

Health Message Framing: Moderators, Mediators, and Mysteries

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Abstract

Health message framing is an important aspect of health communication. Over the past 20 years, researchers have sought to identify the contexts in which gain-framed and loss-framed health messages are most likely to motivate healthy behavior. Two major approaches have emerged: One approach focusing on matching the frame of the message to how people perceive the risks and uncertainties of the advocated health behavior; the other approach focusing on matching the frame of the message to the motivational orientation of the recipient. In this review, we describe these two major approaches to health message framing, identify the most likely psychological mediators that explain why these approaches motivate behavior, suggest a way to integrate these two approaches, and outline several key future directions for both basic and applied research in health message framing.

Health Message Framing: Moderators, Mediators, and Mysteries

“Reduce the impact of breast cancer on your life and your loved one: Schedule a mammogram today!” — Online advertisement

“Don’t use a condom. Don’t get tested... Sound ridiculous? It is. AIDS kills.” – PSA from AIDSVideos.org

“Hand sanitizer, I advise you, get it, why? It makes germs die, when you rub and let it dry.” – John D. Clarke, MD, *H1N1 Rap*

Messages that encourage people to adopt healthy behaviors are ubiquitous, and can be found on billboards, in magazines, in public service announcements, and rap videos by well-meaning physicians. As illustrated by the three examples above, health messages typically emphasize specific consequences afforded by an action (or inaction): Scheduling a mammogram reduces the impact of breast cancer; not using a condom increases AIDS mortality risk; using hand sanitizer kills harmful germs.

Research on health message framing examines how the frame of a health message influences its ability to promote healthy behavior. By “framing”, we focus on the distinction most commonly investigated in health communications research: Framing the outcomes of an advocated behavior in terms of the *benefits of adopting it* (a gain frame) or the *costs of not adopting it* (a loss frame). The mammogram and hand sanitizer messages are gain-framed; the AIDS message is loss-framed.

Any message communicating the consequence of a health behavior will be either gain- or loss-framed and the last two decades have seen intense interest in the topic. Hundreds of studies have examined how framing affects the persuasiveness of health messages, showing that simple framing manipulations can lead to behavioral changes that persist for weeks and even months (see Gallagher & Updegraff, 2012, for review). In this paper, we review research on health message framing with an emphasis on a few pressing questions regarding mechanisms and effectiveness.

First, we turn to the question that is often on everyone’s mind: Which is more effective in changing behavior, a gain- or a loss-framed message? It would be wonderful if one frame consistently outperformed the other. Yet, investigators have consistently demonstrated that this is not the case.

Sometimes a gain-framed message is more effective, other times a loss-framed message is more effective. What has emerged is that the relative effectiveness of a gain- or loss-framed message depends on two categories of factors: Factors related to the content of the message itself, and factors related to the message recipient. In the rest of this paper, we review research pertaining to these two classes of factors. But for now, let's start with something completely different: A brief discussion of statistical moderation and mediation.

Integrating Moderators and Mediators of Message Framing Effects

Why discuss moderation and mediation? It is because our review addresses two basic questions about health message framing. First, *when* are gain- or loss-framed messages most likely to be effective (i.e., promote healthy behavior)? Second, *why* do differences in the effectiveness of gain- and loss-framed messages emerge? Statistically speaking, these two questions represent moderation and mediation, respectively (Fairchild & MacKinnon, 2009). To get a good grasp on when and why gain- and loss-framed messages motivate behavior, it is essential to consider moderation and mediation together.

For the sake of explanation, consider two relatively robust findings in the message framing literature (see Gallagher & Updegraff, 2012, for details): (1) Gain-framed messages are better than loss-framed messages in promoting certain types of prevention behaviors, including physical activity; (2) gain-framed messages are generally no better than loss-framed messages in promoting certain types of illness detection behaviors, such as breast cancer screening. These findings illustrate a broader pattern in the literature: The type of advocated behavior can moderate the influence of message framing on behavior (Gallagher & Updegraff, 2012).

