The Effects of Message Framing on Mammography Utilization

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This experiment compared the effectiveness of gain- versus loss-framed messages to persuade women to obtain mammography screening. One hundred and thirty-three women 40 years and older and not adhering to current guidelines for obtaining mammography screening were assigned randomly to view either gain-framed (emphasizing the benefits of obtaining mammography) or loss-framed (emphasizing the risks of not obtaining mammography) persuasive videos that were factually equivalent. Attitudes and beliefs were measured before and immediately following the intervention. Mammography utilization was assessed 6 and 12 months later. Consistent with predictions based on prospect theory, women who viewed the loss-framed message were more likely to have obtained a mammogram within 12 months of the intervention. These findings suggest that loss-framed messages may have an advantage in the promotion of detection behaviors such as mammography.

Key words: framing, mammography, cancer screening, persuasion, health behavior

Breast cancer is the most frequently occurring cancer and, after lung cancer, the second leading cause of cancer-related death among American women. The American Cancer Society (1993) estimated that in 1993, about 183,000 women were diagnosed with breast cancer in the United States, 46,300 of whom will die of the disease. Detecting breast cancer early is critical to maximizing treatment options and prognosis. Mammography, clinical breast examination by a health professional, and breast self-examination are all thought to be effective in detecting breast cancer early (Wertheimer et al., 1986). Mammography is the most effective screening mechanism available and may be associated with reduced mortality, especially among women over 50 (Baker, 1982; Eddy, Hasselbald, McGivney, & Hendee, 1988; Morrison, Brisson, & Khalid, 1988; Newell, Dodd, & Fink, 1988; Shapiro, 1989; Shapiro, Vanet, Strax, Vanet, & Roesser, 1982; Vernon, Laville, & Jackson, 1990; Wertheimer et al., 1986).

The Framing Postulate of Prospect Theory

The question guiding the present investigation is how best to present the content of a persuasive message concerning the value of regular mammography screening. The framing postulate of prospect theory provides some guiding hypotheses. According to the framing postulate, factually equivalent information concerning risky decisions can be presented as "framed" in one of two ways: as emphasizing potential gains (i.e., benefits or advantages) or potential losses (i.e., risks or disadvantages). Framing manipulations can influence whether people encode the information in terms of gains or losses relative to some psychological reference point, such as current health. People respond differently to information framed as gains or as losses, and the likelihood of choosing a risky option depends on how this option is framed. People tend to be risk averse in the domain of gains. That is, when presented with two options that both emphasize potential benefits or advantages, they tend to avoid risk and prefer the more certain option. However, people tend to be risk seeking in the domain of losses. When presented with two options that both emphasize potential risks or disadvantages, they will tend to choose the risky option. Thus, although people may be presented with factually equivalent information, their preference for certain versus risky options reverses, depending on how these two options are framed. Prospect theory suggests that loss-framed messages are more effective than gain-framed messages in persuading individuals to perform a health behavior that is perceived to be risky (Kahneman & Tversky, 1979, 1982, 1984; Meyerowitz & Chaiken, 1987; Rothman, Salovey, Antone, Kcough, & Martin, 1993; Tversky & Kahneman, 1981; Wilson, Purdon, & Wallston, 1988).

We need to make a distinction between two types of health behaviors—prevention behaviors and detection behaviors—with regard to the influence of framed messages. People may

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respond differently to gain- versus loss-framed messages depending on whether the target behavior is a prevention behavior or a detection behavior. Prevention behaviors prevent the onset of a health problem and include such activities as wearing a seatbelt, applying sunscreen, using a condom, and reducing weight. Detection behaviors, such as breast self-examination, mammography, Pap tests, and colorectal exams, are performed to discover early signs of a disease so that treatment effectiveness and prognosis may be optimized. An important difference between prevention and detection behaviors is their perceived risk. Prevention behaviors are assumed not to be risky; they are performed to minimize risk—the occurrence of disease or accident. Detection behaviors, on the other hand, are perceived as more risky. Although they are performed to minimize long-term risk (e.g., finding disease at an early stage when prognosis is improved), their perceived short-term risks are great (e.g., discovering an abnormality in the breast). Because prospect theory predicts that risk-averse options are preferred in the domain of gains and risky options are preferred in the domain of losses, we expected that gain-framed messages would be more effective in promoting prevention behaviors, a low-risk choice, and that loss-framed messages would be more persuasive in promoting detection behaviors, a riskier choice.

