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The Strategic Use of Gain- and Loss-Framed Messages to Promote Healthy Behavior: How Theory Can Inform Practice

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Message framing provides a theoretically grounded approach to the development of effective health messages. In this study, we review the state of research and theory on message framing (Rothman & Salovey, 1997), and how it can inform efforts to enhance health practices throughout the cancer care continuum. Gain-framed appeals are more effective when targeting behaviors that prevent the onset of disease, whereas loss-framed appeals are more effective when targeting behaviors that detect the presence of a disease. In light of these findings, we consider how message frames may affect other types of health behaviors and identify the need to understand better the processes that shape how people construe health behaviors.

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Throughout the continuum of cancer care, from prevention to survivorship, people face a myriad of behavioral decisions. People must make decisions about diet, physical activity, screening regimens, treatment protocols, and in doing so they need to consider information from a number of sources. People may rely on their own experience with a behavior (e.g., how much do I enjoy eating food high in fiber?), what they observe others doing and saying (e.g., do any of my friends eat only whole-grain bread?), or what they hear from health professionals (e.g., what did the nurse recommend I eat?). In some cases, these views may converge toward a similar decision, but in other cases, they may not. When there is a conflict between what people might want to do and what they should do, health professionals face the challenge of encouraging people to initiate or sustain healthy behavioral practices. How do health professionals ensure that their messages are heard and that they are maximally persuasive?

Effective health messages should communicate information relevant to the behavioral issue at hand, and there is a growing consensus that there is value to improving the correspondence between the content of a health message and an

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individual's prevailing concerns (Prochaska, DiClemente, & Norcross, 1992; Rimer & Glassman, 1999; but see Weinstein, Rothman, & Sutton, 1998). Yet, even if a message addresses a person's primary concerns, the information should be communicated in a manner that maximizes its impact on people's thoughts and behavior. People must not only recognize the personal relevance of health information but also act either to initiate or to maintain healthy behavioral practices. Research on message framing represents one effort to address this challenge and has shown how emphasizing either the benefits of adopting a particular behavior or the costs of failing to adopt a behavior can alter a message's persuasive impact (Rothman, Kelly, Hertel, & Salovey, 2003; Rothman & Salovey, 1997; Rothman, Stark, & Salovey, 2006).

In this study, we review the state of research and theory on message framing and how it can inform efforts to enhance health practices throughout the cancer care continuum. In particular, we examine how recent advances in understanding the factors that guide the influence of gain- and loss-framed appeals may facilitate the application of this communication strategy to new behavioral domains.

Framing health messages: An overview

Information about a health behavior can emphasize the benefits of taking action (i.e., a gain-framed appeal) or the costs of failing to take action (i.e., a loss-framed appeal). For example, a brochure to promote breast cancer screening could include a series of statements describing the health benefits afforded by being screened or a series of statements describing the health costs that arise if you fail to be screened. Table 1 shows a series of examples of gain- and loss-framed statements that have been used by investigators. It is important to note that gain-framed statements can refer to both good things that will happen and the bad things that will not happen, whereas loss-framed statements can refer to bad things that will happen and good things that will not happen.

For decades, investigators have explored the impact of fear appeals on health behavior (for reviews, see Leventhal, 1970; Witte, 1992). However, the premise that shifting how information is framed can affect people's behavioral decisions was motivated by the framing postulate of prospect theory (Tversky & Kahneman, 1981). According to prospect theory, people's preferences are sensitive to how information is framed. Specifically, people will act to avoid risks when considering the potential gains afforded by a decision (they are risk averse in their preferences) but are willing to take risks when considering the potential losses afforded by their decision (they are risk seeking in their preferences).

The empirical basis for the framing postulate rests primarily on responses to hypothetical decision scenarios framed in terms of gains or losses (for a meta-analytic review, see Kuhberger, Schulte-Mecklenbeck, & Perner, 1999). Yet, several investigators have pursued its relevance to understanding how shifting the frame of a health message might affect people's willingness to perform a particular behavior (e.g., Meyerowitz & Chaiken, 1987; Rothman, Salovey, Antone, Keough, &

Table 1 Examples of gain- and loss-framed statements

Meyerowitz and Chaiken (1987)

Gain frame

By doing BSE now, you can learn what your normal, healthy breasts feel like, so that you will be better prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do BSE have an increased chance of finding a tumor in the early, more treatable stage of the disease.

You can gain several potential health benefits by spending only 5 minutes each month doing BSE. Take advantage of this opportunity.

