

Specifying When and How Gain- and Loss-Framed Messages Motivate Healthy Behavior:
An Integrated Approach

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Organizations, small and large, public and private, continue to rely on health communication as a way to motivate and support healthful behaviors. Thus, the specification of evidence-based strategies that can guide the design and dissemination of health communication materials has the potential to greatly enhance their impact on behavior and, in turn, on health. One communication strategy that has received considerable attention from both basic and applied behavioral scientists is the relative effectiveness of messages that focus on the benefits of performing a healthful behavior (e.g., a pamphlet or video describing the benefits of having a mammogram; a gain-framed message) and messages that focus on the costs of not performing the behavior (e.g., a pamphlet or a video describing the costs of not having a mammogram; a loss-framed message). Over the past 20 years, investigators have worked to specify the factors that regulate the impact of gain- and loss-framed health messages and to translate that evidence base into a set of guidelines that practitioners can use when designing health communication programs (Rothman & Salovey, 1997; Rothman, Bartels, Wlaschin, & Salovey, 2006; Rothman, Wlaschin, Bartels, Latimer, & Salovey, 2008).

In order to determine how and when gain- and loss-framed messages should be used, investigators have worked to enumerate the personal and situational factors that regulate the impact of each frame (i.e., moderators) and the psychological processes that underlie a frame's persuasive effect (i.e., mediators). Yet, to date, investigators have had substantially greater success identifying the factors that moderate the impact of framed messages than those that mediate their impact. In particular, two general perspectives have emerged regarding *when* loss-

and gain-framed messages are maximally effective. One view has emphasized how people's construal of the targeted health behavior as risky and uncertain versus safe and certain moderates the impact of framed appeals (Rothman & Salovey, 1997; Rothman et al., 2006). The other view has emphasized how people's dispositional sensitivity to favorable or unfavorable outcomes moderates the impact of framed appeals (Mann, Sherman, & Updegraff, 2004).¹ In this chapter, we first briefly review these two moderator-based perspectives and then examine how our ability to delineate the factors that moderate the influence of framed appeals can inform efforts to generate and test predictions regarding the mediating processes – that is, the “*why*” – through which gain- and loss-framed appeals exert their influence. To this end, we examine four different classes of potential mediators and how these psychological processes may be related to the two moderator-based perspectives. Finally, we consider some implications that research on framing health messages have for research on message framing in other domains.

Message Framing and Health Behavior: Moderators

Health communications can be framed in terms of the benefits afforded by adopting a health behavior (a gain-framed appeal) or in terms of the costs associated with failing to adopt a health behavior (a loss-framed appeal). The premise that altering how health information is framed can affect people's behavioral decisions was initially motivated by Prospect Theory (Tversky & Kahneman, 1981). According to Prospect Theory, losses loom larger than gains, and people are willing to take greater risks when considering the potential losses afforded by their decision (they are risk-seeking in their preferences). In contrast, people act to avoid risks when considering the potential gains afforded by a decision (they are risk-averse in their preferences). Although initial demonstrations of the framing effect were based on patterns of responses to a hypothetical decision-problem, investigators – especially in the health domain – began to

examine how altering how information is framed might affect people's behavioral decisions (see Rothman & Salovey, 1997, for a more complete discussion of this early work). At the outset, practitioners may have hoped that one frame would prove to consistently elicit more healthy behavior, but early on it became clear that the relative impact of gain- and loss-framed appeals varied across contexts and that the factors that moderate the impact of framed appeals needed to be specified.

The Function and Perception of the Behavior

Rothman and Salovey (1997) proposed a theoretically-grounded taxonomy of health-relevant behaviors that afforded predictions as to when gain- or loss-framed health appeals should be maximally persuasive. Inspired by Prospect Theory, Rothman and Salovey's framework focused on the risk implications afforded by different types of health behaviors. Loss-framed appeals should be more persuasive when people are deciding whether to adopt a behavior that they perceive involves risk of an unpleasant outcome (e.g., it may detect a health problem). In contrast, gain-framed appeals should be more persuasive when people are deciding whether to adopt a behavior that they perceive as relatively safe and free of unpleasant outcomes (e.g., it prevents the onset of a health problem).

At the heart of Rothman and Salovey's perspective is the observation that the underlying function served by a health behavior (i.e., illness prevention vs. illness detection) can serve as a reliable heuristic for whether people construe it as a relatively risky or safe course of action. To the extent that people consistently construe a detection or screening behavior in terms of its ability to detect the presence of a health problem, a loss-framed appeal should be more effective. In contrast, to the extent that people consistently construe an illness prevention behavior in terms of its ability to prevent the onset of an illness and maintain a person's current health status, a

gain-framed appeal should be more effective. However, if there is systematic variability in how people construe a given health behavior – e.g., some women might construe having a mammogram as a way to determine if they have breast cancer, whereas other women might construe having a mammogram as a way to affirm that their breasts are healthy – the relative influence of gain- and loss-framed appeals will depend on an individual’s underlying construal of the behavior.

Evidence for the perspective outlined by Rothman and colleagues (Rothman & Salovey, 1997; Rothman et al., 1993; Rothman et al., 2006; Rothman et al., 2008) has come from three different sources: comparisons across studies that have focused on promoting either a detection or a prevention behavior, comparisons within studies that have manipulated the function of the behavior, and comparisons within studies that have either measured or manipulated features of the behavior that affect how it is construed.