For the moment, let us also *assume* that health behavior follows a simple decision-making process: People change their health behavior because some factor – such as the information presented in a framed health message – leads to a change in intentions, and intentions then guide behavior. In the two findings described above, how might the moderating factor (type of behavior) and presumed mediator (intentions) work together to influence how a framed message changes health behavior? At least two possible pathways exist, as shown in Figure 1. First, the moderator may differentially affect how framing

influences the proposed mediator (Path A). This could occur, for example, if the type of behavior differentially influences the extent to which framing leads a person to form an intention to adopt the advocated behavior. If this type of mediation occurred, we would expect to see (1) that gain-framed messages lead to greater intentions towards physical activity than loss-framed messages, but that (2) gain-framed messages lead to similar intentions as loss-framed messages towards breast cancer screening. Intentions then predict behavior in the same manner for all people, irrespective of the type of behavior advocated or the frame of the message.

An alternative way that gain- and loss-framed messages may influence behavior is through Path B in Figure 1. In Path B, the action lies in whether or the degree to which the mediator guides behavior. In this context, a gain-framed message might elicit a greater change in the mediator for everyone, but moderation occurs because the impact of that change leads to a change in behavior only for certain people or in certain situations. We know, for example, that many factors shape the extent to which intentions predict subsequent behavior (see Sheeran, 2002, for a review of this “intention-behavior gap”). In the examples described above, it is possible that the frame of a message may interact with the type of behavior to influence *how much* intentions drive a change in behavior. This could happen if gain-framed messages led to greater intentions than did loss-framed messages for both physical activity and breast cancer screening, but people’s intentions were a much stronger predictor of physical activity behavior than of breast cancer screening behavior.

Note that in each of these two scenarios, we would observe a moderating influence of the type of behavior on the behavioral outcome. However, the specific manner in which the moderator affects the mediational process has very different implications for research and practice. Adopting the view of moderation and mediation captured by Path A means that a researcher would be happy to make inferences about behavior based on findings that show effects of framing on a purported mediator such as intentions. In contrast, when adopting the view of moderation and mediation captured by Path B, a researcher could not settle with knowing simply whether a change in a mediator occurred. The researcher would need to know more about the link between the mediator and behavior, to see when the mediator leads to behavior

change and when it does not. Of course, it is possible for moderation to occur through both Path A and Path B. To examine any of these pathways, the researcher must obviously assess both behavior and its purported mediators.

In the message framing literature, intentions are but one purported mediator, but the same possible routes exist for any given mediator. As we detail later, Path A is the primary way researchers have examined how framed messages might influence behavior. It is a straightforward approach, but unfortunately, it may not be the right approach. Researchers rarely consider whether moderation is affecting Path B, even though it may provide a more accurate description of what happens. This may help explain why evidence for moderation abounds, but mediation remains a mystery. Let us now return to our main event: The two major approaches to health message framing.

Framing to Match Beliefs about Risk and Uncertainty

Historically, much of the research on health message framing has been guided by Rothman and Salovey's (1997) application of Prospect Theory (Tversky & Kahneman, 1981) to health communication, which emphasizes matching the frame of a message to people's beliefs about a health behavior. According to Prospect Theory, people are more risk-seeking when outcomes of a choice are framed to emphasize losses, whereas people are more risk-averse when outcomes are framed to emphasize gains. Extending this reasoning to health decisions, Rothman and Salovey proposed that the risks and uncertainties associated with a health behavior should determine which form of framing should most likely motivate behavior. For behaviors that are viewed as having a high degree of risk or uncertainty associated with them – for example, illness detection behaviors such as HIV tests or cancer screenings, where a person may discover a serious health problem – people should be more likely to choose to take those risks when consequences are framed as losses. In contrast, for behaviors that are viewed as affording relatively safe or certain outcomes – for example, illness prevention behaviors such as exercising regularly or improving one's diet – people should be more likely to choose to engage in those behaviors when consequences are framed as gains. Thus, Rothman and Salovey argue that a person's construal of a behavior as having risky v. safe outcomes should determine which frame will promote

greatest adoption. Furthermore, they argue that the underlying detection v. prevention function of a health behavior should act as a heuristic for determining whether people view a behavior as risky or safe.