Loss frame

By not doing BSE now, you will not learn what your normal, healthy breasts feel like, so that you will be ill prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do not do BSE have a decreased chance of finding a tumor in the early, more treatable stage of the disease.

You can lose several potential health benefits by failing to spend only 5 minutes each month doing BSE. Do not fail to take advantage of this opportunity.

Apanovitch *et al.* (2003)

Gain frame

There are many benefits, or good things, you may experience if you get tested for HIV. If you decide to get HIV tested, you may feel the peace of mind that comes with knowing about your health.

There are many problems, or bad things, you may not experience if you get tested for HIV. If you decide to get HIV tested, you may feel less anxious because you would not wonder if you are ill.

Loss frame

There are many benefits, or good things, you may not experience if you do not get tested for HIV. If you decide not to get HIV tested, you will not feel the peace of mind that comes with knowing about your health.

There are many problems, or bad things, you may experience if you do not get tested for HIV. If you decide not to get HIV tested, you may feel more anxious because you may wonder if you are ill.

Mann *et al.* (2004)

Gain frame

Flossing your teeth daily removes particles of food in the mouth, avoiding bacteria, which promotes great breath.

Loss frame

If you do not floss your teeth daily, particles of food remain in the mouth, collecting bacteria, which causes bad breath.

Martin, 1993; Wilson, Purdon, & Wallston, 1988). Rothman and Salovey (1997) proposed that predictions regarding the relative influence of gain- and loss-framed messages on health behavior can be derived from the conceptual framework outlined in prospect theory. Given the premise that people are more willing to take risks when

faced with loss-framed information but are more risk averse when faced with gain-framed information, the influence of a given frame on behavior should depend on whether the behavior under consideration is perceived to reflect a risk averse or risk-seeking course of action.

What determines whether a health behavior is considered risk averse or risk seeking? Traditionally, research on prospect theory has operationalized risk as the probability that a particular outcome might occur; people are forced to choose between the two alternatives—one that offers a certain outcome and one that offers an uncertain outcome. Health promotion messages typically do not address choices between two different behavioral options but instead advocate either engaging or not engaging in a given behavior. We have proposed that a behavior is considered a risky or safe course of action depending on the extent to which people perceive the behavior will afford an unpleasant outcome. For example, choosing to perform a detection behavior could be perceived as risky; by being screened for a potential health problem, one “runs the risk” of receiving significant, unpleasant information. Although this conceptualization of risk is somewhat different from one grounded on the objective probability of a given outcome, it converges with the growing consensus that how people respond to the stated probability of an outcome depends on the subjective meaning assigned to the potential outcome (Rothman & Kiviniemi, 1999; Rothman & Salovey, 1997).

Consistent with this perspective, we have developed a taxonomy of health-relevant situations—classifying them as risk averse or risk seeking—that affords predictions as to when gain- or loss-framed health appeals are maximally persuasive (Rothman & Salovey, 1997; Rothman *et al.*, 2003). When people are considering a behavior that they perceive involves some risk of an unpleasant outcome (e.g., it may detect a health problem), loss-framed appeals should be more persuasive. When people are considering a behavior that they perceive involves a relatively low risk of an unpleasant outcome (e.g., it prevents the onset of a health problem), gain-framed appeals should be more persuasive. At the heart of this taxonomy is the observation that the function served by a health behavior can be a reliable heuristic for whether people construe a behavior as a relatively risky or safe course of action.

The primary function of detection or screening behaviors such as colonoscopy or mammography is to detect the presence of a health problem. Because of this emphasis on the behavior’s ability to inform people that they are symptomatic or ill, choosing to initiate the behavior may be considered a risky decision. Although behaviors such as mammography provide critical long-term benefits, characterizing them as risky accurately captures people’s subjective assessment of these behaviors (e.g., Lerman & Rimer, 1995; Mayer & Solomon, 1992; Meyerowitz & Chaiken, 1987). In contrast, the primary function of prevention behaviors, such as the regular use of sunscreen or condoms, is to prevent the onset of an illness and maintain a person’s current health status. Thus, choosing to adopt a prevention behavior affords people a relatively safe option. The primary risk associated with these behaviors concerns the decision not to take action (e.g., in certain parts of the United

States, failing to take precautions when hiking such as wearing long pants and using a bug spray places one at risk for Lyme disease). Taken together, this framework suggests that loss-framed appeals would be more effective in promoting the use of detection behaviors, but gain-framed appeals would be more effective in promoting the use of prevention behaviors.¹