Studies that have focused on promoting detection behaviors have tended to reveal an advantage for loss-framed appeals, with the majority of these studies having focused on promoting cancer screening practices (e.g., screening mammography and breast self-examination; Banks et al., 1995; Cox & Cox, 2001; Finney & Iannotti, 2002; Meyerowitz & Chaiken, 1987; Schneider et al., 2001; colorectal cancer screening; Myers et al., 1991).

Although no study has shown gain-framed appeals to be more effective than loss-framed appeals in promoting cancer screening behaviors, several studies have either failed to find an advantage for either frame (e.g., Lalor & Hailey, 1990; Lauver & Rubin, 1990; Lerman et al., 1992) or have found the loss-frame advantage to be limited to a specific subset of individuals (e.g., Finney & Iannotti, 2002; Schneider et al., 2001). In comparison, studies that have focused on promoting prevention behaviors have tended to reveal that gain-framed messages are more effective (e.g.,

Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Jones, Sinclair, & Courneya, 2003; Linville et al., 1993; Millar & Millar, 2000; Rothman, Salovey, Antone, Keough, & Martin, 1993; but see McCaul, Johnson & Rothman, 2002).²

Although the pattern of findings across these studies is encouraging, studies that have manipulated the function of a health behavior provide a more compelling test of the prediction that framing effects are contingent on the function of the advocated behavior. Rothman, Martino, Bedell, Detweiler, and Salovey (1999) presented participants with framed messages advocating the use of a mouthrinse that was designed either to detect the presence of plaque (i.e., a detection behavior) or to prevent the accumulation of plaque (i.e., a prevention behavior). The results of the study revealed the predicted interaction between frame and behavior: participants were more likely to request a free sample of the plaque-detecting mouthrinse after having read a loss-framed message, but were more likely to request a free sample of the plaque-preventing mouthrinse after having read a gain-framed message. This pattern of finding was replicated in a field study designed to promote Pap test utilization that included a manipulation of whether the test is designed to detect or prevent cervical cancer (Rivers, Pizarro, Schneider, Pizarro, Salovey, 2005).

Given the demonstration that the function served by a health behavior determines the impact of gain- and loss-framed messages, it is easy to lose sight of the fact that the predicted pattern of findings initially spelled out by Rothman and Salovey (1997) rests on an underlying assumption regarding how people construe the behavior. For example, it is because detection behaviors are perceived to afford a degree of uncertainty and risk that loss-framed appeals are thought to be more persuasive. To the extent there is variability in how a given behavior is construed, it should alter the relative influence of loss- and gain-framed appeals. Several studies

have shown that variability in how people perceive the behavior or the associated health issue moderates the impact of framed appeals such that people who are ambivalent about the behavior, perceive themselves to be at risk for an adverse outcome or perceive the behavior to be risky, are more responsive to a loss-framed appeal (e.g., Apanovitch, McCarthy, & Salovey, 2003; Broemer, 2002; Meyerowitz, Wilson, & Chaiken, 1991). In a similar manner, Gerend and Shepherd (2007) observed that a loss-framed message regarding HPV vaccination was more persuasive for women who had histories of sexual activity that made HPV a greater concern (e.g., greater number of sexual partners; lower rates of condom use).

Investigators have also experimentally manipulated how people construe the targeted behavior. Bartels, Kelly, and Rothman (in press) have shown that manipulating the risk implications posed by either a prevention behavior (a vaccine) or a detection behavior (a screening test) moderates the impact of gain- and loss-framed appeals. For example, in one of their studies, participants read an article about a new vaccine for West Nile virus (i.e., a prevention behavior). Some participants learned that the vaccine was effective for 9 out of 10 people who are vaccinated and thus there was almost no doubt that the vaccine would work as intended, whereas other participants learned that the vaccine was effective for only 6 out of 10 people who are vaccinated and thus relying on the vaccine to protect their health posed some degree of uncertainty. Consistent with predictions, participants who considered a vaccine whose effectiveness was uncertain were more persuaded by a loss-framed article, whereas participants who considered a vaccine whose effectiveness was assured were more persuaded by a gain-framed article.

A conceptually similar pattern of results was reported by Kiene and colleagues (Kiene, Barta, Zelenski & Cothran, 2005) who observed that when the interpersonal risks posed by using

condom were salient, loss framed appeals were perceived to be more effective. Finally, Broemer (2004) observed, across both a screening behavior (BSE) and a set of prevention behaviors (healthy diet and exercise), that when people found it easy to imagine having the relevant health problem – a manipulation that has been shown to increase feelings of risk – they were more responsive to a loss-framed appeal.

