shoulder; raise your right arm above your head. Use the pads of the three middle fingers of the left hand and examine the entire breast area for any lumps or changes. Check from the underarm to the lower bra line, across the breast bone, up to collar bone, and back to the armpit. More than half of breast cancers are found near the armpit. Check your left breast with your right hand in the same way.

If you see or feel any lumps or changes in your breasts, tell your doctor immediately.
Breast Cancer Detection

Late detection of breast cancer can prevent you from saving your life.

Breast cancer is one of the most common cancers among women, accounting for one out of every three cancer diagnoses in the United States. The American Cancer Society recommends that all women over age 20 perform monthly breast self-examinations.

Did you know that ninety percent (90%) of breast lumps are found through breast self-examination (BSE), making this one of the best ways to find breast cancer early, when the disease is most treatable.

By not doing BSE monthly, you will not know what your normal healthy breast feels like and you will not be able to recognize any changes in your breast tissue.

Research shows that women who do not do BSE decrease their chances of detecting a lump early, when it is smaller and has not spread (in situ).

Ultimately by not engaging in BSE you may be decreasing your chances of surviving from breast cancer. The later the detection the less likely you will have a favorable prognosis and successful treatment. This lack of knowledge can not help you.

Remember, late detection of breast cancer can prevent you from saving your life.

Please read and follow the directions on the right to learn the American Cancer Society’s instructions on how to properly perform monthly breast self-examinations.

BSE Procedures

Start by standing in front of a mirror with your shirt off and check your breasts for changes in shape and color (e.g. dimpling, skin changes, nipple discharge, and puckering).

Next, lie down on a bed with a towel under your right shoulder; raise your right arm above your head. Use the pads of the three middle fingers of the left hand and examine the entire breast area for any lumps or changes. Check from the underarm to the lower bra line, across the breast bone, up to collar bone, and back to the armpit. More than half of breast cancers are found near the armpit. Check your left breast with your right hand in the same way.

If you see or feel any lumps or changes in your breasts, tell your doctor immediately.
Breast Cancer Detection

The early detection of breast cancer can prevent you from ending your life prematurely.

Breast cancer is one of the most common cancers among women, accounting for one out of every three cancer diagnoses in the United States. The American Cancer Society recommends that all women over age 20 perform monthly breast self-examinations.

Did you know that ninety percent (90%) of breast lumps are found through breast self-examination (BSE), making this one of the best ways to find breast cancer early, when the disease is most treatable.

By doing BSE monthly, you will know what your normal healthy breast feels like and you will not be unaware of any changes in your breast tissue.

Research shows that women who do BSE decrease their chances of detecting a lump when it’s too late, when it is larger and may have spread.

Ultimately by engaging in BSE you may be decreasing your chances of dying from breast cancer. The earlier the detection the less likely you will have an unfavorable prognosis and unsuccessful treatment. This knowledge you will gain can not hurt you.

Remember, early detection can prevent you from ending your life prematurely.

Please read and follow the directions on the right to learn the American Cancer Society’s instructions on how to properly perform monthly breast self-examinations.

BSE Procedures

Start by standing in front of a mirror with your shirt off and check your breasts for changes in shape and color (e.g. dimpling, skin changes, nipple discharge, and puckering).

Next, lie down on a bed with a towel under your right shoulder; raise your right arm above your head. Use the pads of the three middle fingers of the left hand and examine the entire breast area for any lumps or changes. Check from the underarm to the lower bra line, across the breast bone, up to collar bone, and back to the armpit. More than half of breast cancers are found near the armpit. Check your left breast with your right hand in the same way.

If you see or feel any lumps or changes in your breasts, tell your doctor immediately.
APPENDIX C:

WOMEN'S HEALTH MESSAGE SURVEY
My name is Laura Umphrey and I am conducting a research study to complete my dissertation at the University of Arizona. This study is designed to examine people’s attitudes related to a variety of women’s health topics.