Detection behaviors

What evidence is there that loss-framed messages elicit greater interest in and use of detection behaviors? Although investigators have examined the impact of framed messages on a range of detection behaviors, research in this area has focused primarily on promoting cancer screening practices. A series of studies has shown that loss-framed appeals are more effective than gain-framed appeals in promoting interest in and the utilization of screening mammography and breast self-examination (Banks *et al.*, 1995; Cox & Cox, 2001; Finney & Iannotti, 2002; Meyerowitz & Chaiken, 1987; Schneider *et al.*, 2001) as well as colorectal cancer screening (Myers *et al.* 1991; Edwards, Elwyn, Covey, Matthews, & Pill, 2001, for a review). To date, no study has shown gain-framed appeals to be more effective than loss-framed appeals in promoting cancer screening behaviors. However, several studies either have failed to find an advantage for either frame (Lalor & Hailey, 1990; Lauver & Rubin, 1990; Lerman *et al.*, 1992) or have identified potential moderators of a framing effect (e.g., Apanovitch, McCarthy, & Salovey, 2003; Finney & Iannotti, 2002; Schneider *et al.* 2001).

Of the three published studies that have reported a failure to find an advantage for either frame, two of them involved efforts to get women to take action following an abnormal screening test (Lauver & Rubin, 1990; Lerman *et al.*, 1992). In both the cases, there was a relatively high rate of compliance, which may suggest that in situations in which people know they have a medical problem, there is sufficient motivation to return for more testing and, thus, no benefit to be had from the added motivation afforded by a loss-framed appeal. Alternatively, in response to the fact that the initial test had already detected a potential health problem, women may have changed how they think about the screening test. Some women might still see the follow-up test as risky—perhaps even riskier—and hence be responsive to a loss-framed appeal. Yet, other women might no longer see being screened as risky and, in fact, might have begun to shift their focus on what can be done to maintain their health. In this case, they might be more responsive to a gain-framed appeal. As we discuss later in this paper, variability in how people think about a health behavior will alter the predicted impact of gain- and loss-framed appeals.

Prevention behaviors

Because prevention behaviors typically afford people the opportunity to maintain their health and minimize the risk of illness, gain-framed messages are predicted to elicit greater interest in and use of prevention behaviors. Although there have been fewer tests of the impact of gain- and loss-framed appeals on prevention behaviors, the empirical evidence has consistently supported the premise that gain-framed

appeals would be more effective (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Jones, Sinclair, & Courneya, 2003; Linville, Fischer, & Fischhoff, 1993; Millar & Millar, 2000; Rothman *et al.*, 1993; but see McCaul, Johnson, & Rothman, 2002). For example, Detweiler *et al.* (1999) distributed gain- and loss-framed brochures about skin cancer to beachgoers and offered them an opportunity to get a free sample of sunscreen. Beachgoers who had received the gain-framed brochure were significantly more likely to seek out the free sample of sunscreen. To date, research on prevention behaviors has focused on the decision to perform a healthy behavior such as using sunscreen. The extent to which similar effects will be obtained for prevention behaviors that involve having to stop an unhealthy behavior (e.g., quitting smoking) is uncertain. We will examine this issue later in the paper.

Issue involvement: Implications for framing

Several investigators have suggested that a person's involvement with a health issue may affect the impact of message framing on behavior. In accord with dual process models of persuasion (Eagly & Chaiken, 1993; Petty & Wegener, 1998), Rothman and Salovey (1997) proposed that framing effects may only be obtained when people care about a health issue and, thus, are systematically processing the information in the message. Consistent with this perspective, several studies have found framing effects only when people are involved with the issue (e.g., Millar & Millar, 2000), or when they score high in need for cognition (e.g., Rothman, Martino, Bedell, Detweiler, & Salovey, 1999; Study 1), which reflects a dispositional tendency to process information systematically (Cacioppo, Petty, Feinstein, & Jarvis, 1996).

However, other investigators have proposed that issue involvement can predict whether one will observe an advantage for loss-framed or gain-framed arguments (Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004). Specifically, loss-framed messages are predicted to be more effective when people are involved with an issue and are systematically processing the message, whereas gain-framed messages will be more effective when people are not involved with an issue and are heuristically processing the message. The thesis that loss-framed messages are more persuasive when people are engaged in systematic processing is predicated on the assumption that negatively worded arguments are always stronger than positively worded arguments. Although there is evidence that negative traits have a stronger influence than positive traits on impression formation (e.g., Fiske, 1980), no similar evidence is available regarding the impact of persuasive arguments.

