

Breast Screening in Response to Gain, Loss, and Empowerment Framed Messages among Diverse, Low-Income Women

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Abstract: Framed messaging has emerged as an important means of promoting a number of health behaviors, including breast cancer screening. However, studies of message framing have infrequently considered race and income as possible moderators of framing effects, despite their importance to screening behavior. The current study examined whether demographic characteristics moderated participant responses to message framing. In the study, 102 Black and 42 White low-income, low-screening women were randomized to a loss, gain, or empowerment frame telephone intervention and re-contacted at 6 and 12 months. Contrary to expectation, there was no main effect for framing condition, although both loss and empowerment conditions elicited superior screening than the gain condition at 12 months. Income proved an important moderator of framing effects, interacting with both condition and race to influence screening. Message frames may differ in the amount of time they require to manifest in behavioral outcomes and may lead to changes in different screening outcomes. Understanding how framing effects vary as a function of key demographic characteristics such as race and income is likely to prove important as such variables facilitate targeting of frames.

Key words: Message framing, breast cancer screening, African American, low-income women, race differences, ethnic differences, mammogram, clinician breast exam, breast self-examination.

Recent estimates suggest that there will be 178,480 new cases of breast cancer diagnosed and 40,460 breast-cancer attributed deaths among women living in America in 2007.¹ While there is a lower incidence among African Americans than among White women,^{2,3} mortality is higher, and 5-year survival lower, among minority women than among Whites;³⁻⁵ furthermore, the mortality gap in breast cancer may be increasing.⁶⁻⁸ Racial differences in mortality and survival are frequently attributed

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to breast screening⁹⁻¹¹ and, despite some disagreement,¹² most research suggests that early detection via screening reduces mortality.¹³⁻¹⁷

Despite unequal distribution of cancer burden across racial and socioeconomic groups, however, few studies have examined the generalizability of interventions aimed at increasing screening. A leading class of intervention—framed messaging—is intended to promote targeted health behaviors by presenting information in a way that emphasizes the negative cost(s) of not performing the behavior (loss framing), or the positive benefit(s) of performing it (gain framing). Framing studies have concerned HIV testing,^{18,19} physical exercise,²⁰ flu vaccinations,²¹ diet,²² sunscreen use,²³ flossing,^{24,25} as well as breast screening,²⁶⁻³⁰ and have generally shown that any framed information is more effective than simple factual information,^{26,31} but that loss frames are generally superior to gain frames^{19,28,29} (although see Finney and Iannotti³⁰ and Lalor and Hailey³²).

However, it is also becoming clear that framing effects may be mediated or moderated by factors such as a family history of breast cancer,³⁰ perceived risk,³³ certainty,¹⁸ ambiguity seeking,^{24,34} ambivalence,²² mood,³⁵⁻³⁶ and regulatory focus.³⁷ Less carefully considered to this point have been the demographic characteristics that are closely associated with both breast cancer risk and breast screening behaviors, notably income,³⁸⁻⁴¹ and race/ethnicity.¹⁰ Data are often collected from homogeneous (typically White) samples^{29-31,42} or, more frequently, fail to describe their sample in racial terms,^{21-22,24,26,32,37} or test for racial effects.^{18,29} Explicitly examining the effects of three different message frames in low-income samples of Black and White women is the broadest purpose of the study reported on here.

There are good reasons to suspect that framing effects may vary according to the demographic characteristics of the target. First, one study of 752 ethnically diverse women aged 40 years and older found that although loss-framing was associated with greater mammography among Anglos and Latinas, it did not have the same effect on African American women.²⁷

Second, several of the suggested mediators of framing effects—notably perceived breast cancer risk,^{16,43-45} characteristic affect,⁴⁶ and emotion regulatory/coping styles^{11,47}—are also known to vary systematically across racial groups. Indeed, it is possible that the failure of the loss frame reported in prior work²⁷ may result from ethnic differences in the extent to which framed messages elicit negative affect. Consequently, we developed a third framing condition, termed empowerment, that seeks to capitalize on the value placed on independence/self-reliance by African American women.⁴⁸⁻⁴⁹ We expected that our empowerment frame would be more successful among Black women than among others.