When message framing and preventive health studies are examined in light of whether the target behaviors are prevention or detection oriented, these predictions add some, but not complete, clarity to seemingly discrepant findings. Of the prevention behaviors that have been investigated, use of infant car seats (Christophersen & Gyulai, 1981) and use of sunscreen (Rothman, Salovey, Antone, et al., 1993) are promoted best by gain-framed messages. Investigations of detection behaviors reveal an advantage for loss-framed messages. For example, Meyerowitz and Chaiken (1987) examined the effects of framing on breast self-examination attitudes, intentions, and behaviors among college students. At 4-month follow-up, women who had read a loss-framed pamphlet that emphasized the risks of not performing breast self-examination exhibited more positive attitudes and intentions toward breast self-examination and reported practicing breast self-examination more frequently than women in gain-framed, no-frame, or no-information conditions (see also Meyerowitz, Wilson, & Chaiken, 1991).

The present experiment was, in part, an attempt to corroborate Meyerowitz and Chaiken’s (1987) findings favoring loss-framed information in the promotion of breast cancer detection behaviors. This study attempted to strengthen the design of Meyerowitz and Chaiken in a number of ways. First, mammography use was chosen as the target behavior instead of breast self-examination. Mammography, like breast self-examination, was assumed to be a risky option because when women obtain mammograms they run the risk of receiving bad news about their health (i.e., discovering a lump in their breast). There are advantages to studying mammography over breast self-examination. First, mammography is a more precise behavioral endpoint; because women obtain mammograms only once per year at most, the event is discrete and salient. Furthermore, mammography is considered to be the preferred method for the early detection of breast cancer. Second, our subject population included women 40 years of age and older, the age group for whom breast cancer is personally relevant, involving, and salient. Third, these women were both recruited from and tested at their workplace, a naturalistic setting. This procedure increases the generalizability of the intervention to worksite health promotion programs. Last, we strengthened the manipulation of the independent variable by integrating the framed persuasive statements into an educational program and by using a video format, a medium that is more involving than print and that provides both visual and auditory modes of communication.

### The Present Experiment

The present experiment compared the effectiveness of gain- versus loss-framed messages to persuade women to obtain mammography screening. Women 40 years and older who were not adhering to national guidelines for obtaining mammography screening watched one of two differentially framed educational video presentations on breast cancer and mammography. Women in the gain-framed condition viewed a video that emphasized the benefits of getting a mammogram, and women in the loss-framed condition viewed a video emphasizing the risks of not getting a mammogram. Women’s attitudes and beliefs about breast cancer and mammography were measured before and immediately after the intervention. Whether women actually obtained mammograms was assessed both 6 months and 12 months following the intervention. In accordance with the framing postulate of prospect theory, women in the loss-framed condition were expected to be more likely to obtain a mammogram than women in the gain-framed condition.

### Method

#### Participants

The eligible sample consisted of female employees of a large northeastern utility company (employing more than 11,000 people) who were at least 40 years of age, who had never been diagnosed with breast cancer, and who had obtained no more than half the number of mammograms recommended for someone of their age.\(^1\) Of 181 interested and eligible women, 133 attended the video viewing and completed two required questionnaire packets. They were paid $10 each for their participation, and they subsequently donated their compensation collectively to the American Cancer Society. Subjects were assigned randomly either to the gain-framed condition \((n = 68)\) or the loss-framed condition \((n = 65)\).

#### Video Presentation

A narrated slide show was videotaped to create a professional-looking, fluid presentation. The thrust of the message was to persuade...