Several studies have obtained loss-framing effects under conditions that either suggest people are highly involved with the issue (e.g., breast cancer screening for women aged 50 years and older; Banks *et al.*, 1995) or reflect efforts to make people feel involved with an issue (e.g., informing college students that heart disease can even be a problem for people younger than 25 years), but in each case, investigators have targeted a screening behavior or a behavior presented as risky (e.g., Banks *et al.*, 1995; Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004). On the other hand, the one study that specifically addressed the impact of involvement and

targeted a prevention behavior obtained a gain-framing advantage when people were highly involved in the issue (Millar & Millar, 2000). Moreover, several studies have found that gain-framed appeals promote prevention behaviors using samples that are likely to be involved with the issue (e.g., providing information about skin cancer and sunscreen for people on a beach; Detweiler et al., 1999; see also Rothman et al., 1993). Although this is clearly an issue that will require further study, we believe that by motivating people to pay close attention to the message, high involvement serves to amplify the differential effect of gain- and loss-framed appeals on prevention and detection behaviors, respectively.²

Unpacking the distinction between detection and prevention behaviors

Despite relatively consistent evidence across studies that framing effects depend on whether an intervention targets a prevention or a detection behavior, clear evidence that the function of the behavior is a critical determinant of the influence of gain- and loss-framed appeals awaited a series of studies in which whether a given health behavior prevented or detected a health problem was manipulated experimentally (Rivers, Pizarro, Schneider, Pizarro, & Salovey, 2005; Rothman et al., 1999). For example, in one study, participants were given a gain- or loss-framed brochure about a behavior—briefly gargling with a small amount of mouth rinse—that described an effective way to either *prevent* the buildup of dental plaque (i.e., a prevention behavior) or *detect* the buildup of dental plaque (i.e., a detection behavior). Consistent with findings that had been observed across studies, the persuasiveness of the framed brochure was contingent on the function served by the mouth rinse. When the mouth rinse provided a way to prevent the buildup of plaque, participants were more likely to request a free sample of the product after having read a gain-framed pamphlet. However, when the mouth rinse provided a way to detect the buildup of plaque, participants were more likely to request a free sample after having read a loss-framed pamphlet (Rothman et al., 1999). This pattern of findings has been replicated in the field. In an intervention designed to promote utilization of pap tests, the persuasive impact of gain- and loss-framed messages was contingent on whether a pap test was characterized as a prevention behavior or a detection behavior (Rivers et al., 2005).

Message frames and health behavior: A more focused look

Clear principles have emerged to guide decisions regarding when to use a gain- or a loss-framed appeal: Gain-framed messages should be used to promote prevention behaviors, and loss-framed messages should be used to promote detection behaviors. Although we believe investigators can rely on these principles, in doing so they must recognize that the predictive value of the distinction between prevention and detection behaviors rests on assumptions regarding how people construe engaging in these two classes of behavior. To the extent that the function of the behavior (i.e., prevention or detection) can serve as a reliable indicator for how people construe a behavior, hypotheses regarding the impact of gain- and loss-framed appeals are

straightforward. To date, tests of the relative influence of gain- and loss-framed information have treated any variability in how people perceive the behavior as error, and given the relatively consistent pattern of findings that have been obtained across studies, it would appear that interventions have targeted behaviors for which there has been considerable consensus in how they are construed.

Within the realm of detection behaviors, this consensus likely reflects the fact that health professionals consistently talk about the function of behaviors such as mammography as illness detecting. Yet, there may be reasons why one would construe adopting a detection behavior as a health-affirming act. For example, people who consistently follow a set of effective preventive behaviors (e.g., regularly brush and floss their teeth) might feel there is little risk of having a health problem and thus consider a screening exam (e.g., a dental checkup) as an opportunity to affirm that they are healthy (e.g., have no cavities).

The experience of close friends and family may also matter. For example, people may be less likely to construe a screening behavior as an illness-detecting behavior if they do not have a family history of the disease or if they do not know anyone who has been diagnosed with the disease. Aspects of a person's personality might also affect how they construe a behavior (e.g., regulatory focus [Higgins, 1998, 1999], dispositional optimism [Scheier & Carver, 1985], monitoring and blunting [Miller, 1995], and consideration of future consequences [Strathman, Gleicher, Boninger, & Edwards, 1994]). For example, the extent to which a person tends to focus on the proximal or distal consequences afforded by a behavior may have a substantial effect on how they think about a screening behavior (see Orbell, Perugini, & Rakow [2004], for an interesting demonstration regarding attitudes toward colorectal cancer screening). Regardless of its sources, to the extent that there is variability across people in how a given behavior is construed, the effectiveness of gain- versus loss-framed messages will vary.

