



Published in final edited form as:

*Health Psychol.* 2004 May ; 23(3): 330–334. doi:10.1037/0278-6133.23.3.330.

## Dispositional Motivations and Message Framing: A Test of the Congruency Hypothesis in College Students

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### Abstract

The authors examined the congruency hypothesis that health messages framed to be concordant with dispositional motivations will be most effective in promoting health behaviors. Undergraduate students ( $N = 63$ ) completed a measure of approach/avoidance orientation (behavioral activation/inhibition system) and read a gain- or loss-framed message promoting flossing. Results support the congruency hypothesis: When given a loss-framed message, avoidance-oriented people reported flossing more than approach-oriented people, and when given a gain-framed message, approach-oriented people reported flossing more than avoidance-oriented people. Discussion centers on implications for health interventions and the route by which dispositional motivations affect health behaviors through message framing.

### Keywords

approach and avoidance motivation; message framing; behavior change

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Providing people with persuasive health messages is often the first step taken in efforts to promote healthy behavior. When persuasive communications are used, two central factors are the type of message and the characteristics of the message recipient. Research in health psychology often looks at these two factors in isolation. The present article explores the interaction between these two factors in predicting health behavior change. We examine the congruency hypothesis that health messages framed to be concordant with individual motivational dispositions will be most effective in promoting positive health behaviors.

When there is a health message that needs to be conveyed, there are many ways in which that material can be framed. In particular, the features of a health behavior can be framed in terms of the benefits of engaging in the behavior (called a *gain frame*) or in terms of the costs of failing to engage in the behavior (a *loss frame*). Although these frames refer to objectively equivalent situations, research has shown that they have different effects on individuals' judgments, decisions, and behaviors (Rothman & Salovey, 1997).

Differential effects of gain and loss frames on behaviors are predicted by prospect theory (Tversky & Kahneman, 1981), which suggests that individuals are risk seeking in the domain of losses and risk averse in the domain of gains. Using prospect theory as a guide, Rothman and Salovey (1997) made two predictions about how health messages should be framed. First, when trying to convince an individual to engage in health detection behavior—a behavior that seems risky because it may detect a serious disease—a message that focuses on the losses associated with failing to perform it should be more effective than a message focusing on

potential gains. This prediction has been supported for many risk detection behaviors, including breast self-exam (Meyerowitz & Chaiken, 1987), HIV testing (Kalichman & Coley, 1995), a viral test for a hypothetical illness (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999, Study 1), and a mouth rinse to detect gum disease (Rothman et al., 1999, Study 2).

The second prediction Rothman and Salovey (1997) made from prospect theory is that when trying to convince an individual to engage in a behavior that prevents, but does not detect, illness—a behavior that is not perceived as risky—a message that focuses on the gains associated with performing it should be more effective than a loss-framed message. This prediction has been supported for many health-promoting behaviors, including using an infant car seat (Christophersen & Gyulay, 1981), getting an inoculation for a hypothetical illness (Rothman et al., 1999, Study 1), and using a mouth rinse designed to prevent gum disease (Rothman et al., 1999, Study 2).

Although all of the above studies report main effects for the type of message frame in promoting health behaviors, research has also shown individual differences in the effectiveness of particular message frames. Indeed, consistent with the research on prevention versus detection behaviors, recent research suggests that individuals' perceptions of the level of risk of particular behaviors interact with the message frame to predict health behaviors (Apanovitch, McCarthy, & Salovey, 2003). Other individual difference characteristics that have been studied in this context are the way in which individuals process information (Wegener, Petty, & Klein, 1994), moods (Wegener et al., 1994), and individual attentional style (Miller et al., 1999). In the present article we propose another candidate for an individual difference that may interact with message frame: approach and avoidance motivations.

## Approach and Avoidance Motivations and Message Framing

Theories of motivation have posited two distinct systems involved in the regulation of behavior (for reviews, see Carver, Sutton, & Scheier, 2000; Elliot & Covington, 2001). One system, an approach system (an example of which is the behavioral activation system, BAS; Gray, 1990), controls appetitive motivation, whereas the other system, an avoidance system (such as the behavioral inhibition system, BIS; Gray, 1990), controls aversive motivation. According to this conceptualization, individuals who have high BAS sensitivity are highly responsive to reward or incentive cues, and those with high BIS sensitivity are highly responsive to punishment or threat cues (Carver et al., 2000). Because the systems are orthogonal, it is possible for individuals to have both high BAS sensitivity and high BIS sensitivity, and therefore to be highly responsive to both reward and punishment cues.