Taken together, these studies provide further evidence that how people construe a health behavior regulates the impact of gain- and loss-framed appeals. In their initial paper, Rothman and Salovey (1997) emphasized the degree to which the behavior was thought to afford unwanted outcomes as the critical belief that moderates the impact of gain- and loss-framed appeals. Although there is empirical evidence in support of this thesis, it is also clear that the risk implication of the behavior is but one aspect of a broader set of thoughts and feelings associated with the behavior. Rothman and colleagues (2008) recently proposed that when people contemplate or engage in a specific class of health behavior, they experience a predictable set of thoughts and feelings that represent a mindset that is conceptually analogous to the two self-regulatory orientations proposed by Higgins (1998) – *prevention-focus* and *promotion-focus*. According to Higgins (1998), a prevention-focus is concerned with safety, security, the fulfillment of obligations (i.e., “oughts”) and the absence of unfavorable outcomes, whereas a promotion-focus is concerned with accomplishment and aspirations towards ideals and the attainment of favorable outcomes (i.e., “wants”). Rothman and colleagues (2008) suggest that behaviors that promote health, such as exercise or sunscreen, are likely to induce a promotion-focus mindset, because they afford favorable outcomes when performed consistently. Therefore, when people think about engaging in these kinds of behaviors, they are more likely to attend to the presence or absence of favorable outcomes, construe engaging in the behavior as a personal

choice, and feel satisfied (disappointed) when they (fail to) meet goals associated with the behavior. On the other hand, because screening behaviors such as mammography serve to detect the presence or absence of a health problem, when people think about engaging in these behaviors, a prevention-focus mindset is likely to be induced. People focus on unfavorable outcomes, construe engaging in the behavior as a duty or obligation, and feel relieved (anxious) when they (fail to) meet goals associated with the behavior (see Rothman et al., 2008 for further discussion of this perspective). Taken together, the extent to which a health behavior is perceived to afford the opportunity to either achieve a desired state (i.e., promote health) or monitor for an unwanted outcome (i.e., detect an illness) evokes a unique set of thoughts and feelings, which in turn regulate how people respond to gain- and loss-framed messages.

Message Framing and Health Behavior: The Role of Dispositional Factors

If the way in which a person construes the goal of a health behavior moderates the impact of framed appeals, one might hypothesize that people's dispositional inclination to think about the decisions they face in terms of gain or losses might similarly affect their reaction to gain- and loss-framed messages. Several independent teams of investigators have demonstrated that people systematically differ in the degree to which they monitor for, and respond to, favorable and unfavorable outcomes. Some investigators have focused on the tendency with which people are motivated to approach or seek out favorable outcomes or to avoid or be responsive to unfavorable outcomes (e.g., Carver & White, 1994; see also Elliot & Thrash, 2002), whereas others have emphasized the notion that people differ in their sensitivity to the presence or absence of positive and negative events (e.g., Higgins, 1999). In either case, researchers have pursued the thesis that people who are sensitive to positive outcomes (as indexed by higher scores on promotion-focus [Higgins, 1999]) or are motivated to approach favorable goals (as

indexed by higher scores on behavioral activation [Carver & White, 1994]) respond more favorably to gain-framed appeals, whereas people who are sensitive to negative outcomes (as indexed by higher scores on prevention-focus [Higgins, 1999]) or are motivated to minimize unfavorable goals (as indexed by higher scores on behavioral inhibition [Carver & White, 1994]) respond more favorably to loss-framed appeals.

Several studies have provided empirical support for the thesis that these dispositional factors moderate the impact of framed health appeals (e.g., Gerend & Shepperd, 2007; Latimer, Rivers et al., 2008; Latimer, Williams-Piehota, et al., 2008; Mann, Sherman, & Updegraff, 2004; Sherman, Mann, & Updegraff, 2006; Updegraff, Sherman, Luyster, & Mann, 2007; Uskul, Sherman, & Fitzgibbon, 2009; for similar findings see Cesario, Grant, & Higgins, 2004; Lee & Aaker, 2004). For example, in a study designed to encourage dental flossing, undergraduate students who had a relatively stronger avoidance orientation (as indexed by a difference between their behavioral activation and their behavioral inhibition scores; Carver & White, 1994) reported flossing more after having read a loss-framed message, whereas those who had a relatively stronger approach orientation reported flossing more after having read a gain-framed message (Mann et al., 2004). A similar pattern of results emerged in an experiment encouraging inactive adults to increase their participation in physical activity (Latimer, Rivers, et al., 2008). In this study, individuals were categorized in terms of whether they were more promotion-focus oriented or prevention-focus oriented. When given gain-framed messages, promotion-focus people reported engaging in more physical activity at the follow-up interview than did prevention-focus people. When given loss-framed messages, prevention-focus participants tended to report more physical activity at the follow-up interview than did the promotion-focus individuals, but this difference was not statistically significant.

In an interesting extension of this line of work, Uskul, Sherman, and Fitzgibbons (2009) observed that persons' cultural background moderated their response to gain- and loss-framed messages about flossing. White British participants were more responsive to a gain-framed appeal, whereas East-Asian participants were more responsive to a loss-framed appeal. Moreover, they demonstrated that the moderating effect of cultural background was due to systematic differences across cultures in personality: White British participants were predominantly promotion-focus oriented, whereas East-Asian participants were primarily prevention-focus oriented.

Using Evidence of Moderation of Framing Effects to Guide Thinking about Mediation

To date, there is evidence that framing effects can be moderated by people's dispositional tendencies as well as by features of the behavioral decision. In both cases, the *match* between how the message is framed and the person or situation is thought to maximize the effectiveness of the framed appeal. Research and theorizing regarding the interplay between these two classes of moderators has just begun to emerge. It has been suggested that when the behavior elicits a strong set of beliefs, those beliefs about the behavior will shape people's responses to framed messages (Rothman et al., 2008). In contrast, when the behavior fails to elicit a strong set of beliefs, dispositional factors such as motivational orientation will most likely shape people's responses to framed messages. For example, most evidence regarding the moderating impact of personality has come from studies that have targeted flossing (i.e., Mann et al., 2004; Sherman et al., 2006; Updegraff et al., 2007; Uskul et al., 2009), which may exemplify a behavior that doesn't elicit strong affective or motivational concerns (but see also Latimer, Rivers, et al., 2008, and Latimer, Williams-Piehot, 2008 for similar findings in exercise and diet).