What evidence is there that variation in how people construe a behavior affects the relative influence of gain- and loss-framed appeals? A few studies have examined how people's perceptions of some aspect of a health behavior or a health concern affect the influence of framed appeals. Meyerowitz, Wilson, and Chaiken (1991) found that a loss-framed brochure increased rates of breast self-examination, but only when read by women who perceived performing breast self-examination to be risky. Although, as expected, those women who did not perceive breast self-examination to be a risky behavior were more responsive to the gain-framed brochure, this effect was not statistically significant. A similar pattern of results was obtained in a study designed to promote interest in skin cancer screening exams (Rothman, Pronin, & Salovey, 1996). Those participants who perceived themselves to be at relatively higher risk for developing skin cancer were more interested in a screening exam if they had received loss-framed information about skin cancer. Once again, those people who were expected to be more responsive to a gain-framed appeal—those who perceived themselves to be at relatively low risk for skin cancer—revealed a nonsignificant advantage for a gain-framed appeal.

In another study, Apanovitch *et al.* (2003) found a significant advantage for a gain-framed appeal. In this case, women who were confident that they were not currently HIV positive were more likely to have an HIV test after having viewed the gain-framed appeal. However, the prediction that a loss-framed appeal would be more effective for those women who thought they could be HIV positive did not receive as strong support; these women were only somewhat more likely to get tested after having viewed the loss-framed appeal.

Although the pattern of findings across these three studies suggests that how people think about a health behavior systematically affects their response to gain- and loss-framed appeals, the findings within each study were mixed. However, experimental work has generated findings that converge with the initial observations. Kelly and Rothman (2001) manipulated the risk implications posed by a screening behavior. Typically, screening tests are developed to detect the presence of a health problem. What would happen if a test was designed to identify factors that are health promoting? Given the tendency to construe a behavior in terms of what it is designed to detect, people may not perceive screening for a healthy attribute as risky (i.e., one no longer runs the risk of finding something wrong). In this study, participants were encouraged to schedule a screening exam at the university health center. The perceived function of the exam was manipulated by adapting a version of the thioamine acetylase (TAA) paradigm (Croyle & Ditto, 1990). Participants were led to believe that testing positive for TAA indicated either a health benefit (i.e., it made them more resistant to a complex of pancreatic disorders) or a health problem (i.e., it made them more susceptible to a complex of pancreatic disorders). Among participants who reported having previously used the university health center, the effect of message frame depended on the risk implications of the screening test.³ When people were encouraged to test for a health problem, a loss-framed pamphlet was more effective in getting them to schedule a test at the health center, but when people were encouraged to test for a health benefit, a gain-framed pamphlet was more effective.

Variability in how people construe the risk posed by being screened would appear to affect the impact of gain- and loss-framed efforts to promote screening. What happens when there is variability in how people think about a prevention behavior? To the extent that people are confident that a prevention behavior will keep them healthy and safe, a gain-framed appeal should be effective. However, if people have reason to question the effectiveness of the behavior, performing the behavior might be considered a risky proposition as people cannot be confident that they will be protected. To test this idea, Bartels, Elo, and Rothman (2004) manipulated the effectiveness of a vaccine. Some people were led to believe that a newly developed vaccine for West Nile virus worked for 9 out of every 10 people who received the vaccination, whereas others were led to believe that the vaccine worked for only 6 out of 10 people. Participants read either a gain- or a loss-framed article promoting the vaccine, and after reading the article, they indicated their interest in being vaccinated. Consistent with predictions, the perceived effectiveness of the vaccine moderated the impact of the framed article. When people were

confident that the vaccine would be effective (i.e., it works for nearly everyone who receives it), the gain-framed article elicited greater interest in the vaccine, but when people were unsure whether the vaccine would be effective and thus there is some risk associated with relying on the vaccine, the loss-framed article elicited greater interest in the vaccine.