Like BIS and BAS, prevention and promotion focus (Higgins, 1997) are also distinct manifestations of approach and avoidance tendencies. Whereas BIS and BAS are broad dispositional measures of overall sensitivity to punishment and reward, prevention and promotion focus reflect specific types of desired end states, either aspirations (if promotion is the focus) or responsibilities (if prevention is the focus). As an approach strategy is usually taken for promotion and an avoidance strategy is usually taken for prevention (Higgins, 1997), similar behavioral predictions are frequently made for BAS-oriented and promotion-focused individuals, as well as for BIS-oriented and prevention-focused individuals.

As dispositional motivations are theorized to be central in regulating behavior, adopting an approach/avoidance framework could elucidate how health messages should be framed for different individuals. In particular, the route from health message to behavior change may include several processes, any of which may be influenced by approach/avoidance motivations. Before a health message can lead to behavior change, it must be perceived and remembered, a goal or intention must be formed, and strategies to implement the goal must be selected. There is some evidence that approach/avoidance motivations may influence each of these processes.

In a study in which participants performed a simple perceptual task, individuals with strong approach motivation were biased toward positive cues, and individuals with strong avoidance motivation were biased toward negative cues (Derryberry & Reed, 1994). Similar results have been found in a study of memory for either positive- or negative-framed experiences (Higgins & Tykocinski, 1992). To the extent that one of the steps from health message to behavior change is getting individuals to attend to and remember the message, the findings of these studies suggest that information that is congruent with dispositional motivations will be more effective in persuading individuals to alter their behavior than information that is incongruent with dispositional motivations.

In addition to influencing what information is attended to and remembered, approach/avoidance motivation can also influence goal selection, which is another process in the path from health communication to behavior change. Research on achievement motivation finds that individuals with a fear of failure, a motivational disposition conceptually related to avoidance orientation, pursue more avoidance goals (e.g., to avoid performing poorly) in the achievement domain than do individuals with a high need for achievement, a motivational disposition related to approach orientation (Elliot & Sheldon, 1997). Similarly, individuals with a high need for achievement pursue more approach goals in the achievement domain (e.g., to learn as much as possible in class; Elliot & McGregor, 2001). These findings suggest that it may be difficult for people to adopt goals that are not congruent with their motivational dispositions.

Finally, approach/avoidance motivation can influence which strategies individuals choose to use to try to meet those goals. In one study, participants who had earlier been categorized as predominantly prevention focused (and therefore inclined to be avoidance oriented) chose more avoidance strategies to meet the study's goal than did participants who were categorized as predominantly promotion focused (and therefore inclined to be approach oriented; Higgins, Roney, Crowe, & Hymes, 1994, Study 3). The promotion-focused participants favored approach strategies. Thus, more effective behavior change might result if health messages suggest behavior change strategies that are congruent with individuals' approach/avoidance orientation.

Taken together, the above findings suggest that matching the frame of a persuasive message to people's approach/avoidance motivations should render that message more effective. In particular, a gain-framed message should be more persuasive with a person who is predominantly approach oriented, and a loss-framed message should be more persuasive with a person who is predominantly avoidance oriented.

In the present study we examined the interaction between dispositional motivations and message frame in predicting whether an individual reports engaging in the health-promoting behavior of dental flossing. Daily flossing has been shown to prevent periodontal disease, tooth decay, and tooth loss (Schonfeld, 1985), but surveys suggest that only 13%–33% of adults floss daily (Ronis, Lang, Farghaly, & Ekdahl, 1994). Beyond the health advantages, using the promotion of dental flossing has two methodological advantages as a focus of the present study. First, while most participants know that daily flossing is recommended, they are also aware that most people do not floss daily, so there are not excessive concerns for evaluation apprehension. Second, by giving participants a set of flosses to take home, we are able to remove one important barrier to flossing (i.e., not having any floss), allowing for a clean test of our hypotheses.

In the study, participants' levels of BIS and BAS were measured, and then they read either a gain-framed or a loss-framed message promoting flossing. One week later, their self-reported flossing behavior was measured. We predict that when a message is framed in terms of losses,

avoidance-oriented individuals will floss more than approach-oriented individuals, and when a message is framed in terms of gains, approach-oriented individuals will floss more than avoidance-oriented individuals.