It has been suggested that the failure of loss framing among African American women may result from differential barriers,²⁷ including income.⁵⁰ In many cases, race and income have independent or additive predictive value in terms of cancer and screening behaviors.^{17,51-54} In addition to serving as a proxy for variables including access to screening services, physician recommendation practices, insurance coverage and so forth, income is related to beliefs about efficacy and outcome.⁵⁵ Hence, although the current study was primarily aimed at controlling income as a means of more carefully assessing possible race differences,²⁹ we also expected that lower income might be associated with a greater response to the empowerment frame.

A second area in which the current work extends prior framing research lies in considering the time frames within which framed messages exert their behavioral impact and whether that impact is sustained over time. The time elapsed between intervention and follow-up varies widely in the framing literature examining breast screening, with studies reporting elapsed durations ranging between a few minutes for intention studies,⁴² and 5 weeks,²⁸ 1–2 months,³⁰ and 12 months for behavioral outcomes studies, with varying results.^{27,29} Understanding whether different frames can be expected to elicit the target screening behavior immediately or whether they may take time to incubate is of tremendous methodological and practical importance; in addition, knowing the answer may provide insight into the mechanisms underlying framing effects. The current study, which compared 3 types of message, gathered self-reports of breast self-exam (BSE), clinician breast exam (CBE), and mammography at 6 and 12 months after a telephone intervention.

Methods

Participants. Participants in the study were 144 low-screening women (102 Black and 42 White) drawn from a larger stratified cluster-sampling study of 1,364 women between the ages of 50 and 70 residing in Brooklyn, New York.¹¹ The parent survey study examined psychosocial predictors of breast screening in diverse samples of women. Data were collected during face-to-face interviews lasting approximately 90 minutes during approximately 2½ years during 2000–2002. In accordance with our interest in lower-screening women, women were selected from the parent study if (a) they reported 7 or fewer mammograms in the previous 10 years and (b) they self-identified as African American or European American. The screening frequency cutoff was deemed the best trade-off between the current study's focus on low-screening women and the resources available to follow up with participants. Permission to conduct both the parent survey study and the current intervention study were obtained from the Long Island University Institutional Review Board.

As might be expected in a low-income, urban sample, a large number of women could not be reached for follow-up at their original telephone number either because they had moved or because the telephone number had ceased to be in service. Out of the 281 women in the initial sample, 146 (52%) were successfully recruited. Although this rate of participation in the full study is low, its significance is improved when noting that only 30 (11%) refused to participate while 105 (37%) could not be found. This means that 146 of 176 (83%) of re-contacted women agreed to participate. Women were offered \$15 to participate in this study.

Procedures. Trained interviewers contacted eligible women by telephone and secured informed consent. Following this step, women were randomly assigned to one of three experimental framing conditions (gain, loss, or empowerment), and then listened to a 5-minute framed script. Women were re-contacted at 6 months and 12 months following the intervention and asked to report the frequency of breast screening behaviors (breast self-exam, clinician breast exam, and mammography) in the intervening 6 months.

Materials and measures. *Demographics questionnaire.* At the time of the original study,^{56–57} respondents provided information on age, race, household income, and level

of education. Given the low education of our community sample, we assessed education dichotomously, in terms of the whether participants had education beyond high school or not.

Framed scripts. Several means of presenting framed messages have been employed in prior research, including pamphlets or other written formats,^{21,25-26,32} audiotape,³¹ videotape,^{19,27,29,58} and telephone.⁵⁹ Our intervention used a combination of a framed telephone intervention followed by a mailed pamphlet that repeated the framed material. We adopted this strategy because of concerns regarding the education level and appropriateness of a purely text-based intervention among older, low-income populations⁶⁰ and our desire to evaluate message framing outcomes among hard-to-reach, low-screening populations. The three framed scripts were factually equivalent, with approximately the same number of words and composition characteristics.⁶¹

At the time of the first telephone interview, each participant was read a 5-minute script that described breast cancer incidence and risk factors, and the importance of screening behaviors in detection. The initial basis for the gain- and loss-framed messages were taken from earlier work,^{27,29} in which a series of short factual statements encapsulating either a loss or gain frame are given. Contrast, for example, "We will show that detecting breast cancer early can save your life" (gain-frame), with "We will show that failing to detect breast cancer early can cost you your life."²⁹ Finally, the empowerment-framed message stated "We will show how taking an active role in early breast cancer detection can put control in your hands and save your life." Example items from the final framed scripts are provided in Appendix 1.