It may also be the case that framing effects are maximized when there is a match between the construal elicited by the behavior, a person's personality, and the frame. For example, Latimer, Rivers, et al. (2008) found that when encouraging exercise there was a gain-frame advantage for promotion-focused people but not a loss-framed advantage for prevention-focused people. Given that exercise is thought to elicit beliefs that support a gain-framed advantage, this study provides some support for the proposition that persuasion is maximized when a framed message matches a person's personality *and* the construal of the behavior. There is a clear need for additional research that examines the impact of both of these moderators simultaneously.

Message Framing and Health Behavior: Mediators

In contrast to the progress that has been made in specifying moderators of framing effects, our understanding of the psychological processes (i.e., mediators) that underlie these effects has been disappointing. For instance, most framing studies have been notoriously unsuccessful in identifying the mediational processes that underlie demonstrations of a main effect of framing, and only a few studies have identified the processes responsible when framed messages are matched to moderating factors such as disposition or risk beliefs. We believe that this paucity of evidence is due to the fact that the psychological processes responsible for health message framing effects are a varied bunch: different psychological processes may be responsible for different classes of framing effects as well as for behavioral effects that occur in different contexts. Given this complexity, it may be the case that thinking systematically about the implications of these moderating effects might provide a framework for generating predictions about potential mediators. Furthermore, understanding the mediators of various types of message framing effects can help specify the contexts in which each of them are most likely to influence the adoption of healthful behaviors (Brinol & Petty, 2006).

When a factor such as a person’s disposition is shown to moderate the impact of an intervention on an outcome (e.g., behavior), the moderator may be able to provide evidence regarding the operating mediational process. How might this work? Consider the general diagram presented in Figure 1. Evidence that a factor moderates the impact of a framing intervention indicates that the process through which framing influences behavior may be affected in one of two ways. First, the moderating effect may be due to the fact that the moderator alters the framing intervention’s ability to affect the status of a putative mediator (see Figure 1, Option A). For example, it could be that when a frame does not match a person’s disposition that person isn’t sufficiently engaged or interested in the health behavior, which, in turn, guides that person’s subsequent behavior. Second, the moderating effect may be due to the fact that the moderator alters the influence that the putative mediator has on the behavioral outcome (See Figure 1, Option B). In this case, the frame elicits a change in the mediator for everyone (e.g., everyone is engaged with or interested in the behavior), but the moderator prevents some people from translating change in the mediator (e.g., greater engagement) to change in behavior. Distinguishing between these two options may be useful because in the second case evidence of moderation is not due to problems with the framing manipulation *per se*, but the extent to which the putative mediator ultimately influences behavior. At present, very few framing studies have attempted to disentangle these two ways in which mediation might occur but, as we return to shortly, we believe this is an important direction for future research.

 Insert Figure 1 about here

To date, the literature suggests that four general processes may account for health message framing effects. First, framed messages may garner different degrees of attention, which may help capture the initial interest of individuals and make them more likely to remember the message. Second, framed messages may elicit different degrees of elaboration. Third, framed messages may lead people to have a different subjective experience when processing the message. Fourth, framed messages may set into play different cognitive and affective responses to the advocated behavior, which can facilitate longer-term behavior change. As we describe, each of these alleged processes can increase the persuasiveness of the messages, but each will be likely to influence the adoption of a behavior in different situations.

Attention to the Message

In order for any framed message to have an effect on behavior, it must first be attended to. Yet, surprisingly little research has investigated the role that attention plays in explaining why framed messages have their behavioral impact. Negative information, such as that emphasized in loss-framed appeals, is known to capture people's attention to a greater degree than neutral or positive information (Taylor, 1991). Based on this fact alone, one might expect loss-framed messages to be more effective in drawing people's attention and engendering behavior change than gain-framed messages. However, as described throughout this chapter, the impact of loss-framed and gain-framed messages on health behavior change is highly context dependent, suggesting that the manner in which framed messages elicit attention are likely to depend on other factors, such as the disposition of the recipient and aspects of the behavior itself.

To date, research provides only suggestive evidence about how this might occur. When people perceive messages as having greater relevance to them – such as when the gain versus loss outcome is framed to be congruent with their dispositional sensitivity to favorable and

unfavorable outcomes – they may be more likely to pay greater attention to and have greater memory for the details of the message that are consistent with their disposition (Higgins & Spiegel, 2004). For instance, Higgins and Tykocinski (1992) measured participants' chronic motivational orientation, and had participants read a passage that contained a mix of approach- and avoidance-oriented events. Consistent with the notion that greater attention was given to information that was congruent with motivational orientation, they found that approach-oriented individuals recalled more approach-oriented events and avoidance-oriented individuals recalled more avoidance-oriented events. Although no studies have examined this issue in the context of framed health messages, we suggest that attention may be one mechanism responsible for the effects of message framing in some contexts (see also chapter 1).