Currently, I am designing different cancer self-examination health messages. If you participate in this study you will be asked to read one of several health messages and then provide your opinions and reactions to the message. In addition, you will be asked to provide some basic demographic information about yourself (e.g., age, sex, and education level). Your assistance with this project is greatly appreciated. Your participation is strictly voluntary and you may stop your participation at any time. I guarantee you complete confidentiality.

Your responses will be combined with those of other respondents to provide general information about health attitudes. Your name does not and will not appear anywhere linked with the actual survey or as data entered into the computer (no names will be entered). If you complete the questionnaire it will be assumed that you consent to have your responses included with those of others. If you have questions regarding your rights as a research subject, please call the Human Subjects Research Office at 626-6721. If at any time you have questions about this study please contact Laura Umphrey at 621-3941.

- Please answer ALL questions.
- Please do not look ahead or behind in the survey as you fill it out.
- Please give HONEST answers.
- Please remember that your participation is voluntary and you may stop at any time.
- Please remember that all answers are anonymous and confidential.

Thank you for your participation.
Now, please turn to the next page and follow the instructions provided.
SECTION 1: I am interested in finding out your attitudes about health and healthy behaviors. The following section contains questions about different health behaviors. There are no right or wrong answers so please answer honestly.

How often do you engage in AEROBIC physical activity? (Aerobic means that your heart rate is continuously elevated for a period of at least 20 minutes and you are breathing heavily during that time.)

- Every day
- 1-2 times/week
- 3-5 times/week
- Seldom/Never

Has a medical doctor ever examined your breasts for signs of lumps?

- YES
- NO
- UNCERTAIN

Have you previously experienced any medical problems with your breasts?

- YES
- NO
- UNCERTAIN

Have you ever heard of the breast self-examination procedure?

- YES
- NO
- UNCERTAIN

Have you been taught how to perform breast self-examinations?

- YES
- NO
- UNCERTAIN

If so, who taught you?

- "Doctor taught me"
- "Family member taught me."
- "Friend taught me."
- "I read a pamphlet or brochure."
- Other (Please specify:________________)

Please indicate the number of times in the past 12 months that you have performed breast self-examinations (not including doctor visits). If you have never performed a breast self-exam, put zero.

- Number of times:________

Has anyone in your family ever had breast cancer?

- YES
- NO
- UNCERTAIN
Have you ever had breast cancer? YES NO UNCERTAIN
Have any of your friends or co-workers ever developed breast cancer? YES NO UNCERTAIN
Do you have any children? YES NO
If yes, at what age did you have each child? Age(s): ________________
How often do you have a cervical exam/pap smear? ___Once a year ___Every two years ___Every 5 years ___I have never had an exam
Do you feel you are getting enough exercise? YES NO UNCERTAIN
Have you ever had a mammogram? YES NO UNCERTAIN
Have you been on a diet in the last FIVE years (to lose weight or control a health problem) YES NO UNCERTAIN
How often do you floss your teeth? ___Once a day or more ___3-6 times per week ___Less than 3 times a week ___Never
What is your smoking status? ___current smoker ___ex-smoker ___non-smoker
Have you ever talked to a medical doctor or nurse about breast cancer—what it is and how to prevent it? YES NO UNCERTAIN
For each of the following sources, please indicate how much information about breast cancer you received in the last year. (E.g., count each time you believe that you have seen information).
___Health care professionals (e.g. physicians or nurses)
___Brochures, leaflets, pamphlets from a doctor’s office
___The mass media (TV, magazines, radio, newspapers)
___ Other (Please specify: __________)
SECTION 2: The following statements are about breast cancer. Please answer each of the questions as accurately as possible. Please circle the response that you believe is the correct answer.