## Method

### Participants

Participants were 70 undergraduate students who were enrolled in a research methods course and received extra credit points in their course for participating. Seven participants who did not have follow-up data were excluded, leaving a final sample of 63 participants.

### Measures

The BIS/BAS Scale (Carver & White, 1994) is a 20-item scale that was designed to measure the relative strengths of people's approach (BAS) and avoidance (BIS) motivations. Participants rate their agreement to statements using Likert scales with endpoints of 1 (*strongly disagree*) and 5 (*strongly agree*). The seven BIS items measure concern over the possibility of bad occurrences and sensitivity to such events when they occur (e.g., "I worry about making mistakes"). The BAS items fall onto three subscales that measure Fun Seeking (e.g., "I crave excitement and new sensations"), Reward Responsiveness (e.g., "When I get something I want, I feel excited and energized"), and Drive (e.g., "I go out of my way to get things I want"). In the present study, all BAS items are used together as one BAS scale for the primary analyses. The reliabilities of the BIS and BAS scales were  $\alpha = .70$  and  $\alpha = .82$ , respectively.

### Materials

Two articles were adapted from the American Dental Association's Web page to use for the specific purpose of this experiment. Although both versions of the article were educational in tone and presented facts and figures about gum disease and proper flossing technique, they differed in how the material was presented. In the gain-framed message, titled "Great Breath, Healthy Gums Only a Floss Away," the potential benefits of regular flossing were emphasized, and some mention was also made to the undesirable outcomes that would be prevented. For example, an excerpt from the gain-framed message informed participants that "flossing your teeth daily removes particles of food in the mouth, avoiding bacteria, which promotes great breath." In the loss-framed message, titled "Floss Now and Avoid Bad Breath and Gum Disease," the potential dangers of not flossing were emphasized, and some mention was also made to the desirable outcomes that would be missed. Accordingly, the excerpt (above) was changed in the loss-framed message to read, "If you don't floss your teeth daily, particles of food remain in the mouth, collecting bacteria, which causes bad breath."

### Procedure

Participants were administered the measures and materials in a large group. First, participants completed the BIS/BAS measure. Next, participants were randomly given either the gain-framed or the loss-framed article and were asked to read it. Next, the experimenter gave participants seven individually wrapped single-use flosses that they could take home with them. Participants were asked to use the provided flosses the next seven times they flossed. However, the participants were not told during this first session that they would be later asked how many of the flosses they had used. Exactly 1 week following the first session, participants were given a short questionnaire in class that asked how many of the seven flosses they had used over the previous week.

## Results

### Operationalization of Motivational Orientation

Our primary goal was to examine whether gain-framed messages would be more effective for predominantly approach-oriented participants, whereas loss-framed messages would be more effective for predominantly avoidance-oriented participants. Hence, in our analyses we created a measure of motivational orientation that represented the degree to which each participant was more avoidance oriented or more approach oriented. This measure was constructed by taking the difference of each person's scores on the BIS and BAS scales (BIS – BAS).<sup>1</sup> Positive difference scores represent individuals who are predominantly avoidance oriented, and negative difference scores represent individuals who are predominantly approach oriented. Further, the greater the magnitude of a person's difference score, the greater the predominance of that person's motivational orientation. Thus, this measure provided a direct and efficient way of representing the degree to which each person was predominantly avoidance or approach oriented. BIS ( $M = 3.76$ ,  $SD = 0.42$ ) and BAS ( $M = 3.80$ ,  $SD = 0.44$ ) were uncorrelated ( $r = -.008$ ,  $n = 59$ ,  $p = .95$ ).