Message Processing: Degree of Elaboration

Elaboration is a process distinct from attention, as elaboration refers to scrutiny of the message as well as consideration of the merits of the underlying arguments in a persuasive message (Petty & Cacioppo, 1986). Thus, elaboration refers to a deeper level of processing than simply paying attention. Importantly, greater elaboration of a persuasive message is known to predict more stable changes in attitudes as well as a greater likelihood that changes in attitude will predict subsequent behavior (Briñol & Petty, 2006).

It has been suggested that negatively-framed information should elicit greater elaboration than positively-framed information (Maheswaran & Meyers-Levy, 1990; Smith & Petty, 1996). However, a recent meta-analysis of the effect of framed messages on depth of processing found no advantage of negatively-framed messages on extent of elaboration (O'Keefe & Jensen, 2008). Thus, similar to the findings regarding attention described above, it does not appear that one manner of framing systematically results in deeper processing than the other.

Rather, the existing research suggests that dispositional factors moderate the influence of message framing on depth of processing (Shen & Dillard, 2009; Updegraff, Sherman, Luyster, & Mann, 2007). These findings are consistent with a larger body of research showing that when persuasive messages are framed to match important and enduring concerns of the recipient, people are more likely to pay closer attention to the central merits of the message (see Brinol & Petty, 2006, for review). Updegraff and colleagues (2007) tested this mechanism in a study of oral health. Participants' approach and avoidance motivations were assessed using the BIS/BAS (Carver & White, 1994), and then read gain- and loss-framed messages about the importance of regular flossing. However, what was unique about this study was that the argument strength of the framed message was manipulated. Some messages contained cogent reasons for flossing (it will prevent gum disease); whereas other messages contained weak reasons for flossing (it will improve dexterity in fingers). With such a manipulation, these researchers could observe participants' degree of elaboration by examining the extent to which they discerned strong from weak arguments. Updegraff and colleagues found that when the health message was framed to match the participants' motivational orientation, participants' were better able to discern the quality of the arguments presented. For example, approach-oriented participants found strong gain-framed messages to be quite persuasive, but found weak gain-framed messages to be relatively unpersuasive. In contrast, approach-oriented participants did not discern the quality of the arguments in loss-framed messages. Thus, when the frame of the message matches the chronic motivational concerns of the participant, the messages may be perceived as more personally relevant and a higher degree of engagement with the message is achieved (see also Shen & Dillard, 2009, for similar findings).

Interestingly, Evans and Petty (2003) found that this sort of match between the content of a message and the concerns of the recipient may be especially effective in increasing elaboration for people who might not ordinarily be motivated to think deeply about the topic. Evans and Petty (2003) classified their participants in terms of their need for cognition (NFC), which represents the degree to which participants intrinsically enjoy engaging in thought. Among their high NFC participants, Evans and Petty (2003) did not find any effect of matching the content of their message to characteristics of the participant, suggesting that these high NFC individuals might have already been thinking deeply about the message. However, among the low NFC participants, an effect of matching was observed, indicating that matching the content of messages to characteristics of the participants may be a useful strategy for increasing persuasion among individuals who are not already motivated to think deeply about the topic at hand.

Message Processing: Fluency and “Feeling Right”

A third mechanism by which framed messages may influence behavior is by influencing the subjective experience a person has while processing the message. In this regard, two somewhat related mechanisms are fluency and “feeling right”. Fluency refers to the relative ease of processing a message (cf. Lee & Aaker, 2004), whereas “feeling right” refers to the subjective sense of importance or correctness that comes when the way a message is presented fits a person’s motivational orientation (Cesario et al., 2004). Importantly, each of these subjective experiences can act to add importance or value to the topic under consideration, thereby increasing persuasion (Cesario et al., 2004; Lee & Aaker, 2004).

Lee and Aaker (2004) examined how the gain or loss frame of a message interacted with the promotion- or prevention-focus of a message to influence processing fluency. In their studies, promotion-focus messages were those that described how consumer products could satisfy

accomplishment needs such as increased energy and happiness, whereas prevention-focus messages were those that described how the same products could satisfy security needs such as preventing harm and disease. The researchers found that gain-framed messages were more persuasive when the message's content was promotion-focused, whereas loss-framed messages were more persuasive when the message's content was prevention-focused. Using both self-reports of perceived fluency as well as participants' ability to quickly and correctly identify words from the messages as their measures of processing fluency, Lee and Aaker (2004) found greater fluency when the frame matched the regulatory focus of the message, as well as evidence that this increased fluency was responsible for the greater persuasiveness of messages under conditions of fit.

Consistent with Rothman and colleagues' (2008) reasoning, Lee and Aaker (2004) also found that these regulatory fit effects could be replicated when a person's perceptions of personal health risk, rather than whether the product elicited a promotion- or prevention-focus, were manipulated within the message itself. For instance, when a message stated a high risk of getting mononucleosis, participants had more favorable attitudes towards a loss-framed message about an anti-mononucleosis supplement than towards a gain-framed message. In contrast, when a message stated a low risk of developing the illness, participants had more favorable attitudes toward a gain-framed rather than loss-framed message. Although the researchers did not examine whether fluency accounted for the effect of matching the perceived health risk to the frame of the message, they suggest a similar process may be in play. Specifically, when people think about a health condition for which they are at high risk, it temporarily induces a prevention-focus, whereas thinking about a health condition for which they are at low risk temporarily induces a promotion- focus.