Breast cancer screening behavior. Screening behavior at 6 and 12 months post-intervention was measured with 3 items that asked participants to indicate the frequency of (a) breast self-exam, (b) clinician breast exam, and (c) mammography in the intervening 6 months, as well as to provide a date estimate for the latter 2 procedures, if applicable. Validation studies for breast cancer screening have indicated that self-reports correspond reasonably well with clinic charts,⁶²⁻⁶⁴ although self-reports tend to slightly overestimate frequencies while clinic records underestimate them,⁶⁵ and there is some variation across studies,⁶⁶ and ethnicities.⁶⁷ The breast self exam distribution revealed a small number of outliers producing positive skew. Following standard statistical practice⁶⁸ and prior framing research,²⁸ these scores were recoded to within 3 standard deviations of the mean and, to ensure a common metric across screening measures, all variables were z-transformed prior to analysis.

Results

Demographic characteristics of the sample. Table 1 shows the demographic characteristics of the sample at baseline as a function of race. We contrasted the two racial groups on age and income with MANOVA and the proportion with education greater than high school education via chi-square. There were no differences in either age or income, $F(1, 142) = 1.83$, n.s., although the chi-square showed significant differences between the two groups in terms of the proportion with greater than a high school education, $\chi^2(1) = 12.32$, $p < .001$; a greater proportion of Whites reported more than a high school education, hence education was entered as a covariate in the initial analyses.

Table 1.**BASELINE DEMOGRAPHIC CHARACTERISTICS
BY RACE (N=144)**

Variable	Black n=102	White n=42	Univariate F or χ^2 value
Age, years [mean, (s.d.)]	58.0 (6.6)	56.7 (5.6)	1.23
Household income (\$K) [mean, (s.d.)]	10.5 (10.5)	8.2 (8.1)	1.57
% greater than HS education ^a	22.5	52.4	12.32*

^aA significantly greater proportion of Whites reported greater than a high school education than Blacks.
* $p < .001$.

Attrition analysis. Although previous research suggested that drop out rates in longitudinal studies of older persons average around 10%,⁶⁹ ranging from 4.4%⁷⁰ to 15%,⁷¹ prior studies have infrequently concerned low SES, urban samples, thus we carefully examined attrition across the 12 months of the study.

As indicated in Table 2, we retained 132 of 144 T1 participants at 6 months (92%) with 10 participants not being contactable for follow-up and a further two being excluded because they received a breast cancer diagnosis during the intervening period. A multivariate analysis of variance (MANOVA) examining differences in age, income, education, race, and framing condition between those lost and retained was significant, Wilks' $\lambda = 2.41$, $p < .05$, with follow-up univariates indicating that women who dropped from the study had higher incomes, $F(1, 142) = 7.51$, $p < .01$, and were younger, $F(1, 142) = 5.85$, $p < .05$, than those who remained. An equivalent MANOVA compared those retained with the 25 women who dropped from the study between 6 and 12 months; these women did not differ on any of the variables. However, because of the differences between baseline and 6-month samples, income, education, and age were entered as covariates in the initial analyses.

Framing condition and screening behavior. We tested our primary hypotheses regarding the behavioral outcome variables (BSE, CBE, mammography), within a repeated-measures ANOVA approach* in which the three, z-transformed screening behaviors at each of the two follow-up intervals (6 and 12 months) were entered as repeated (dependent) measures, framing condition and race were entered as between

*Because of our interest in the differential effects of framing over time and across different types of screening and the consequent need for a repeated-measures design, we examined BSE, CBE, and mammography frequency within an ANOVA approach despite the near-dichotomous characteristics of the latter two variables. An extensive examination using the Monte Carlo technique has shown that ANOVA-based procedures are robust when applied to dichotomous data and have a number of advantages over analytic strategies that require either excluding levels of the dependent variable or adding a small constant to empty cells.