Taken together, the findings from these studies provide compelling evidence that the risk implications of a behavior determine whether a gain- or a loss-framed appeal will more effectively motivate people to take action. Although investigators and practitioners can rely on this framework to determine when to use gain- or loss-framed arguments, its value rests on people thinking about a behavior in terms of risk. For decisions regarding screening exams and prevention behaviors, risk appears to be a relevant attribute, but its applicability to a broader range of behaviors is uncertain. Do people think about treatment protocols in terms of risk? What about efforts to stop an unhealthy pattern of behavior such as smoking or drug use? To date, research on message framing has focused on a relatively narrow set of behaviors. It is critical that investigators begin to examine whether—and if so, how—message framing affects the decisions people make about health issues that involve the performance of a complex set of behaviors. For example, successfully losing weight depends on people successfully modifying their dietary behavior and their physical activity. Should framed appeals focus on the broader goal of these efforts (e.g., the benefits of losing weight) or should they target the specific behaviors (e.g., the benefits of regular exercise)? Efforts to apply message framing principles to these domains depend on answers to these questions.

Moving beyond the risk implications of the behavior

In applying the framing postulate of prospect theory to health communication, Rothman and Salovey (1997) argued that perceived risk was a critical determinant of how people respond to gain- and loss-framed appeals. As was noted earlier, in the prototypical framing study, risk was operationalized as the fixed probability of an outcome (e.g., if Program B is adopted, there is a 2/3 chance that 600 people will die). In studies that have used message framing to promote health behaviors, risk has been operationalized more broadly as people's subjective perception of the behavior. Thus, it reflects not only the probability of a particular outcome, but also the associated feelings of worry and concern about the issue and perhaps even the reasoning strategies elicited by the possibility of a favorable or an unfavorable outcome. For example, when a man is deciding whether to be screened for prostate cancer, he must weigh the probability that the test could be positive and, thus, the risk of finding that something is wrong. But, in addition, thinking about the screening exam may affect his mood, perhaps making him anxious and tense, and may bring to mind reasoning strategies he tends to rely on when faced with the chance of an unwanted outcome. Although research and theory on message framing have

emphasized the moderating effects of the risk attributed to the behavior, it is possible that all these factors contribute to the predicted influence of framed appeals.

In fact, several teams of investigators have recently demonstrated that variability in people's general sensitivity to favorable and unfavorable outcomes regulates their reactions to gain- and loss-framed appeals (Cesario, Grant, & Higgins, 2004; Lee & Aaker, 2004; Mann, Sherman, & Updegraff, 2004). The primary thesis that has guided this research is that gain- and loss-framed messages will prove to be more persuasive to the extent they fit or are compatible with how the recipient of the message thinks and reasons about his or her environment. Using a range of measures, investigators have shown that people differ in the extent to which they think about their daily experiences in terms of the presence and absence of favorable outcomes or unfavorable outcomes (Carver & White, 1994; Elliot & Thrash, 2002; Higgins, 1998, 1999). Specifically, some people primarily focus on hopes and aspirations and pursue goals that afford them the opportunity to seek out favorable outcomes (i.e., a promotion-oriented perspective), whereas other people primarily focus on duties and obligations and pursue goals that afford them the opportunity to avoid unfavorable outcomes (i.e., a prevention-oriented perspective; Higgins, 1998, 1999).⁴ Across several studies, gain-framed appeals were more effective for people who tend to be promotion oriented, whereas loss-framed appeals were more effective for people who tend to be prevention oriented (Cesario *et al.*, 2004; Lee & Aaker, 2004). Using a different but conceptually analogous measure developed by Carver and White (1994), Mann *et al.* (2004) found that gain-framed appeals were more effective for people who scored relatively high on a measure of behavioral activation (i.e., behavioral activation scale), whereas loss-framed appeals were more effective for people who scored relatively high on a measure of behavioral inhibition (i.e., behavioral inhibition scale; see Lang, 2006).

Given the observation that variability in regulatory focus—that is, the tendency to be preoccupied more so with accomplishments than safety or vice versa—moderates the influence of framed appeals, how might this finding fit with earlier evidence that the function of the behavior moderates the influence of framing? Should these be thought of as two distinct sets of findings, or could they both reflect the influence of a single underlying set of processes? We believe that these independent lines of research may reflect the operation of a single set of processes. The observation that loss-framed appeals are more effective when people must decide whether to perform a risky behavior (which typically have been detection behaviors) may be due to the fact that thinking about a behavior such as screening mammography may serve to induce a prevention-oriented mindset. Consistent with Higgins' (1998, 1999) characterization of a prevention orientation, detection behaviors may elicit feelings of concern and anxiety and an emphasis on vigilance and the avoidance of unwanted outcomes (see Millar & Millar, 1995). Furthermore, the decision to perform a detection behavior may feel more like a duty or an obligation (i.e., something one ought to do) than a choice (i.e., something one wants to do). Consistent with Rothman and Salovey's (1997) emphasis on the risk

implications of the behavior, this characterization of a detection behavior should be particularly true when people believe that it affords the chance of an unwanted outcome.⁵ In fact, Lee and Aaker (2004) found that people who were led to believe that they were at a high risk for developing a health problem responded to loss- and gain-framed appeals in the same manner as someone who was placed in a prevention-focused mindset.