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\(^1\) At the time of the study, both the American Cancer Society and National Cancer Institute recommended that women aged 50 and older obtain a mammogram once annually and women aged 40-49 obtain a mammogram once every 1-2 years. To determine the maximum number of mammograms to remain eligible for the study, we calculated how many mammograms a woman should have obtained given her age according to these guidelines (using one mammogram every 2 years for women in their 40s), divided this figure by 2, and conservatively rounded the figure up to the next whole number.
women of the importance of early detection through routine mammography screening. Both the gain-framed and loss-framed presentations were approximately 15-min long and addressed such issues as the magnitude of the problem of breast cancer, risk factors, detection procedures, the importance of early detection, facts about mammography, and the importance of regular mammograms. The two videos were identical in the factual information conveyed; they differed only in the way persuasive statements were framed. The gain-framed video, entitled "The Benefits of Mammography," emphasized the benefits of getting a mammogram, whereas the loss-framed video, entitled "The Risks of Neglecting Mammography," emphasized the risks of not getting a mammogram. Table 1 lists some exemplary gain- versus loss-framed statements from the two videos.

**Table 1**

**Comparison of Sample Gain- Versus Loss-Framed Persuasive Statements**

<table>
<thead>
<tr>
<th>Gain Framed</th>
<th>Loss Framed</th>
</tr>
</thead>
<tbody>
<tr>
<td>We will show that detecting breast cancer early can save your life.</td>
<td>We will show that failing to detect breast cancer early can cost you your life.</td>
</tr>
<tr>
<td>Although all women are at risk for breast cancer, there is something you can do to increase your chances of surviving it.</td>
<td>Although all women are at risk for breast cancer, there is something you can do that increases your risk of dying from it.</td>
</tr>
<tr>
<td>For this reason, when you get a mammogram, you are taking advantage of the best method for detecting breast cancer early.</td>
<td>For this reason, when you avoid getting a mammogram, you are failing to take advantage of the best method for detecting breast cancer early.</td>
</tr>
<tr>
<td>If a cancer has not spread, it is less likely to be fatal.</td>
<td>If a cancer has spread, it is more likely to be fatal.</td>
</tr>
<tr>
<td>Another advantage of finding a tumor early is that you are more likely to increase your treatment options and may need less radical procedures.</td>
<td>Another disadvantage of failing to find a tumor early is that you may have fewer treatment options and may need more radical procedures.</td>
</tr>
<tr>
<td>The bottom line is, when you get regular mammograms, you are doing your best to detect breast cancer in its early stages.</td>
<td>The bottom line is, when you fail to get regular mammograms, you are not doing your best to detect breast cancer in its early stages.</td>
</tr>
</tbody>
</table>

**Measures**

**Preintervention Questionnaire**

This questionnaire addressed demographic characteristics, breast cancer-related risk factors and attitudes, and health behaviors and included the following:

- **Demographics.** Five items asked about education, marital status, race, religion, and family annual income.
- **Breast cancer risk factors.** Five items were devoted to breast cancer risk factors, namely onset of menarche, age at first birth, duration of breastfeeding, and age of onset and duration of contraceptive pill use. These five items were combined into a continuous 5-point risk factor index.
- **Breast cancer salience.** Four questions addressed the salience of breast cancer regarding the following four items: (a) personal history of benign breast problems, (b) personal history of cancer other than breast, (c) family history of cancer of any type in any of 8 first-degree relatives, and (d) the diagnosis of breast cancer among any close friends. These questions were combined into a continuous salience index with a theoretical minimum of 0 and a maximum of 32.

- **Attitudes and beliefs about breast cancer and mammography.** A scale of fourteen 5-point items examined various attitudes and beliefs, including five items about breast cancer risk and anxiety, four about mammography, four about breast cancer treatment, and one about knowledge of breast cancer. An index was created by scoring these items in the pro-mammography direction and then calculating a mean.
- **Preventive health behaviors.** Six questions probed for participation in preventive health behaviors (frequency of exercise, doctor and dentist visits, Pap tests, seat belt use, and degree of effort put into lowering dietary fat).