These predictions have received some empirical support. As Gallagher and Updegraff's (2012) meta-analysis shows, the prevention/detection distinction does moderate the influence of framing on behavior. Gain-framed messages are more likely to motivate several classes of prevention behavior – including smoking cessation and physical activity – than loss-framed messages. In contrast, loss-framed messages are generally no better than gain-framed messages in motivating detection behaviors. Recall, however, that the prevention/detection distinction is a heuristic, and it should moderate message framing effects because it should influence people's perception of the riskiness of a behavior. It is this perception, rather than the type of behavior, that should interact with message framing to affect behavior.

Indeed, evidence supports the role of risk perception as a pivotal moderator of framing effects. For example, among women who perceive high susceptibility to breast cancer, a loss-framed message led to significantly greater rates of subsequent screening than a gain-framed message; however, framing had no effect on screening among women who perceived low susceptibility (Gallagher, Updegraff, Rothman & Sims, 2011). A conceptually similar pattern of moderation was found in a study of women responding to HIV-promotion messages (Apanovitch, McCarthy, & Salovey, 2003). Gain-framed messages were more effective in promoting HIV testing for people initially certain that the test would not detect HIV (i.e., a safe construal), but loss-framed messages were somewhat more effective in promoting testing for people who were uncertain whether HIV would be detected (i.e., a risky construal). Thus, the risks and uncertainties people perceive about a health behavior shape their responses to framed messages, supporting the general predictions of Rothman and Salovey (1997).

Why does this pattern of moderation occur? This, indeed, is a mystery. Interestingly, neither Gallagher et al (2011) nor Apanovitch et al (2003) could identify the mechanism that underlied the moderated framing effect, including intentions. These findings are at odds with several other studies showing that people's risk-related beliefs interact with framing to influence intentions toward HIV testing (Hull, 2012), colorectal cancer screening (Ferrer, Klein, Zajac, Land, & Ling, 2012), and interest in

preventive health products (Bartels, Kelly, & Rothman, 2010; Lee & Aaker, 2004, Experiment 3).

Unfortunately, these latter studies did not assess behavior, so it is impossible to know whether these effects on intentions would have led to similar differences in behavior.

However, Hull (2012) found that framing interacted with perceived risk to predict message elaboration: Among women reading a loss-framed message, those who perceived some risk for HIV reported greater elaboration of the message compared to those who perceived no risk for HIV.

Elaboration reflects scrutiny of the arguments in a message. Attitudes that are based on a greater degree of elaboration tend to be more stable over time and more predictive of behavior (Brinol & Petty, 2006). To the extent that elaboration leads to attitudes or intentions that more strongly predict behavior, one might expect to find evidence of moderation of Path B in the mediational model, whereby framing and perceived risk jointly influence the strength of the relationship between intentions and behavior. For example, among people reading a loss-framed message, we might expect a greater link between intentions and behavior for high risk people than for low risk people.

Why has it been so difficult to identify how the processes underlying a Prospect Theory-based approach to health message? One reason may be that Prospect Theory is a descriptive theory of choice, rather than a theory that posits explicit mechanisms (Salovey & Wegener, 2003). To date, researchers have *assumed* that framing effects are mediated by conscious, intentional processes and thus have focused their efforts on capturing changes in attitudes and intentions. However, people can react to potential risks through two routes: One, a dispassionate cognitive route, and two, an emotional route (Loewenstein, Weber, Hsee, & Welch, 2001). People may encode the consequences of different actions in terms of associated happiness, sadness, fear, and the like. These emotions need not be consciously recognized, and can arise from past experiences with the health issue or behavior. These “somatic markers” are then thought to guide subsequent decision making (Bechara & Damasio, 2005). Thus, the framing of a health message – and its emphasis on either positive or negative health outcomes – may activate particular emotional associations with those outcomes, and these associations guide behavior. Relatively few studies

have examined the role of emotional responses (assessed either explicitly or implicitly) as a mediator of framing effects on behavior. We think this is one fruitful avenue for future research.