Table 2.**DEMOGRAPHIC CHARACTERISTICS AT INTERVENTION,
6- AND 12-MONTH FOLLOW-UP, BY FRAMING CONDITION**

Characteristic	Intervention (N=144)			6-Month follow-up (N=132)			12-Month follow-up (N=107)		
	Gain N=53 (37%)	Loss N=43 (30%)	Empower N=48 (33%)	Gain N=47 (36%)	Loss N=42 (32%)	Empower N=43 (32%)	Gain N=39 (37%)	Loss N=35 (30%)	Empower N=36 (33%)
Age ^a , years [mean, (s.d.)]	57.5 (6.1)	56.5 (6.3)	58.7 (6.6)	57.8 (6.1)	56.7 (6.3)	59.3 (6.5)	57.3 (6.0)	57.3 (6.1)	59.5 (6.7)
Household ^b income (\$K) [m, (s.d.)]	8.2 (7.2)	10.6 (10.3)	10.9 (11.9)	7.8 (7.1)	10.0 (9.5)	9.9 (9.9)	8.2 (7.5)	9.3 (9.4)	9.2 (9.1)
% ≥ HS education	30.0	32.0	31.0	30.0	33.0	30.0	31.0	26.0	31.0
% Black	66.0	67.0	69.0	64.0	74.0	72.0	64.0	77.0	67.0

Note: Superscript letters indicate differences between women retained and lost from study.

^aWomen who dropped at T2 were significantly younger than those retained, $F(1, 142)=5.85$, $p<.05$.

^bWomen who dropped at 12 months had significantly greater income than those retained, $F(1, 142)=7.51$, $p<.01$.

No other differences between lost and retained sample.

HS = high school

subject factors, and age, income, and education were entered as covariates. Race was significant in the initial multivariate analysis of covariance (MANCOVA), $F(1, 100) = 4.34$, $p < .05$, as was the interaction between type of screen and framing condition, Wilks' $\lambda = 3.32$, $p < .05$; none of the covariates was significant. However, because of our interest in examining race effects beyond those of income (above), we dichotomized income and added it to a second customized model in which condition, race, and income were grouping variables and the number of BSEs, CBEs, and mammograms at 6 and 12 months within-subject dependent variables. Raw results and percentages reporting each type of breast screen per condition are shown in Table 3.

Contrary to expectation, framing condition was not significant, $F(2, 97) = 1.18$, *n. s.*, although there was an effect for race, $F(1, 97) = 6.66$, $p < .05$, with Black women reporting more screening than White women. In addition, however, race and condition both exerted effects in interaction with a number of other variables. The main effect for race was qualified by a marginal interaction with income, $F(1, 97) = 3.66$, $p = .058$, in which the greater screening reported by Black women was only evident among women of greater income. This effect was, in turn, further qualified by a three-way interaction between type of screen, race, and income, Wilks' $\lambda = 3.61$, $p < .05$, in which the more frequent screening of higher-income, Black women was evident only for CBE and mammography. Finally, a marginal three-way interaction between race, type of screen, and time (6 vs. 12 months), Wilks' $\lambda = 2.82$, $p = .065$, showed that the overall more frequent screening reported by Black women was evident for all three types of screen at the 6-month interval, but only for CBE at the 12-month measurement point.

Consistent with our assertions regarding the importance of income and a possible incubation effect for framed messages, framing condition interacted with time (6 vs. 12 months) in predicting screening, Wilks' $\lambda = 3.57$, $p < .05$. Specifically, while there were no appreciable screening rate differences across conditions at 6 months, the 12-month measurement saw loss and, particularly, empowerment condition women screening at a greater rate than previously, while gain condition women screened less frequently. This effect was qualified, however, by a significant interaction between time, condition, and income, Wilks' $\lambda = 3.97$, $p < .05$, as well as by marginally significant interactions between condition, type of screen, and time, Wilks' $\lambda = 2.21$, $p = .07$, and between condition, type of screen and income, Wilks' $\lambda = 2.78$, $p = .06$. Inspection of the interaction between time, condition and type of screen suggested that although the gain condition produced low screening at 12 months for all three types of screen, the empowerment condition produced levels of mammography on a par with the loss frame at 12 months, intermediate levels of CBE, and very high levels of BSE (see Figure 1). This finding is important, for it may suggest that empowerment frames have the potential to elevate levels of sub-optimal screening.