**Postintervention Questionnaire**

This questionnaire contained seven sets of measures. The first two sets of measures was sure to that the two framed conditions did not differ on potentially confounding variables: the credibility of the video or knowledge acquired from it. The remaining five sets of variables were measured with the intention of identifying mediators of a potential framing effect. The seven sets of variables included the following:

- **Evaluation of video presentation.** Using a 5-point scale, three items asked whether the presentation was believable and interesting and whether the subject learned a lot from it. An index was created by calculating the mean of the three items (Cronbach’s alpha = .63).
- **Knowledge about breast cancer and mammography.** The two videos were intended to convey the same factual information to women in both conditions. A scale of 11 multiple choice questions covering facts about breast cancer and mammography assessed subjects’ postintervention understanding of the factual information presented in the two videos and whether subjects in the two conditions acquired comparable information from the videotapes (Cronbach’s alpha = .68).

- **Emotional reactions to video presentation.** Seven positive mood items (cheerful, hopeful, confident, calm, relaxed, happy, and assured) and seven negative mood items (sad, discouraged, gloomy, afraid, disturbed, anxious, and agitated) were used to assess emotional reactions to the video on 7-point scales (Cronbach’s alphas: positive = .89, negative = .92).
- **Attitudes and beliefs about breast cancer and mammography.** The 14-item scale used at preintervention was administered again at postintervention. (Cronbach’s alpha = .69).
- **Perceived risk of breast cancer.** On a 7-point scale ranging from not at all likely (1) to very likely (7), subjects made two risk judgments, one for the likelihood that they would develop breast cancer and another for the likelihood that the would die from breast cancer. A risk probability index was then created by calculating the mean of these two items (Cronbach’s alpha = .82).
- **Breast cancer self-efficacy.** Four 10-point items measured subjects’ self-assessment of confidence to detect breast cancer and to seek physician help if a lump was detected (Cronbach’s alpha = .61).
- **Intention to get a mammogram.** A 5-point scale ranging from definitely yes (1) to definitely no (5) assessed subjects’ intention to obtain a mammogram within the year.

**Behavioral Follow-up**

Six months after viewing the video, subjects were recontacted by phone to determine if they had obtained a mammogram in the past 6 months. We describe only those preintervention measures used in the analyses of this study. Our preintervention questionnaire contained some additional questions. Copies of the two questionnaires are available from the authors on request.
months and if they had, when and where. Self-reports have been found
to be an accurate measure of mammography use (King, Rimer, Trock,
Balshem, & Engstrom, 1990). Those subjects who had not obtained a
mammogram at 6 months were recontacted 12 months (±2 weeks)
following the presentation.

**Procedure**

One week prior to the scheduled presentation, each eligible subject
was mailed a packet containing the preintervention questionnaire, the
postintervention questionnaire in a sealed envelope, consent and
medical release forms, and an educational pamphlet outlining facts
about mammography. Subjects were instructed to fill out the prein-
tervention questionnaire and the consent and release forms prior to
attending the presentation and to bring the postintervention ques-
tionnaire to the presentation. The video presentation was broadcast over
the company's closed-circuit television network during scheduled
times at 14 company locations across Connecticut. Following the
educational portion of the presentation, the women were instructed
(in the video) to open the sealed envelope and to fill out the
postintervention questionnaire. They were then instructed either to
hand the two questionnaires and forms to the research assistant or to
mail them back to the investigator in the stamped, addressed envelope
provided. Six months following the presentation, subjects were recon-
tacted by phone to determine whether they had obtained a mammo-
gram. Follow-up calls took place throughout September and October
1992. Eight women were unable to be reached by phone and thus were
mailed response postcards. Only one woman did not return her
postcard. Those subjects who had not obtained a mammogram after 6
months, plus the one woman unable to be contacted previously
(n = 81), were recontacted at 12 months, in March and April 1993.