In a similar manner, Cesario et al. (2004) examined how the frame of a message interacted with a person's promotion or prevention regulatory focus to influence people's subjective experience of "feeling right" about the message. One study employed messages promoting fruit and vegetable consumption, and temporarily induced in their participants either a promotion- or prevention- focus by focusing on how fruit and vegetable consumption could increase energy and happiness (promotion-focus) or how it could protect oneself from various harms (prevention-focus). Furthermore, the frame of the message was also manipulated by highlighting either how these benefits could be achieved by consuming more fruits and vegetables (gain frame), or how these benefits would be lost by not consuming more fruits and vegetables (loss frame). Similar to Lee and Aaker (2004), they found that when the frame of the message fit the temporarily-induced regulatory focus, greater acceptance of the message was observed. Similar results were found in another study that assessed participants' chronic regulatory focus rather than having induced it through the content of the message.

Cesario et al. (2004) interpret these finding as being due the greater sense of "feeling right" that arises when the frame of a message matches a person's predominant regulatory concern. They tested this account in another study that induced either regulatory fit or non-fit in participants prior to their exposure to a persuasive message. Some participants then had their attention called to the source of this fit, whereas others did not. Cesario et al. (2004) observed the predicted fit effects on persuasion only among those participants who did not have the source of fit called to their attention. These findings suggest that when the frame of a message matches with one's regulatory focus, it creates a subjective sense of correctness which can then be transferred to evaluations of the attitude object. Interestingly, Cesario et al. (2004) also found that when a person had predominantly *unfavorable* thoughts regarding a topic, the sense of

“feeling right” that resulted from regulatory fit actually *decreased* persuasion. This finding has important implications for understanding the contexts in which these “feeling right” effects might lead to health behavior change, a point to which we will return shortly.

Thus, the way a health message is framed may interact with either the recipients’ chronic regulatory focus or the predominant regulatory concern of the message topic to facilitate greater ease of processing and the sense that one’s evaluation of the message “feels right”. However, when considering the extent to which these processes may ultimately influence behavior, some caveats should be mentioned. First, all of the studies that have examined processing fluency or “feeling right” have used self-reports of attitudes or intentions as their outcomes; it is unclear how much these processes might lead to behavior change. Second, although Lee and Aaker (2004) argue that processing fluency may be responsible for the subjective sense of “feeling right”, it is not yet known whether these mechanisms are the same or distinct psychological processes. Regardless, they both suggest that framing can influence the persuasiveness of a health message by influencing the subjective experience that people have while processing the message.

Cognitive and Affective Responses

Framed health messages may also influence behavior by eliciting different cognitive and affective responses to the advocated behavior. For example, it has been suggested that when there is “fit” between the means of goal pursuit emphasized in a situation – such as in a framed health message – and a person’s motivational orientation, people derive more value from the behavior itself (Higgins, 2000). This value may manifest itself in a number of ways, including: (1) a greater intention to engage in the behavior and a greater belief that one can perform the

behavior (self-efficacy; Bandura, 1977), (2) more positive feelings when imagining engaging in the behavior, and (3) more positive feelings after having engaged in the behavior.

Indeed, the studies that have found cognitive and affective responses to mediate behavior change are those that have matched the frame of the message to some aspect of the recipient's disposition. For example, in Sherman et al. (2006)'s study of flossing behavior, they found that messages that were framed to match people's predominant approach or avoidance motivation resulted in greater perceptions of self-efficacy for performing the behavior, which was in turn associated with greater intentions and subsequent flossing behavior.

Additionally, in a sample of inactive adults, Latimer, Rivers, et al. (2008) examined the effects of matching the frame of exercise promotion messages with people's chronic regulatory focus. They found that messages that matched recipients' regulatory focus resulted in greater physical activity at a 2-week follow-up. Furthermore, the matched messages led participants to feel more favorably about past episodes of exercise, and these retrospective feelings mediated the influence of the message on exercise behavior.

Moving Back from Mediators to Moderators

As we have described, framed health messages can influence behavior via a number of psychological processes. Of course, we do not believe that all of these processes necessarily operate independently of one another. It may be, for example, that increased elaboration could result in a change in a person's beliefs about the importance of a health behavior, or that an increased sense of "feeling right" about a message could translate into greater anticipated positive feelings about engaging in the behavior. We do, however, view attention and elaboration as being processes distinct from fluency and "feeling right", and propose that these

two general classes of mediators are likely to promote behavior change under different conditions, as we describe below

For example, attention and elaboration are processes that focus individuals on the content and central merits of a persuasive message. Therefore, these processes may be best suited to change the behavior of people who are largely unaware of the importance of engaging in a particular health behavior in the first place, or who might have generally unfavorable pre-existing attitudes towards a behavior. In cases such as these, health messages serve as opportunities to *inform* such individuals about the importance of engaging in a behavior and as opportunities to *change* attitudes and beliefs about the behavior. Interestingly, the only existing study to have found the effects of message framing to be mediated by changes in explicit attitudes and intentions is Sherman et al.'s (2006) study on flossing, in which the frame of message was matched to the chronic motivational orientation of their participants, a process which is known to increase elaboration (Shen & Dillard, 2009; Updegraff et al., 2007). Given that greater elaboration of a message generally leads to more stable attitudes over time and a greater likelihood of those attitudes guiding subsequent behavior (Brinol & Petty, 2006), we believe that this form of matching may be a particularly useful tool when communicating about a new health issue or when communicating to individuals who initially perceive a behavior to be relatively unimportant for their long-term health.