In addition, however, the interaction between time, condition, and income suggested that the marked increase in screening between 6 and 12 months in the empowerment condition was only evident among higher-income women, while the improvement in the loss condition was strongest among lower-income women. Finally, the interaction between condition, type of screen, and income revealed the predicted effect in which empowerment framing was generally more effective among low-income women, at least

Table 3.**FREQUENCY OF SELF BREAST EXAM, AND PERCENTAGE REPORTING
CLINICAN BREAST EXAM, AND MAMMOGRAPHY BY FRAMING CONDITION**

Condition	Between 0 and 6 months			Between 6 and 12 months		
	BSE frequency (n=132) mean, (s.d.)	CBE (n=132) %	Mammography (n=132) %	BSE frequency (n=107) mean, (s.d.)	CBE (n=107) %	Mammography (n=107) %
Gain	28.8 (65.6)	23/47 (48.9)	18/47 (33.3)	19.4 (52.7)	16/39 (41.0)	8/39 (20.5)
Loss	27.7 (63.6)	21/42 (50.0)	19/42 (45.2)	7.6 (15.7)	21/35 (60.0)	17/35 (48.6)
Empowerment	33.4 (68.4)	21/43 (48.8)	13/43 (30.2)	44.2 (72.1)	19/36 (52.8)	15/36 (41.7)

BSE = breast self-exam
CBE = clinician breast exam

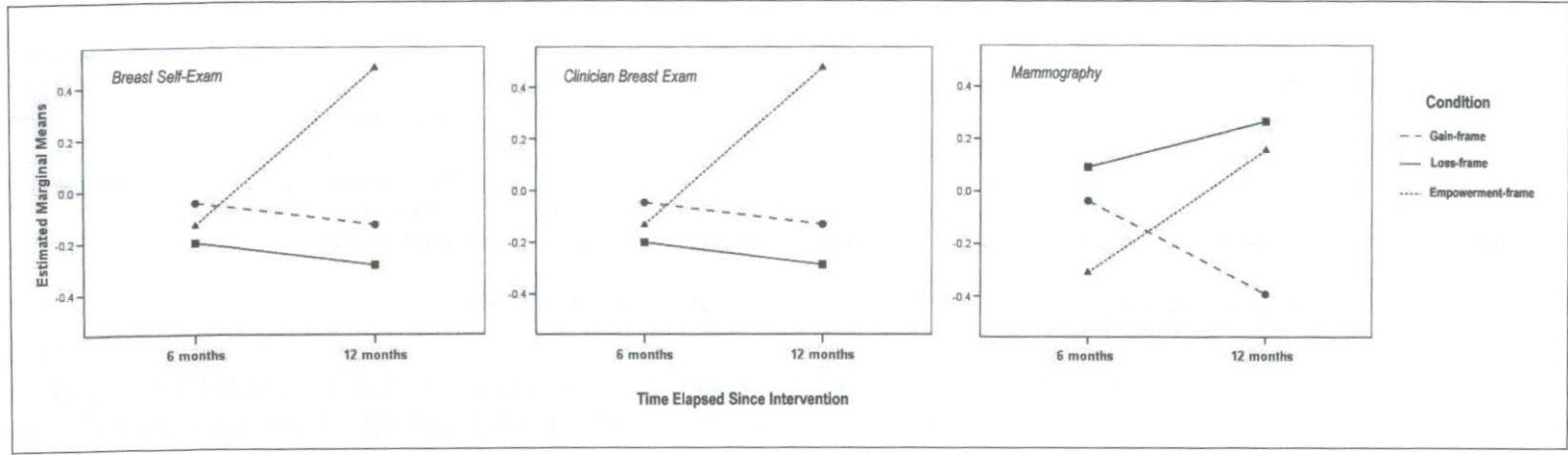


Figure 1. Mean breast self-exam (left panel), clinician breast exam (middle panel) and mammography (right panel) rates at 6 and 12 month follow-up for gain, loss, and empowerment conditions.

for BSE and CBE. In contrast, the loss and gain frames were not consistently related to income across the three different screens.

Discussion

Although a large body of research has shown greater levels of preventive health behaviors in response to framed (versus non-framed) messages,^{18,22,37} there were few main effects for framing condition in the current study. Specifically, although we expected that loss framing would produce greater breast screening for White but not Black women, this expectation was not borne out; loss framing did not promote significantly greater screening for women from either racial/ethnic group. In general, this failure is inconsistent with several studies that have previously demonstrated the superiority of the loss frame for detection behaviors,^{26,28,29} although prior failures have also been reported.^{30,32} One early failure to find framing effects³² showed that framing condition was not related to any other variable in the study and that BSE frequency was best predicted by a pre-intervention characteristic (perceived susceptibility). A second study finding no effect³⁰ sampled women from a clinic who were regular mammogram screeners, perhaps constraining the variance in improvement. Nonetheless, although the failure of the loss frame among African American women was predicted,²⁷ interpreting this effect in the absence of a main effect for condition is difficult.