**Results**

**Sample Characteristics**

The sample was predominantly White (79.4%) and Catholic
(58.5%), although about 19% of the women were African
American. Study participants ranged in age from 40–66 years.
Just over half (54.9%) were married, and about a quarter
(25.6%) were separated or divorced. Seventy-six percent of the
sample completed high school or some college. More than half
(53.5%) of the sample had a household income of $45,000 or
more. Subjects in the two conditions were compared on all
preintervention demographic characteristics, breast cancer-
related risk factors and attitudes, and health behaviors. Multi-

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\[
\chi^2(1, N = 133) = 5.84, p < .05.
\]

However, across all preintervention measures, this was the only condition
difference that emerged.

**Bivariate Analyses of Framing Effects on Mammography
Behavior**

Women assigned to the loss-framed condition were ex-
pected to be more likely to obtain a mammogram during the
follow-up period. By the 6-month follow-up, more women in
the loss-framed condition had indeed obtained a mammogram
than women in the gain-framed condition (45.3% in the
loss-framed condition compared with 33.8% in the gain-
framed condition), although this difference did not quite reach
statistical significance, \[
\chi^2(1, N = 132) = 1.82, p < .09, \text{ one-tailed.}
\]
At the 12-month follow-up, the cumulative difference
in mammography rates had widened. More than
66% (66.2%) of the women in the loss-framed condition,
compared with 51.5% of the women in the gain-framed
condition, had obtained a mammogram. This difference was
significant and consistent with predictions, \[
\chi^2(1, N = 133) = 2.95, p < .05, \text{ one-tailed.}
\]

**Effects of Framing on Evaluation of Video and Knowledge**

Table 2 provides means and standard deviations by framing
condition for evaluation of the video presentation and postin-
tervention knowledge about breast cancer and mammography.
As we had hoped, both conditions evaluated the video as
comparably interesting, believable, and informative. Furth-


-

\[
F(2, 130) = 0.26.
\]

**Examining Mediators of the Framing Effect**

To examine whether emotional reactions to the video
presentation, postintervention attitudes and beliefs, perceived
risk of breast cancer, breast cancer self-efficacy, or intention
mediated the effect of framing on mammography behavior,
two MANOVAs were performed, the first to determine if
framing had an effect on any of these psychological variables
and the second to determine if any of these variables predicted
mammography behavior. Table 2 provides means and standard
deviations by framing conditions for these variables. No
significant condition difference was found for either positive or
negative emotional reactions, perceived risk of breast cancer,
self-efficacy, postintervention attitudes and beliefs, or inten-
tion to get a mammogram, Wilks's lambda = 0.96, \[
F(6, 112) = 0.69; \text{ univariate tests were also not significant. Furthermore,}
\]
emotional reactions, attitudes and beliefs, perceived risk,
self-efficacy, and intention did not significantly differ between
those women who did and did not obtain a mammogram,
Wilks's lambda = 0.93, \[
F(6, 112) = 1.48.
\]

The framing effect observed was not mediated by any of the self-report variables
measured in this study.
Table 2  
Postintervention Measures by Framing Condition

<table>
<thead>
<tr>
<th>Measure</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gain frame</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Evaluation of video</td>
<td>4.33</td>
</tr>
<tr>
<td>Knowledge about breast cancer and mammography</td>
<td>9.26</td>
</tr>
<tr>
<td>Positive emotional reactions</td>
<td>5.10</td>
</tr>
<tr>
<td>Negative emotional reactions</td>
<td>2.69</td>
</tr>
<tr>
<td>Attitudes and beliefs</td>
<td>3.79</td>
</tr>
<tr>
<td>Perceived risk of breast cancer</td>
<td>3.04</td>
</tr>
<tr>
<td>Breast cancer self-efficacy</td>
<td>7.85</td>
</tr>
<tr>
<td>Intention to obtain a mammogram this year</td>
<td>1.38</td>
</tr>
<tr>
<td>Obtained mammogram within 6 months of intervention (%)</td>
<td>33.8</td>
</tr>
<tr>
<td>Obtained mammogram within 12 months of intervention (%)</td>
<td>51.5</td>
</tr>
</tbody>
</table>