Another reason why evidence of mediation has proven to be elusive is that it may occur through cognitive channels that are rarely assessed by researchers. Salovey and Wegener (2003) propose that risk beliefs and framing may interact to influence the way a person processes a message, but may do so in two possible ways. One way is by biasing people's perceptions of argument strength. For example, when people think about illness prevention, arguments that focus on health rather than sickness may be more relevant and perceived as stronger (Salovey & Wegener, 2003). In contrast, when people think about illness detection, arguments that focus on illness and disease may be perceived as stronger arguments. If this occurred, we might expect to see the moderation of Path A in the mediational model, where risk beliefs and framing interact to bias people's perceptions of the quality of the message's arguments, and these perceptions may ultimately lead to a change in behavior.

As revealed by Hull (2012), risk beliefs may also interact with framing to influence message elaboration. However, the effect of elaboration depends on the quality of the message. If a person perceives a message as having generally strong arguments, greater elaboration should lead to greater persuasion and to intentions that predict behavior, but if person perceives a message as weak in some way – outdated, polemic, or based on flimsy data – then greater elaboration could *reduce* persuasion, reduce intentions, or result in intentions that do not predict behavior (Petty, Haughtvedt, & Smith, 1995). Thus, the interaction between risk beliefs and framing could itself interact with the perceived quality of the message to influence behavior. Note that this would represent a complicated pattern of moderation and mediation that is rarely, if ever, examined. Such a pattern of moderation could be tested using techniques described elsewhere (e.g., Fairchild & MacKinnon, 2009; Muller, Judd, & Yzerbyt, 2005).

In sum, evidence for the moderating role of risk beliefs on health behavior is clear, but the mediational pathways need more attention. Researchers may do well by testing more complex models of mediation, as well as examining emotional responses (both explicit and implicit) and information processing as potential mediators of framing effects on behavior.

Framing to Match Motivational Orientation

A second dominant approach to message framing involves matching the frame of the message to broader dispositional-based differences in motivational orientation. People differ in the degree to which they attend to and respond to favorable and unfavorable outcomes, such as those emphasized in framed messages. Some researchers have investigated the tendency with which people are motivated to approach favorable outcomes or to avoid unfavorable outcomes (i.e., approach and avoidance motivational orientation; [e.g., Carver & White, 1994; see also Elliot & Thrash, 2002]) Other researchers have examined people's sensitivity to the presence or absence of positive events (promotion regulatory focus) or sensitivity to the presence or absence of negative events (i.e., prevention regulatory focus; Higgins, 1999). In both cases, approach-motivated and promotion-focused people should be more responsive to gain-framed health messages, whereas avoidance-motivated and prevention-focused people should be more responsive to loss-framed health messages¹. Indeed, a growing body of research supports these predictions across a range of behavioral domains including oral health (Mann, Sherman, & Updegraff, 2004; Sherman, Mann & Updegraff, 2006), papillomavirus vaccination (Gerend & Shepherd, 2007), and physical activity (Latimer et al., 2008).

Why do these findings emerge? When the frame of a message matches a person's motivational orientation, the message should have a greater relevance to a person's goals and valued outcomes. This increase in relevance should increase what Johnson and Eagly (1989) refer to as *outcome-relevant involvement*, which should increase motivation to attend to and elaborate on the message (see Briñol & Petty, 2006; Johnson and Eagly, 1989; for reviews). Updegraff and colleagues (2007) examined the role of elaboration in this approach to message framing by presenting participants with framed oral health messages, some with deliberately strong arguments about the importance of flossing ("it will prevent gum disease") and others with deliberately weak arguments ("it can improve dexterity in fingers"). When there was a match between frame and motivational orientation, participants better discriminated between the strong and weak arguments than when there was a mismatch (Updegraff, Sherman, Luyster, & Mann, 2007). In other words, people were more attuned to the quality of the information they read when the

frame matched motivational orientation (see also Shen & Dillard, 2009). Thus, when matching frame to motivational orientation, the processes underlying effects on behavior may be more likely to involve attention and elaboration on the message, which may make attitudes more durable and more predictive of behavior.