1. Which of the following is the biggest known risk factor for breast cancer?
   A. Age  B. Diet  C. Family history  D. Exposure to the hormone estrogen

2. What is the highest risk age group for breast cancer?
   A. 13-19 years old  B. 20-34 years old  C. 35-50 years old  D. 50 years old and up

3. Who is most likely to develop breast cancer?
   A. Asian-Americans  B. African-Americans  C. Caucasian-Americans  D. Hispanic-Americans

4. Most breast cancers are discovered by
   A. The patient either by accident or self-exam
   B. The doctor performing the breast exam at a yearly physical
   C. The doctor using a mammogram

5. How often should a breast self-examination be done?
   A. Once a week  B. Once a month  C. Every six months  D. Once a year

6. Most tumors/lumps in the breast are
   A. Malignant (cancerous)  B. Benign (not cancerous)  C. The distribution is about 50-50

7. Which of the following is a common symptom of breast cancer?
   A. A lump inside the breast  B. Blood in the urine  C. Pain in the breast  D. Swollen or enlarged breasts

SECTION 3: Breast cancer is an issue that affects people to varying degrees. Please answer the following two questions about breast cancer.

1. How important is this issue to you today?
   Very important  1  2  3  4  5  Not important

2. How relevant is this issue to you today?
   Very relevant  1  2  3  4  5  Not relevant
People have different opinions about certain issues. Please rate the statement below on the following scale:

**Doing a monthly breast self-examination is:**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inconvenient</td>
</tr>
<tr>
<td>Not at all useful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely Useful</td>
</tr>
<tr>
<td>Extremely Unfavorable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extremely favorable</td>
</tr>
<tr>
<td>Common</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Uncommon</td>
</tr>
<tr>
<td>Worthless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Worthwhile</td>
</tr>
<tr>
<td>Not embarrassing at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extremely embarrassing</td>
</tr>
<tr>
<td>Not risky at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Risky</td>
</tr>
<tr>
<td>Not reassuring at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extremely reassuring</td>
</tr>
<tr>
<td>Scary</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Not scary at all</td>
</tr>
<tr>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Easy</td>
</tr>
<tr>
<td>Frightening</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Not frightening</td>
</tr>
</tbody>
</table>
Doing a monthly *breast self-examination* is:

<table>
<thead>
<tr>
<th>Hard to remember</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Easy to remember</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not worth my time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Worth my time</td>
</tr>
<tr>
<td>Not intimate at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Too intimate</td>
</tr>
<tr>
<td>Extremely effective</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely ineffective</td>
</tr>
<tr>
<td>Comforting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Discomforting</td>
</tr>
<tr>
<td>Useless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Useful</td>
</tr>
<tr>
<td>Time consuming</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Quick</td>
</tr>
<tr>
<td>Extremely bad idea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely good idea</td>
</tr>
<tr>
<td>Not at all important</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely important</td>
</tr>
</tbody>
</table>

SECTION 4: The next page contains a message concerning a woman's health issue. I am interested in knowing how much time people spend reading pamphlets. Please look at a clock and record the current time in the space provided below. Please turn the page and read the pamphlet. Once you have finished reading the pamphlet, turn the page and answer the questions that follow.

What time is it?: ___:___
[INSERT BROCHURE HERE]
What time is it now? __:____

SECTION 5: In this section, please write down all of the thoughts that crossed your mind and how you were feeling as you read the pamphlet. Please NUMBER your thoughts when you have listed all of them.
SECTION 6: Different people respond to and process messages in their own ways. Please think about the message that you just read, and respond to the statements below, indicating your level of agreement or disagreement with each item by circling the appropriate response based on the following scale: Strongly Disagree = SD Disagree = D Neither Agree nor Disagree = N, Agree = A Strongly Agree = SA

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The issue discussed in the message was interesting to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>While reading, I concentrated on the arguments the author made.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>My mind kept wandering as I read the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I was interested in what the author had to say.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>While reading the message, I paid close attention to each point that was made.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>While reading, I didn't let myself get distracted from focusing on the message content.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I didn't find the issue addressed in the message very interesting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I wasn't all that motivated to read the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>While reading the message, thoughts about other things kept popping up in my head.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I didn't really care what the author had to say about the topic.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>My mind did not wander as I read the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I was motivated to read the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I didn't concentrate very hard on the arguments made by the author.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I didn't pay close attention to the author's arguments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>My emotions got in the way of my reading the message objectively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I was looking for flaws in the author's arguments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I tried not to let my personal views on the subject influence my reading of the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I found myself actively agreeing with the author's points.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I tried to remain impartial as I read the message.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>My prior beliefs about the issue prevented me from reading the message objectively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I found myself actively disagreeing with the author.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
22. I tried not to let how I feel about the issue influence how I read the message. 