### Self-Reported Flossing Behavior

At the conclusion of reading and responding to the health article, all of the participants were given seven individual flosses. Our primary dependent measure was the number of flosses each person reported using after 1 week. We hypothesized an interaction between message frame and motivational orientation in the prediction of subsequent flossing reports. To test this prediction, we followed the recommendations of Aiken and West (1991) and conducted a hierarchical multiple regression, in which frame and orientation were entered in the first step, and the Frame  $\times$  Orientation interaction term was entered in the second step. In the first step of the regression, there were no significant main effects of either frame or orientation, and the model was not a significant predictor of reported flossing,  $F(2, 56) = 0.74$ , *ns*. Thus, neither the frame of the message nor the participants' motivations appeared to have independent effects on flossing reports. However, in the second step, the inclusion of the Frame  $\times$  Orientation interaction term led to a significant increase in the amount of predicted variance in flossing reports,  $F_{\text{change}}(1, 55) = 4.10$ ,  $p < .04$ . The main effect of frame ( $\beta = .11$ , *ns*) remained nonsignificant, the main effect of orientation was negative and marginally significant ( $\beta = -.28$ ,  $p < .15$ ), and the Frame  $\times$  Orientation interaction term was significant and positive ( $\beta = .37$ ,  $p < .05$ ). The interaction is graphed in Figure 1. As is clear from the figure, as participants became predominantly avoidance oriented, they reported flossing more in response to the loss-framed article, and as they became more approach oriented, they reported flossing more in response to the gain-framed article.

## Discussion

This study presented the first demonstration that tailoring health messages to individuals based on their dispositional motivations can lead to successful self-reported behavior change. As expected, when given a gain-framed health message, individuals who were predominantly approach oriented reported flossing more than individuals who were predominantly avoid oriented. When given a loss-framed message, individuals who were predominantly avoidance oriented reported flossing more than individuals who were predominantly approach oriented.

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<sup>1</sup>To ensure that the analyses were not biased by the presence of outliers, we inspected the distributions of all measures. Four participants were excluded from analyses because their scores on the BIS scale deviated substantially from the distribution of the remainder of the participants, raising concern over the validity of their responses. Analyses conducted with these 4 participants do not differ significantly from those conducted without them.

The results from this study demonstrated significant changes in self-reported flossing measured 1 week after an experimental manipulation. Self-reports, however, are susceptible to intentional and unintentional bias. Efforts were taken to minimize such problems by keeping the study questionnaires anonymous, encouraging participants to provide honest responses, and asking participants a specific question about their use of the seven provided flosses to avoid biased memory recall. It is still possible, however, that dispositional motivations and message frame interacted to produce differential levels of willingness to comply with experimental demands.

Both approach-oriented and avoidance-oriented individuals reported performing more health behaviors when they were given a congruent message, but it is worth highlighting that the individuals who reported the healthiest flossing behavior in this study were avoidance-oriented individuals who were given a loss-framed article. Other work on approach and avoidance motivation has found that avoidance-oriented individuals and those who choose avoidance goals often have poor performance outcomes in the achievement setting (Elliot & McGregor, 2001; Elliot & Sheldon, 1997), and the poor performance is mediated by perceived competence. In the present study, avoidance-focused individuals may have had beneficial outcomes because flossing is such a simple behavior (compared with taking a test in a difficult class) that there is not a substantial opportunity for perceived competence to play a role. As we demonstrate here, when avoidance orientation is combined with a congruently framed message, it can lead to advantageous health behavior change.

Although the present study found that messages congruent with an individual's dispositional motivations were more effective in leading to behavior change, a study of breakfast-eating behavior found that prevent-focused (avoidance-oriented) participants were more persuaded by messages that were incongruent with their motivational orientation (Tykocinski, Higgins, & Chaiken, 1994). The researchers hypothesized that congruent-focused messages would lead participants to feel distress, and that distress would lead participants to counterargue the message, making it less effective.<sup>2</sup> Other work, however, finds that only avoidance-oriented individuals feel distress after reading a congruent message, and that approach-oriented individuals actually feel positive affect after reading a congruent message (Carver & White, 1994). This may explain why the incongruency advantage was only found for prevent-focused (i.e., avoidance-oriented) participants in the breakfast-eating study. It seems unlikely that affect is the crucial mediator of how individuals respond to gain- and loss-framed messages, because if it were, then behavior change should rarely result from loss-framed information.

Future work should examine the mediators of the effects of message frame and dispositional motivations on health behaviors. We suggest three potential mediators (memory, goal-setting, and strategy selection), although we did not test them in this study. Congruent messages could be remembered better, they could lead people to set higher goals for the health behavior, or they could lead to different selection of strategies to perform the behaviors. An initial study in our lab (Updegraff, Sherman, & Mann, 2002) has found support for goal-setting (i.e., intentions to floss in the coming week), but future research with careful measurement of all three potential mediators is needed.