Consistent with this explanation, Sherman and colleagues (2006) found clear evidence of a mediational pathway when examining the moderation of framing effects by motivational orientation. When a frame matched a person's motivational orientation, it resulted in greater perceptions of self-efficacy and this, in turn, predicted both greater intentions to floss and actual flossing behavior. This is one of the few studies to find the effects of framing on behavior to be mediated by explicitly-reported beliefs and intentions, suggesting that attitude change may be an underlying process in this motivational orientation approach to framing.

Other theorists propose that subjective experiences such as regulatory fit and "feeling right" may underlie the effect of matching message frames to motivational orientation (see Cesario, Grant, & Higgins, 2004). When there is a match between a person's motivational orientation and the framing of a message, it leads to regulatory fit and a sense of "feeling right"; this sense has also been described as a feeling of correctness or importance. Regulatory fit theory states that this feeling right experience should transfer to a person's *evaluation* of the message (Cesario, Higgins, & Scholer, 2008). If a message is generally convincing and regulatory fit leads people feel right about that evaluation, then they should perceive the message as being even more convincing than if there was no regulatory fit. However, if a message is generally unconvincing and regulatory fit makes a person feel right about this negative evaluation, then they should perceive the message as being even *less* convincing than if fit did not exist. Thus, according to this regulatory fit perspective, the quality of the message should also moderate the effects of framing on behavior, as depicted in Figure 2.

Thus, both elaboration and regulatory fit are possible mechanisms that underlie the motivational orientation approach to framing, and both of these mechanisms rely on strong, convincing messages to facilitate persuasion and behavior change. Indeed, this is an example of why understanding the

mechanisms that explain framing effects is so important: It can tell us when framing should be likely to promote healthy behavior, and when it may backfire.

Integrating the Two Approaches to Health Message Framing

We have described these two general approaches to message framing as qualitatively different from each other, but are they really? As we note, both approaches may rely on elaboration as a mechanism, although this requires further evidence. These two approaches may also share a single set of underlying processes (Rothman, Wlaschin, Bartels, Latimer, & Salovey, 2008). Rothman and colleagues suggest that thinking about illness prevention or illness detection behaviors may temporarily elicit one of the two self-regulatory orientations proposed by Higgins (1999) – promotion or prevention, respectively. For example, Rothman and colleagues (2008) show that when people think about illness prevention behaviors such as exercise, they exhibit a pattern of thinking and feeling consistent with a promotion regulatory focus. In contrast, when people think about illness detection behaviors such as a cholesterol test, their thoughts and feelings are more consistent with a prevention regulatory focus. In short, the Prospect Theory-based approach to message framing may be simply a situationally-induced case of the motivational orientation approach to framing.

Rothman and colleagues (2008) also suggest that when an advocated health behavior elicits strong promotion or prevention concerns, those beliefs about the behavior are likely to be the pivotal moderators of message framing effects. This may be why we observe the moderating role of risk beliefs across many studies. However, when an advocated health behavior fails to elicit strong promotion or prevention concerns – because a person has limited knowledge of, exposure to, or weak beliefs about the behavior - a person's more enduring motivational orientation should act as the pivotal moderator of message framing effects. This may explain why motivational orientation is a robust moderator of young adult's responses to framed messages advocating oral health behavior such as flossing or brushing (see Sherman, Updegraff, & Mann, 2008, for review). Compared to other health behaviors such as cancer screening, dental flossing may not elicit particularly strong beliefs, especially among a relatively healthy young adult population. Interestingly, recent evidence from one of our labs shows that the moderation of

framing effects by motivational orientation occurs among young adults, but *not* among middle-aged and older adults (Updegraff, Sherman, & Mintzer, forthcoming). Among middle-aged and older-adults, perceived susceptibility to oral health problems moderates the influence of message framing on flossing behavior. We interpret these findings in a way consistent with Rothman's and colleagues' (2008) theorizing: Young adults may have weakly articulated beliefs about oral health risks, so motivational orientation moderates; middle-aged and older-adults may have more strongly articulated beliefs about oral health risks, so those beliefs moderate.