Note. Means for variables were based on the following underlying scales: Evaluation—5-point scales ranging from Agree (1) to Disagree (5) with a higher score indicating a more positive evaluation of the videotape; Knowledge—11 multiple-choice items scored as either correct (1) or incorrect (0); Two emotional reaction indices—7-point scales ranging from Not at all (1) to Extremely (7); Attitudes and beliefs—5-point scales ranging from Strongly disagree (1) to Strongly agree (5) with a high score indicating more positive attitudes/beliefs about breast cancer and mammography than a low score; Perceived risk index—7-point scales ranging from Not at all (1) to Extremely (7); Breast cancer self-efficacy—11-point scales ranging from Very uncertain (0) to Very certain (10); Intention—5-point scales ranging from Definitely yes (1) to Definitely no (5).

Multivariate Analyses of Framing Effects on Mammography Behavior

We were also interested in determining if message framing could account for a significant proportion of the variance in mammography behavior even after controlling for any variance accounted for by demographic and preintervention psychological variables. To answer this question, we performed logistic regression analyses with both the 6- and 12-month utilization data as the criterion, entering the following independent variables: age, race, and education, breast cancer risk factors, breast cancer salience, preintervention attitudes and beliefs, and preventive health behaviors; and experimental condition. Three subjects were excluded from the 6-month analysis, and 2 subjects were excluded from the 12-month analysis because of missing data.

The logistic regression model at 6 months revealed that after entering all of the independent variables described above, there was still some advantage for loss- over gain-framed messages in promoting mammography that was almost statistically significant, \( \beta = 0.15, p = .08 \), one-tailed. The odds ratio for experimental condition (loss framed:gain framed) was 1.72; women in the loss-framed condition were 1.72 times more likely to obtain a mammogram than women in the gain-framed condition, after accounting for the demographic and psychological variables (95% confidence interval: 0.80–3.68). In addition, younger age tended to be associated with mammography behavior at 6 months (\( p = .06 \)).

The logistic regression model at 12 months produced approximately the same odds ratio for experimental condition, even after accounting for all other independent variables—odds ratio = 1.74; 95% confidence interval: 0.82–3.69; \( \beta = 0.15, p = .07 \), one-tailed—again suggesting an advantage (though not quite a statistically significant one) of loss framing. A subset of all predictors—having less education, being white, and having more breast cancer risk factors, together with viewing the loss-framed video—accounted for significant increases in mammography use behavior after 12 months, \( \chi^2(4, N = 131) = 9.32, p = .05 \).

The two logistic regression analyses demonstrated that the advantage of loss framing is not attenuated when demographic and other psychological variables (e.g., attitudes and risk factors) are taken into account. The fact that the betas and odds ratios for framing did not quite reach conventional levels of statistical significance reflects the somewhat limited sample size for these analyses. To detect an odds ratio of 1.75 with a power = .80 and \( \alpha = .05 \), we would need a sample of about 330 women.

Discussion

We hypothesized that the way in which a persuasive message about mammography is framed—whether emphasizing gains (benefits of obtaining a mammogram) or losses (risks of not obtaining a mammogram)—affects the power of that message to encourage women to obtain a mammogram. Specifically, we predicted that women exposed to a loss-framed video presentation should be more likely to obtain a mammogram within a 12-month follow-up period than women exposed to a gain-

3 Income and religion were not entered into the logistic regression because subjects often refused to answer these questions. Marital status was not entered because we assumed that it would not be a predictor of mammography use.
framed video presentation. The two videos were designed to differ only in the way statements encouraging early detection and mammography were framed. The two videos were comparable in terms of credibility, the factual information imparted, and the affective responses elicited.