Second, we had expected that the valuation of independence/self-reliance that is thought to characterize African American women⁴⁸⁻⁴⁹ and, possibly, women from lower-income backgrounds, might lead to greater responsiveness to the empowerment frame among these groups. Results were mixed. On the one hand, the empowerment frame was no more or less effective than other frames among Black women. On the other hand, lower-income women reported greater BSE and mammography at 12 months in response to the empowerment frame. Below, we consider our effects in greater detail, focusing on the relevance of demographic characteristics such as race and income to framing interventions and the conceptual and methodological implications of our data for exploring the possibility that framing effects incubate over time.

Demographic characteristics in framing research. As noted, most studies of message framing have been conducted in racially homogeneous, typically White, samples,^{29-31,42} do not describe samples in ethnic/racial terms,^{21-22,24,26,32,37} or do not separately examine income.¹⁸ Even the previous study employing the most diverse sample,²⁷ is somewhat limited because the participants were drawn from health clinics, suggesting they were experiencing comparatively few barriers to health care. It has previously been remarked that conducting message-framing research in ecologically-valid samples is difficult.⁷²

As the current study did, the most notable exception to this tendency to recruit samples that do not reflect the diversity of the population²⁷ also found that loss framing did not appear to work among a sample of Black women (albeit that race and condition never interacted in our model). As expected, empowerment framing was more effective among low-income women, at least for BSE and CBE, while loss and gain frames were not consistently related to income across the three different screens. Although further research is clearly required to understand this finding, it should be recalled that the empowerment frame was theoretically derived because of data showing (a) a cultural

premium on self-reliance among women of African descent,⁴⁸⁻⁴⁹ and (b) other data showing inverse relations between self-efficacy and income.⁵⁵ Thus, although frames were not differentially successful among the Black women in our sample, empowerment frames may well have some benefit among lower-income women because they influence perceptions about one's ability to carry out the recommended behavior. Indeed, prior work has shown that framed messages have a greater impact on self-efficacy among low self-efficacy groups,²⁸ although this was not directly tested in the current study and although our empowerment-frame result was only evident for BSE and CBE.

In the current data, Black women reported generally greater screening than White women, a finding that is in contrast to early screening research^{16,44,73} (although more recent data suggest fewer differences¹¹). However, interactions with income as well as between type of screen, race, and income showed that this racial difference was most evident among higher-income women ($p=.06$), and primarily for CBE and mammography measures. Previous framing studies have not concurrently examined the impact of race and income despite the fact that income is frequently viewed as the underlying cause of racial differences in screening;³⁹⁻⁴⁰ determining exactly why higher-income Black women reported greater frequency of these two screens in the current study is unclear. However, it should be recalled that higher income is a strictly relative term in the current study as the mean reported household income of the sample was less than \$10,000. Consistent with an interpretation in which higher-income women have less time for formal screening, perhaps because of employment commitments, a three-way interaction between type of screen, condition, and income suggested that CBE and mammography were lower in higher-income women, while BSE was actually higher. While these results do not speak to whether or not the complex relevance of income to framing responsiveness and screening was due to differing barriers to screening,²⁷ they may suggest that women from the higher-income portion of our sample are pressed for time, an interpretation that is consistent with their greater likelihood of dropping from the study. Although replication and further study of income as a moderator of framing effects is clearly needed, our data may suggest that care should be taken when implementing framing interventions among impoverished groups of women to ensure that the interventions do not result in elevations in a clinically sub-optimal screen.

The impact of framed messages over time: A possible incubation effect. As was noted earlier, the second major thrust of the current study concerned how loss, gain, and empowerment frames related to screening behavior over time. Taken together, the prior research in this area, discussed in the introduction, raises the possibility that framing effects, either in general or for particular framing conditions, may wear off over time or require a period of time in which to incubate.