On the other hand, when people decide whether to adopt a prevention behavior, they may find themselves in a promotion-oriented mindset. The decision to adopt a prevention behavior such as using sunscreen or becoming physically active may feel like a choice rather than a duty or an obligation. Furthermore, thinking about engaging in the behavior should elicit feelings of satisfaction and a focus on opportunities to seek out favorable outcomes.

To the extent that a health behavior consistently invokes either a prevention-oriented or a promotion-oriented mindset, a reliable pattern of framing effects should be obtained. Gain-framed appeals should be more effective when promoting behaviors that elicit a promotion-oriented mindset, and loss-framed appeals should be more effective when promoting behaviors that elicit a prevention-oriented mindset. However, there are likely behaviors for which people differ systematically in the mindset that is elicited. For example, some people may find that the prospect of a dental visit invokes a prevention-oriented mindset characterized by feelings of anxiety and tension and concerns about the removal of plaque and the possibility of cavities, whereas others may find a potential dental visit invokes a promotion-oriented mindset characterized by feelings of satisfaction and thoughts about keeping one's teeth healthy and clean. If factors can be identified that reliably predict which mindset is invoked by a consideration of the behavior, they can be used to guide the application of gain- or loss-framed appeals. For example, people with a history of dental problems (e.g., cavities) may be more likely to adopt a prevention-oriented mindset, whereas those with a limited history of problems may adopt a promotion-oriented mindset. Finally, there may be some behaviors that fail to invoke a particularly strong promotion-oriented or prevention-oriented mindset. In these situations, the persuasive impact of framed appeals may be affected less by characteristics of a particular behavior and more by people's chronic tendency to adopt a prevention-oriented or a promotion-oriented mindset.

Although the premise that health behaviors can systematically invoke a promotion or a prevention mindset is compelling, further research is needed to specify the predicted associations. One potentially important advantage of thinking about a behavior in terms of its ability to invoke a prevention-oriented or a promotion-oriented mindset is that it may facilitate the application of message framing to a broader array of health behaviors. For example, it might be difficult to specify the risk implications people ascribe to a treatment regimen, but it could be possible to determine whether the regimen invokes feelings of anxiety or calm (i.e., markers of a prevention-oriented behavior) or feelings of disappointment or satisfaction (i.e., markers of a promotion-oriented behavior).

The application of message framing: Using theory to guide practice

Health communication professionals who design and disseminate messages to promote specific behavioral outcomes want their messages to be maximally effective. Theories of communication and persuasion can provide professionals with invaluable guidance in this endeavor, but only if they specify a set of principles on which investigators can act (Rothman, 2004). In particular, there should be some correspondence between the parameters identified in the theory and the characteristics of the situations in which communication professionals operate. From this perspective, research and theory on message framing have the potential to assist professionals in determining when to rely on gain- or loss-framed appeals. At present, there is sufficient evidence to recommend the use of gain-framed messages when developing initiatives to promote prevention behaviors and the use of loss-framed messages when developing initiatives to promote detection behaviors.

These recommendations are predicated on the assumption that people perceive the behaviors within each of these two broad classes as invoking a promotion orientation and a prevention orientation, respectively. To the extent there is variability in how people construe a given behavior, the effective use of message framing would require that professionals employ a dissemination strategy that tailors the frame of a message to an individual's mindset. Although there is evidence to support the use of tailored messages (Kreuter, Strecher, & Glassman, 1999; Williams-Piehota, Pizarro, Navarro, Mowad, & Salovey, 2006; Williams-Piehota, Pizarro, Schneider, Mowad, & Salovey, 2003; Williams-Piehota, Schneider, Pizarro, Mowad, & Salovey, 2004, 2005; see Rimer & Kreuter, 2006), the utility of tailoring critically depends on the development of reliable and efficient assessment methods. If we hope to extend the utility of message framing as a communication strategy, we need to improve our ability to assess how people construe health behaviors.