Other Moderators of Health Message Framing

Although risk beliefs and motivational orientation represent the two dominant classes of moderators of health message framing effects, we would be remiss by not mentioning two other moderators of framing effects: Consideration of future consequences and self-efficacy. We propose that these moderators operate at a somewhat lower level than those already outlined, and that they can be integrated into the two more prominent approaches discussed already.

Consideration of future consequences. Consideration of future consequences (CFC; Orbell, Perugini & Rakow, 2004) is an individual difference in the extent to which a person is influenced by immediate or distant outcomes of decisions. People low in CFC are sensitive to short-term outcomes, whereas people high in CFC are sensitive to longer-term outcomes. For behaviors with risky short-term consequences such as screening tests, people low in CFC should be especially prone to respond to loss-framed messages. In contrast, people with high CFC may be more likely to see past short-term risks and focus on the relatively safer longer-term consequences of a behavior, and should be more prone to respond to gain-framed messages. These predictions have been found in studies of colorectal cancer and Type I diabetes screening (Orbell & Hagger, 2006; Orbell et al., 2004). However, we believe that this moderation by CFC does not represent a unique class of moderation; rather, it occurs because of the particular outcomes that people focus on. In other words, this form of moderation is a specific case of the broader approach to message framing rooted in Prospect Theory.

Perceived self-efficacy. Van 't Riet and colleagues show that people high in perceived self-efficacy are more persuaded by loss-framed information compared to gain-framed information. In contrast, people low in self-efficacy are equally persuaded by loss- and gain-framed information. They show this across several domains of health behavior including skin cancer screening (van 't Riet et al., 2010) and smoking cessation (van 't Riet et al., 2008). They interpret this pattern through the lens of other theories of health behavior which propose that people take action to protect their health when they perceive both high threat as well as a high efficacy for performing the behavior (see Leventhal, 1970; Rogers, 1983; Witte, 1992). In particular, they propose that loss-framed messages evoke a greater sense of threat than gain-framed messages, and self-efficacy determines whether the evoked threat translates into adoption of the behavior (for high self-efficacy) or defensive avoidance of the information (for low self-efficacy). Although neither of these studies assessed behavior as an outcome, we present these studies as an example of how the moderation of framing effects could theoretically occur through Path B in the mediational model, as the moderator shapes the extent to which a mediator influences behavior. Thus, these studies suggest how examining mediation through Path B may also indicate the need for other theories to help explain how mediators may have a differential impact on behavior (see also Rothman and Baldwin, 2012).

Future Directions in Health Message Framing

Given the complexities that have emerged in the last twenty years of research on health message framing, what can be said about the place of message framing in health interventions? Owing in part to the multitude of moderators of message framing effects, we believe there are a number of ways in which message framing can promote healthy behavior. First, knowledge of how health beliefs shape responses to framed messages can be useful for informing the development of mass media interventions. At the simplest level, knowing whether a behavior serves a prevention or a detection function can provide some guidance to how messages should be framed, particularly in mass-media interventions. This is particularly the case for prevention behaviors, for which gain-framed messages tend to be more effective than loss-framed messages in changing behavior (Gallagher & Updegraff, 2012). Message framing may also be

incorporated into individually-delivered tailored health interventions, if an opportunity exists to measure specific beliefs and personality traits. Although such tailored interventions have been rather expensive in the past, the advent of technologies such as the internet, text messaging, and mobile phones make it increasingly easy to assess people's beliefs and characteristics, craft framed messages that are tailored to those beliefs, as well as assess their impact on health behavior in real-world contexts.

Second, greater attention should be paid to the role of message quality in understanding health message framing effects on behavior. If either elaboration or feeling right is a mechanism that drives health message framing effects, then message quality should shape how these processes guide behavior. It is even conceivable that the heterogeneity of effect sizes observed in health message framing studies (cf., Gallagher & Updegraff, 2012) may be due, in part, to variation in the perceived strength of messages used across studies. Additionally, if elaboration is a mechanism that drives message framing effects, we should expect to see effects of framing in contexts when elaboration would ordinarily be low. In settings when people's motivation and/or ability to elaborate on a message are already high, there may be less of an opportunity for framing to increase elaboration.