Consistent with the latter suggestion, our analyses showed that although there were no appreciable differences across framing conditions at 6 months, the loss and especially the empowerment conditions showed marked improvement in screening by 12 months, while women in the gain condition screened at a notably lower rate by the second measurement point. *Prima facie*, this finding suggests that both loss and empowerment frames may take some time to exert their full effect while the initial successes of the gain frame may atrophy as time passes. The superiority of the loss frame in this regard is consistent with prior work demonstrating the efficacy of loss framing

in promoting breast cancer screening.^{19,28-29} Despite the fact that the current study did not test cognitive and affective mediators, it seems possible that changes in negative affect^{19,28} and locus of control/self-efficacy^{72,74} may change over time in response to loss and empowerment frames, respectively. The possibility that different psychological alterations underlie responses to different framing conditions and that they may take time to mature in an individual's motivational and health belief system, has important theoretical and methodological implications and is deserving of further research.

Finally, however, it should be recalled that these effects were not consistent across women from different socioeconomic groups and varied depending on which screening outcome was considered. The three-way interaction between time, condition, and type of screen suggested that although the gain condition produced low screening at 12 months for all three types of screen, the loss condition produced significant improvements in CBE and mammography, while the empowerment condition produced improvements in mammography and, particularly BSE. This pattern of differences across the two most successful frames is important, for it may suggest that while loss condition women responded differentially with CBE and mammography, changes in self-efficacy may have led women in the empowerment condition to types of screens that do not require the presence of a physician. If that is the case, this finding calls for a caveat in our interpretation of our findings, for it may suggest that frames that elevate self-efficacy beliefs have the potential to elevate levels of sub-optimal screening.

Limitations and conclusions. The current data provide a preliminary examination of how demographic characteristics may moderate the impact of health messaging interventions. They are, however, not without their weaknesses. Although drawn from a larger, geographically representative parent sample, the number of women participating in this particular study ($N=144$), as with many prior framing studies is relatively small. Similarly, although the refusal rate (11%) for women contacted for the study was low, only 52% of those from the earlier study meeting the screening and racial criteria were retained because a large number could not be contacted. Consequently, it is possible that the most mobile portion of our larger sample, or those with relatively low SES, were excluded from the study and that our findings are less generalizable than might be desired.

Some important findings emerged, even in light of these caveats. It was demonstrated that loss and empowerment framed messages exerted a significant influence over breast cancer screening behaviors at 12 months post-intervention. However, our data suggested that framing effects are complexly manifested in low-income samples. While there were no indications that framing effects varied among women from different racial groups, income emerged as an important moderator of framing effects. In addition, the current data generate a strong suggestion that differentially framed messages may take differing amounts of time to manifest in behavioral change and, in the context of breast cancer screening behavior, may lead to changes in different screening outcomes. Understanding how framing effects vary as a function of key demographics such as income is likely to prove an important next step for framing researchers as demographic variables make it possible to target frames to large groups without the need for prior identification of psychological moderators.

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APPENDIX—Sample Statements from Gain, Loss, and Empowerment Conditions

Condition	Text Sample
Gain Frame	Practicing regular screening—breast self-exams, clinical breast exams, and mammograms—and staying in touch with your doctor can make risk management much easier and promote better breast health.
Gain Frame	... going for early breast cancer screening can increase your chance not to become part of this unfortunate statistic. By getting regular screening for breast cancer you are increasing the chance that you will detect the disease in its early stages.
Gain Frame	In getting regular mammograms you gain greater treatment flexibility and increase the likelihood of a positive outcome.
Loss Frame	Failing to participate in regular screening—breast self-exams, clinical breast exams, and mammograms—and failing to stay in touch with your doctor makes risk management more difficult and promotes poorer health.
Loss Frame	... not going for early breast cancer screening increases your chance of becoming a part of this unfortunate statistic. By failing to get regular screening for breast cancer you are decreasing the likelihood that you will detect the disease in its early stages.
Loss Frame	In failing to get regular mammograms you lose treatment flexibility and increase the likelihood of a negative outcome.
Empowerment Frame	Practicing regular screening—breast self-exams, clinical breast exams, and mammograms—and staying in touch with your doctor enables you to control your risk factors and your own breast health.
Empowerment Frame	... going for early breast cancer screening gives you the power to determine whether you become a part of this unfortunate statistic. By getting regular screening for breast cancer you can have greater control over when you detect the disease.
Empowerment Frame	By getting regular mammograms you can also give yourself greater treatment options and greater control over the outcome.

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