Research on dispositional motivations has shown that approach and avoidance orientation also plays an important role in determining affective responses (Carver, 2001). As affect itself is an important determinant of health outcomes, these constructs may influence other areas of

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<sup>2</sup>According to Tykocinski et al. (1994), their incongruency prediction only pertains to situations in which individuals do not already have preestablished goals to engage in the behavior of interest. Thus, in their study, they excluded participants who currently engaged in the behavior (eating breakfast) more than twice weekly. They predict that congruence will be beneficial in cases in which individuals do have a preestablished goal to engage in the behavior, as in the present study.

health psychology, beyond health behavior change, such as coping, symptom reporting, stress, and the etiology of illness.

The results from this study, if replicated with behavioral measures, suggest a simple addition that clinicians can make in their practice that might maximize the effectiveness of persuasive communications. In line with the growing literatures on tailoring interventions to individual characteristics (e.g., Kato & Mann, 1996), instead of giving all patients identically framed information, patients can be briefly probed at intake about their approach/avoidance orientation (perhaps with a short questionnaire), and then they can be given the concordant health communication from their health care provider. Providers often collect survey information at intake, and the health communications can be in the form of differently framed written pamphlets, or even in different standard comments that physicians can make to their patients.

A whole host of health-promotion programs include the provision of persuasive messages as at least one component of the intervention. Because changing a health behavior can usually be framed either as approaching a new behavior (e.g., beginning an exercise program) or as avoiding an old one (e.g., refraining from being sedentary), it may be worthwhile to take dispositional motivations into account in all types of health behavior interventions.

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## Acknowledgements

This study was reported at the 110th Annual Convention of the American Psychological Association, Chicago, Illinois, August 2002. The study was supported by a University of California Council on Research Grant.

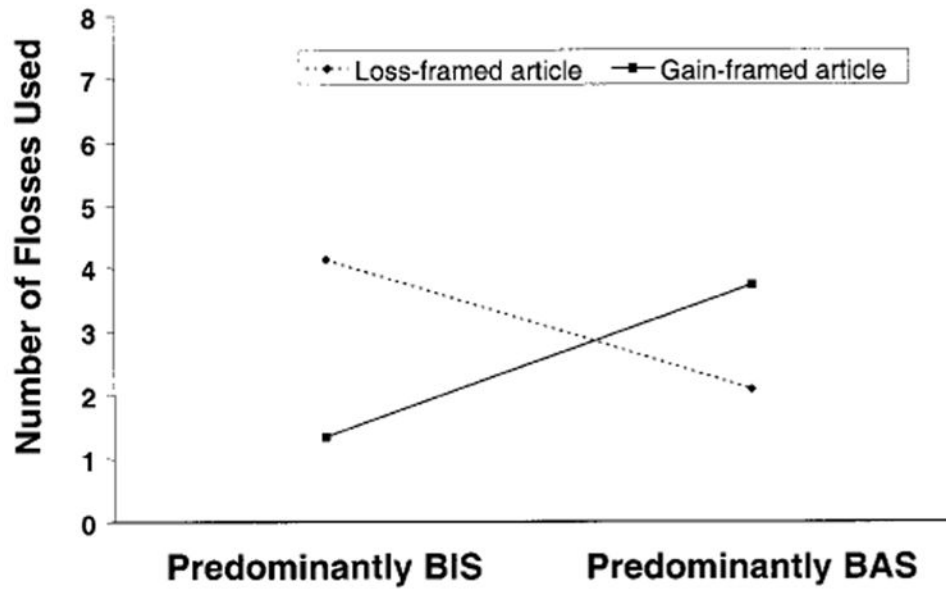
We thank Shelly Gable, Curtis Hardin, Heejung Kim, and Shelley Taylor for their helpful comments on the draft of this article and the following individuals for their assistance with this study: Melissa Dunagan, Annie Kwan, Jen Mato, Dee Michelbock, Dani Pallafacchina, and Anna Park. We acknowledge Jacob Kim-Sherman and Ben Engelmann for being charming diversions who nearly prevented this study from being completed.

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**Figure 1.** The effect of message framing and motivational orientation on self-reported flossing. Regression lines were plotted by entering points at  $+1 SD$  and  $-1 SD$  from the sample mean of the continuous measure of behavioral inhibition system (BIS) minus behavioral activation system (BAS) and plotting y-axis points accordingly.