23. While reading, I found it difficult to objectively consider the message arguments. 

24. It was easy to agree with the arguments made in the message. 

25. The way I already feel about the topic guided how I read the message. 

26. I found myself paying more attention to some points in the message than others. 

27. As I read the message, I was looking for ways in which the author and I agreed. 

28. I didn’t let how I feel about the issue influence how I read the message. 

SECTION 7: People have different opinions about certain issues. Please rate the statement below on the following scale:

Doing a monthly breast self-examination is:

- Convenient 1 2 3 4 5 Inconvenient
- Not at all useful 1 2 3 4 5 Extremely Useful
- Extremely Unfavorable 1 2 3 4 5 Extremely favorable
- Common 1 2 3 4 5 Uncommon
- Worthless 1 2 3 4 5 Worthwhile
- Not embarrassing at all 1 2 3 4 5 Extremely embarrassing
- Not risky at all 1 2 3 4 5 Risky
- Not reassuring at all 1 2 3 4 5 Extremely reassuring
- Scary 1 2 3 4 5 Not scary at all
- Hard 1 2 3 4 5 Easy
Doing a monthly breast self-examination is:

<table>
<thead>
<tr>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frightening</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Not frightening</td>
</tr>
<tr>
<td>Hard to remember</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Easy to remember</td>
</tr>
<tr>
<td>Not worth my time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Worth my time</td>
</tr>
<tr>
<td>Not intimate at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Too intimate</td>
</tr>
<tr>
<td>Extremely effective</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely ineffective</td>
</tr>
<tr>
<td>Comforting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Discomforting</td>
</tr>
<tr>
<td>Useless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Useful</td>
</tr>
<tr>
<td>Time consuming</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Quick</td>
</tr>
<tr>
<td>Extremely bad idea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely good idea</td>
</tr>
<tr>
<td>Not at all important</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Extremely important</td>
</tr>
</tbody>
</table>

**SECTION 8:** The following statements reflect opinions some people have about breast cancer, breast lumps, and detection methods. Please indicate whether you strongly disagree, disagree, neither agree or disagree, agree, or strongly agree with each of the statements below.

Breast cancer is a hopeless disease. SD D N A SA  
The presence of a lump indicates a hopeless condition. SD D N A SA  
Breast cancer is a frightening disease. SD D N A SA  
Breast cancer is a dangerous disease. SD D N A SA  
Finding a lump in your breast is frightening. SD D N A SA  
Breast lumps are dangerous. SD D N A SA  
Breast lumps are fatal. SD D N A SA  
I believe that breast cancer is a severe disease. SD D N A SA  
I believe that breast cancer is significant. SD D N A SA
I believe that breast cancer is a serious disease. SD D N A SA

It is likely that I will get breast cancer in my lifetime. SD D N A SA

It is likely that I will get breast cancer in the next few (3) years. SD D N A SA

It is possible that I will get breast cancer in the next few (3) years. SD D N A SA

I am highly susceptible to breast cancer. SD D N A SA

Breast self-examinations are highly effective in the detection of breast cancer. SD D N A SA

It is risky NOT to do breast self-examinations. SD D N A SA

Performing breast self-examinations could significantly affect one's medical outcome. SD D N A SA

Breast self-examination is an effective method for the early detection of breast cancer. SD D N A SA

I feel confident that I can perform breast self-examinations effectively. SD D N A SA

Performing breast self-examinations would enable me to detect a lump in my breasts. SD D N A SA

Doing breast self-examinations is risky. SD D N A SA

I am confident in my ability to detect changes in my breasts. SD D N A SA

I am confident that I know the correct procedures for conducting breast self-examinations. SD D N A SA

I feel well informed about how to perform breast self-examinations. SD D N A SA

I will perform a BSE in the next 8 weeks. SD D N A SA

I will perform a BSE in the next couple of months. SD D N A SA

I will NOT perform a BSE in the next 8 weeks. SD D N A SA
1. How harmful do you believe are breast lumps?
   