Nowadays, most health behaviors are those for which people are *already aware* of their importance, so a critical issue in choosing how to best frame health messages involves *motivating* them to engage in the behavior, rather than simply informing them about the behavior. For example, most people know that moderate exercise and a low-fat diet have clear health benefits, yet many people fail to modify their diet or physical activity. In these cases,

people do not need to be persuaded as much as they need to be given a nudge in the right direction. We believe that any method of framing health messages that increases the sense of fluency and “feeling right” can provide such a nudge. For example, the subjective feelings of fluency and “feeling right” can serve as pieces of information from which people make inferences about the behavior itself. For example, when a message is perceived as being easy to process, this subjective experience of fluency can translate into a feeling that the advocated behavior will be easy to perform, thereby increasing people’s intentions (Song & Schwarz, 2008). Furthermore, when a person’s preexisting beliefs about a behavior are generally favorable, the sense that a message “feels right” may also translate into a feeling that their attitudes about the behavior are also important and correct, which may likewise increase their intentions to engage in it. However, as Cesario et al. (2004) found, when people’s preexisting beliefs about a behavior are generally unfavorable, the sense of “feeling right” can lead people to *decrease* their intentions to act. Thus, we propose that any method of framing that creates a sense of “feeling right” should promote behavior change only when people are already favorably predisposed towards the behavior. Likewise, any method of framing that increases the ease of processing should also promote behavior change only when people already have some awareness of the importance and usefulness of the behavior.

Importantly, nearly all demonstrations of processing fluency and “feeling right” have been shown in studies where the frame of the message is matched to some manipulated aspect of the message – for example the promotion-focus versus prevention-focus orientation of the behavior (Cesario et al., 2004) or a person’s likelihood of being susceptible to a health condition (Lee & Aaker, 2004). In essence, this kind of “fit” may well be the phenomenon that occurs

when the frame of a message is matched to the prevention or detection function of a health behavior (cf, Rothman & Salovey, 1997; Rothman et al., 2008).

For example, Updegraff and Gallagher (2009) examined how matching the frame of a message to either the prevention or detection function of a behavior or to the dispositional motivational orientation of the recipient influenced young adults' interest in a mouthrinse. Utilizing the paradigm developed by Rothman et al. (1999), messages described the mouth rinse as either one that served a prevention function or one that served a detection function. When the frame of the message matched the manipulated function of the mouth rinse – for example, a gain-framed message about a plaque-prevention rinse, and a loss-framed message about a plaque-detection rinse – participants reported a greater proportion of *favorable* thoughts about the message than when the frame mismatched the function. However, when the frame of the message matched participants' dispositional approach or avoidance orientations, they reported a greater *number* of overall thoughts about the message and, importantly, these thoughts were more focused on the central issues of the message (e.g., importance of mouth rinse, severity of gum disease) rather than other tangential aspects (e.g., pictures, font). These findings suggest that greater elaboration of the message occurred when the frame matched people's disposition (cf., Updegraff et al., 2007), but that a more simple evaluative process occurred when the frame of the message matched the prevention or detection function of the behavior.

Updegraff and Gallagher (2009) also found that these two forms of matching predicted participants' requests for free samples of the mouth rinse under different conditions. When the frame matched the function of the behavior, it increased interest in the product only for participants who already felt some susceptibility to gum disease. This form of fit between the frame and the function of the behavior was able to promote behavior only when participants

already viewed that a mouth rinse might be of benefit to them. In contrast, a fit between the frame and the person's disposition increased interest in the mouthwash only for those individuals who were the least adherent to daily oral health practices in the first place. This latter finding suggests that matching the frame of the message to a person's dispositional motivation may be particularly effective in changing behavior for people who are not ordinarily cognizant of the importance of the behavior. Thus, these findings suggest that these different ways of matching message frames – to a person's disposition or to aspects of the behavior – will likely motivate behavior change in different situations

Implications for Future Research in Health Message Framing

Taken together, these findings highlight the importance of understanding the psychological processes responsible for different classes of health message framing effects. However, research in this area is still in its infancy and understanding how moderators and mediators of these effects are linked can better specify how framed health messages can be used to promote health behavior change. Returning to Figure 1, we note that efforts to specify the factors that moderate message framing effects have either explicitly or implicitly focused on only one part of the mediational model: the effect of frame on hypothesized mediators (Option A). For example, research on how dispositional factors moderate the impact of framed messages have shown that a match increases attention and elaboration of the message which, in turn, promotes behavior change, especially among those least adherent. Similarly, research on how message factors – such as detection versus prevention function (Rivers et al., 2005; Rothman & Salovey, 1997; Rothman et al., 1999), promotion versus prevention regulatory focus (Cesario et al., 2004; Lee & Aaker, 2004) and risk implications (Bartels et al., in press; Lee & Aaker, 2004) – moderate the influence of framing show that a match may increase the perceived ease of

processing or the degree that it “feels right”, which in turn may promote behavior change, especially among those with existing perceptions of susceptibility.