Third, virtually all framing research has examined the effects of print messages or public service announcements, but little is known about how interpersonal factors might moderate the effects of framed messages. For example, would a loss-framed message be more or less effective when delivered in a conversation with a health care provider rather than via a pamphlet? Although an interpersonal context may increase the recipient's attention to the information, other interpersonal factors might diminish the impact of a loss-framed message, such as a perception that the provider lacks empathy or places blame on the recipient for non-adherence. Thus, an examination of the interpersonal factors that moderate the influence of framed messages is a critical direction for future research.

Fourth, little is known about the broader social and institutional factors that shape how people think about health behaviors. If the media and health care systems routinely describe detection behaviors such as cancer screenings, for example, as tests that mainly detect the presence of a health problem, most people would be expected to construe screenings in terms of their associated risks and uncertainties.

However, to the extent that the public's construal of screening changes – for example, with a greater emphasis on screening tests designed to affirm that one is healthy – it may begin to suggest a role for gain-framed messages in promoting such behaviors (e.g., Bartels et al., 2010). Thus, understanding the factors that shape people's beliefs about health behaviors is an interesting direction for future work.

Most importantly, the greatest difficulty in understanding *how* framed messages impact behavior arises because so few studies of framing assess both presumed mediators *and* behavior. Thus, our last recommendation – nay, admonishment – for researchers is to resist the temptation to settle with attitudes and intentions as measures of the ultimate impact of framed health messages. We believe it is only by assessing behavior as the main outcome of interest can we better understand when message framing is likely to make a practical difference in health, as well as identifying the contexts in which each major approach to health message framing is likely to have its strongest impact on behavior.

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Notes

1. Higgins' (1999) regulatory focus theory makes distinctions between different types of gain-framed and loss-framed messages. Specifically, promotion-oriented people should be most responsive to messages that frame gains as the presence of positive outcomes rather than the absence of negative outcomes. In contrast, prevention-oriented people should be most responsive to messages that present losses as the presence of negative outcomes rather than the absence of positive outcomes.

Figure 1. Possible routes by which moderators of framing effects can influence health behavior (adapted from Rothman & Updegraff, 2011).

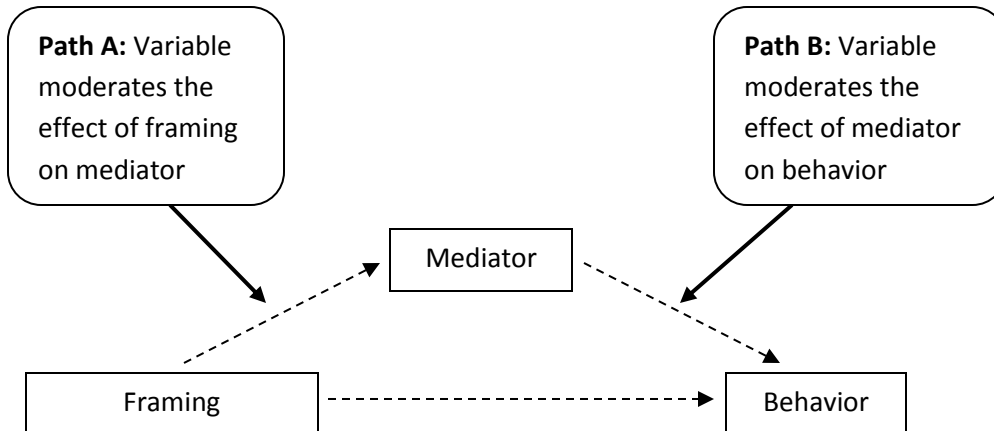


Figure 2. A model linking framing, Path A moderators (risk beliefs, motivational orientation), plausible mediators (elaboration, feeling right, emotions), Path B moderators (message quality), and behavior.