To date, the application of message framing has focused exclusively on efforts to promote the performance of a single action—using sunscreen, obtaining a mammogram, and getting tested for HIV. Yet, practitioners frequently face the challenge of motivating people to perform a series of behaviors as the benefits afforded by most health practices require sustained action. Research and theory are needed to inform efforts to promote both the initiation and the maintenance of health practices (Rothman, 2000; Rothman, Baldwin, & Hertel, 2004; Rothman & Salovey, *in press*). How might message frames be used to motivate and sustain ongoing behavioral practices? If loss-framed appeals have been shown to promote rates of screening mammography, should women consistently be sent a loss-framed appeal?

Although research and theory on message framing have not directly addressed promoting ongoing patterns of behavior, the thesis that how a person construes a behavior determines their response to a framed appeal may afford the opportunity to generate a set of testable predictions (see Rothman *et al.*, 2003, for a more complete discussion of these issues). Specifically, the ongoing application of a message

frame should depend on the stability of how people think about the behavior. To the extent that a behavior consistently elicits either a promotion-oriented or a prevention-oriented mindset, the theory would advise the repeated use of a gain- or a loss-framed appeal, respectively. However, if how people construe the behavior shifts systematically over time, the decision regarding which frame to use becomes much more complicated.

How people construe a behavior is likely a function of a number of factors. Yet, the primary determinant of how people construe a behavior is likely to be their personal experience (Fazio & Zanna, 1981). If how people think and feel about a health behavior is a function of their experience, the actions people take in response to a framed appeal have the potential to alter their construal of the behavior, and thus, how they would react to a subsequent framed appeal. For example, getting a mammogram could alter the way a woman thinks about getting future mammograms and, hence, affect the impact of framed appeals encountered in the future. Therefore, decisions regarding the repeated dissemination of a framed appeal would depend on information about the actions people take in response to an initial appeal and how those actions affected their thoughts and feelings about the behavior.

We believe that this perspective could also be applied to situations in which people have completed treatment for a health problem and need to monitor for a recurrence. In this case, a critical factor may be the pattern of thoughts and feelings induced by the treatment procedure. To the extent that people complete treatment feeling satisfied and reassured about their health, they may be more likely to construe the monitoring process as a health-affirming procedure and, thus, respond to a gain-framed appeal, whereas for those who complete treatment anxious about the possibility of a recurrence would be more likely to construe the monitoring process as an illness-detecting procedure and, thus, respond to a loss-framed appeal (Bedell, Detweiler, & Salovey, 1997).

Finally, research and theory on message framing provide investigators with a framework that specifies when a particular message format or frame will be most effective. Yet, this framework provides no guidance regarding the specific information that should be included in a message (Rothman & Salovey, *in press*). For example, would it matter if a loss-framed appeal focused on the social norms regarding the behavior as opposed to the health risks afforded by the behavior? In light of this situation, there may be utility in examining whether there is value in using current models of behavioral decision making such as the theory of planned behavior (Ajzen, 1991) or the precaution adoption process model (Weinstein, 1988) to guide the selection of the information that is highlighted in a framed appeal.

Conclusion

Research on message framing has provided a theoretically grounded approach to understanding effective health communication and rational health decision making. It has demonstrated the importance of framing messages in accord with the risk

associated with (or thought to be associated with) the targeted behavior. The essential findings appear robust across different kinds of health behaviors and in different populations. The magnitude of these differences is not only statistically significant, in most cases, but also represents an increase in desired health behaviors that would have public health impact. Yet, it should be clear that framing in and of itself is not a “magic bullet.” An emphasis on gains or losses does not always lead to an increase in healthy behavioral practices. Rather, the effectiveness of a framed message is moderated by characteristics of the message recipient, characteristics of the desired behavior, or both. The exploration of such interactions and a further understanding of the psychological mechanisms underlying them represent fruitful areas for further study.

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Notes

- 1 This framework is predicated on assumptions regarding how a given behavior is construed. We will return to this issue later in the paper and examine what transpires when there is meaningful variability in how a behavior is construed.
- 2 The effect of framing when people are not involved with an issue also remains uncertain. Although some studies have obtained a gain-framing advantage when people are less involved with an issue (e.g., Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004), other studies have reported no effect of frame (e.g., Rothman et al., 1999).
- 3 The behavioral decisions made by participants who had never used the university health center failed to reveal any interpretable pattern.
- 4 Because research on message framing has focused on the distinction between prevention and detection behavior, there is a potential for confusion between the prevention behaviors and the prevention regulatory style specified by Higgins (1998, 1999). To forestall any confusion, we will use the term prevention oriented to refer to the regulatory style.
- 5 Based on the findings obtained by Bartels et al. (2004), prevention behaviors that offer an uncertain chance of success should elicit a similar pattern of reactions.

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