The two experimental conditions differed in rates of mammography use at both 6 and 12 months, although only the 12-month condition difference reached conventional levels of statistical significance. This condition difference in mammography use is in accordance with hypotheses based on the framing postulate of prospect theory. Although our logistic regression models were underpowered, the results of these multivariate analyses lend support to our bivariate analysis findings and further suggest that the framing effect is not attenuated when demographic, risk factor, attitudinal, and behavioral variables are accounted for. Women who were exposed to the loss-framed message were about 1.7 times more likely to obtain a mammogram than women exposed to the gain-framed message.

According to prospect theory, loss-framed information may increase women's perceived risk, causing them to be more willing to perform risky behaviors. However, neither this study nor that of Meyerowitz and Chaiken (1987) found perceived risk to be a mediator of the effect of framing on mammography. That is, framing did not significantly influence perceived risk nor did perceived risk significantly distinguish between those who did and did not obtain a mammogram. Loss-framed information also may exert its impact on behavior by changing efficacy expectations, that is, by increasing women's beliefs in the effectiveness of mammography to detect breast cancer early (outcome efficacy), by enhancing women's confidence in their ability to obtain a mammogram (self-efficacy), or both. Protection-motivation theory (Maddux & Rogers, 1983) predicts that efficacy is an important mediator of appropriate responses to health threats. However, although Meyerowitz and Chaiken found that women exposed to the loss-framed message reported higher self-efficacy to perform breast self-examination, they did not find condition differences for outcome efficacy. We did not find framing effects for self-efficacy here.

It is surprising that we obtained a significant framing effect on mammography in the 12-month bivariate analysis and near-significant findings in the multivariate analyses, yet did not obtain condition differences on any of the potential mediating variables. It is possible that one or more of these variables may in fact mediate framing, but the construct was not adequately measured. For example, there was no effect of framing on intention probably because nearly everyone indicated that they planned to get a mammogram. Moreover, the internal consistency of some of our measures was a bit on the low side. It is also possible that other unexamined psychosocial variables may mediate framing. Alternatively, the loss-framed message may not have had an immediate impact on attitudes, beliefs, or intentions, but had a delayed impact on behavior by way of information seeking or cognitive processing after the experimental session was over.

Despite the random assignment of women to framing condition, one unintended preintervention difference, history of benign breast problem, threatened to confound the observed framing effect. However, because the breast cancer salience index, of which the benign breast problem variable was a part, did not emerge as a significant predictor of mammography behavior at either 6 or 12 months, it can be assumed that this variable was unlikely to have confounded the effects of framing on mammography use. Even when we looked at this variable in isolation, it was not significantly related to mammography use.

Message framing readily lends itself to direct applications to public health education strategies. Altering the frame of a persuasive message is a relatively straightforward task. An appropriately framed message could be incorporated into an existing health education program or media campaign potentially to increase its effectiveness. Specifically, health psychologists have attempted to promote mammography and breast self-examination using reminder calls or letters (Vernon, Gilstrap, Jackson, & Hughes, 1992); physician-delivered messages (Falvo & Tippy, 1993); educational literature (Dworsky, 1991; Lalor & Halley, 1989-1990); educational programs (Reynolds, 1988; Reynolds, West, & Aiken, 1990; Rothman, Salovey, Turvey, & Fishkin, 1993); personally tailored letters (Skinner, 1992; Skinner, Strecher, & Hopsers, 1994); rewards (Grady, Goodenow, & Borkin, 1988); and combination efforts encompassing media campaigns, discounts on services, incentive coupons, prompts, and information packets (Mayer et al., 1987; Mayer & Kellogg, 1989; Mayer et al., 1992). Loss-framed text, in the form of printed or verbal communication, could be included easily in virtually any of these interventions, conceivably increasing their effectiveness in persuading women to comply with breast cancer early detection recommendations and potentially decreasing breast cancer mortality. Our data, along with previously reviewed studies, further suggest that the type of health behavior promoted—whether prevention or detection—should be considered when constructing a public health message. If the behavior is a detection behavior, like mammography, loss-framed persuasion messages that emphasize the risks of not engaging in that behavior may be more persuasive than gain-framed messages.

References