What remains to be examined is the other part of the mediational model: the effect the hypothesized mediator has on behavior (Option B). It is possible that gain- and loss-framed messages elicit similar changes in the putative mediator, but that the influence of this mediator depends on the interplay between the frame of the message and other moderating factors. We propose that the scarcity of evidence supporting this form of mediation may be due more to the fact that it is rarely tested rather than the possibility that it does not occur. Two recent studies may potentially offer insights into this process, although this was not the focus in either study. Gerend and Cullen (2008) observed that a gain-framed alcohol prevention message was more effective than a loss-framed message in reducing self-reported alcohol use, but only when the messages focused on the short-term consequences of drinking. No effect was obtained when the messages focused on long-term consequences. Although it was not tested in this study, it could be that the psychological responses to short-term outcomes predict behavior, but the psychological responses to long-term outcomes do not. The observation that self-efficacy moderates the impact of framed messages may also be consistent with this second path. In a study on interest in smoking cessation, Van ‘T Reit et al. (2009) found that the loss framing effect was more pronounced for smokers with greater levels of confidence in their ability to quit. It may be that people need a sufficient degree of confidence in their abilities before they can translate their response to the message into a behavioral response.

Investigators should also be mindful that there are likely factors that do not moderate the influence of a framed message directly, but instead specify the conditions that afford the opportunity for a framing effect to occur. An example of this can be seen in a study by

McCormick and McElroy (2009). In this study, the authors manipulated the affective tone of a background picture that was provided with a framed message about exercise. They hypothesized, and found, that when a message was presented on a negatively toned background (e.g., a picture of women who is upset) people would pay greater attention to the message and thus heighten the predicted impact that the gain-framed message had on behavioral intentions. Differences in dispositional factors that capture variability in how carefully or how intently people process information (e.g., need for cognition) may similarly affect whether framing effects are observed (e.g., Rothman et al., 1999, Study 1; Steward et al., 2003).

Final Thoughts

Research over the past two decades has identified the importance of message framing in promoting healthy behavior, as well as the factors and processes that shape people's responses to framed communications. By furthering our understanding of the interplay between these moderators and mediators, we can better specify the contexts in which different approaches to framing messages will be maximally persuasive. We believe this focus on the moderators and mediators of health message framing effects is an exciting and important direction for future research to take, as it will help practitioners understand how to best use message framing to promote healthy behavior.

Although research on the framing of health messages was initially inspired by Prospect Theory, as evidenced by the programs of research described in this chapter (as well as in the rest of this book), work in this area has progressed on a trajectory that is somewhat distinct from more traditional research on framing. The development of different lines of research on framing has led some investigators to develop typologies of framing (e.g., Levin et al., 1998). Although these different lines of research share some family resemblance, there would appear to be some

very clear differences. For example, when a frame is manipulated within a hypothetical decision problem such as the Asian disease problem (Tversky & Kahneman, 1981), the two frames provide logically identical descriptions of gain and loss outcomes (e.g., 200 of 600 lives saved vs. 400 of 600 lives lost). In contrast, when a frame is manipulated within a health message, the messages typically differ qualitatively in the outcomes described (e.g., a gain-framed message might state “If cancer is detected early, the chances of surviving more than 5 years are almost 100%”, whereas a loss-framed message might state “If cancer is not detected early, the chances of dying within five years can be as high as 80 (Schneider et al., 2001).

Yet, it may be interesting to note that there are several conceptual issues that have emerged across different areas of framing research that may indicate some potential linkages across these different literatures. First, one thing that all research on framing shares is the premise that a frame represents a perspective that shapes how people think about an issue or an outcome. Second, the value and meaning that people ascribe to the perspective or construal that is afforded by the frame depends on people’s prior beliefs. For example, the observation that how people respond to framed decision problems varies depending on the outcome (i.e., human lives, money, property; Kuhberger, 1998) may indicate that framing effects are affected by the thoughts and feelings people ascribe to these different domains. Within research on health message framing, people’s dispositions and prior beliefs about the relevant behavior or health domain have been shown to be critical determinants of their response to a framed message. We propose that the theoretical ideas that have come to the fore in research on health message framing might also provide a useful framework for explaining observed variability of effects in other research on framing and for developing research programs that would afford the specification of both the mediators and moderators of framing effects. A systematic test of these

predictions across the different framing literatures would provide an empirical basis for thinking about the similarities and differences that underlie different approaches to framing.

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Footnotes

¹There are studies that have examined other moderating factors such as self-efficacy (e.g., Van 'T Riet, Ruiters, Verrij, & de Vries, 2008) and temporal context (e.g., Gerend & Cullen, 2008), but at present a larger body of research on these factors has not emerged.

²There is a growing body of research on message framing and smoking cessation, which has tended to reveal that gain-framed messages are more effective in promoting cessation-related attitudes and behavior (e.g., Schneider, Salovey, Pallonen, Mundorf, Smith, & Steward, 2001; Steward, Schneider, Pizzaro, & Salovey, 2003; Toll et al., 2007; Toll, Salovey, O'Malley, Mazure, Latimer, & McKee, 2008; but see Van 'T Riet et al., 2008). Consistent with this pattern of results, investigators have suggested that cessation is a prevention behavior, but there has yet to be a focused examination of how smokers construe cessation.

Figure 1. Understanding the Interplay between Moderators and Mediators.