   No harm  1  2  3  4  5  Extremely devastating
   
   at all

2. How harmful do you believe is breast cancer?
   
   No harm  1  2  3  4  5  Extremely devastating
   
   at all

3. What is the likelihood that you will be diagnosed with breast cancer in your *lifetime*?
   
   No chance  1  2  3  4  5  Certain to happen
   
   at all

3. What is the likelihood that you will be diagnosed with breast cancer *in the next 3 years*?
   
   No chance  1  2  3  4  5  Certain to happen
   
   at all

4. How many times do you *realistically* intend to perform breast self-examinations in the next 12 months?
   
   (CIRCLE ONE RESPONSE)

   Over 12 times  11 times  10 times  9 times  8 times  7 times
   6 times  5 times  4 times  3 times  2 times  1 time  0 times

5. Please check here if you would be interested in receiving additional information about performing breast self-examinations. ___
Please provide the following information about yourself:

What is your age? _____ years  Gender: M / F

What is your ethnic origin?
____ Hispanic  ____ Asian/Pacific Islander  ____ African American
____ Anglo/White  ____ Native American  ____ Other (Specify: ____________________)

What is the highest level of education that you have completed?
____ High School  ____ Some college  ____ College Degree  ____ Vocational Degree
____ Professional Degree (M.D.)  ____ Some graduate school  ____ Master's/Ph.D.

What is your marital status?
____ Single  ____ Married  ____ Co-habitating  ____ Divorced  ____ Widowed

THANK YOU FOR YOUR PARTICIPATION! The last page contains a description of the study.
Thank you very much for your participation in this study on women’s health messages. Now that you are done answering the questions in the survey I would like to tell you what this study is about.

This study was done to examine whether the type of messages used to inform women about breast cancer and breast self-examinations makes a difference in whether or not they would do a breast self-examination. Half of the messages talked about the benefits of doing a breast self-examination and the other half talked about the potential drawbacks of not doing breast self-examinations.

Specifically, this study set out to examine whether these differences in how the health messages were framed would be effective in persuading people to perform breast self-examinations. It is hoped that by examining these issues we can create more effective messages that will help health care professionals and health educators design the most effective health messages possible. If you have any questions regarding this study, please contact Laura Umphrey at 621-3941.
REFERENCES


Cacioppo, J. T., Harkins, S. G., & Petty, R. E. (1981). The nature of attitudes and
cognitive responses and their relationships to behavior. In R. E. Petty, T. M. Ostrom, &
T. C. Brock (Eds.), *Cognitive responses in persuasion* (pp. 31-53). Hillsdale, NJ:
Erlbaum.

Cameron, L. D. (1997). Screening for cancer: Illness perceptions and illness
worry. In K. J. Petrie & J. A. Weinman (Eds.), *Perceptions of health and illness* (pp. 291-


Chaiken, S. (1980). Heuristic versus systematic information processing and the
use of source versus message cues in persuasion. *Journal of Personality and Social
Psychology, 39*, 752-766.

Olson, & C. P. Herman (Eds.), *Social influence: The Ontario Symposium* (Vol. 5, pp. 3-

impression motives in heuristic and systematic information processing. In P. M.
Gollwitzer & J. A. Bargh (Eds.) *The psychology of action: Linking cognition and
motivation to behavior*. New York: Guilford Press.

detection behaviors in women 35 and over. *Oncology Nursing Forum, 18*, 733-739.


