

Bringing the Frame Into Focus: The Influence of Regulatory Fit on Processing Fluency and Persuasion

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This research demonstrates that people's goals associated with regulatory focus moderate the effect of message framing on persuasion. The results of 6 experiments show that appeals presented in gain frames are more persuasive when the message is promotion focused, whereas loss-framed appeals are more persuasive when the message is prevention focused. These regulatory focus effects suggesting heightened vigilance against negative outcomes and heightened eagerness toward positive outcomes are replicated when perceived risk is manipulated. Enhanced processing fluency leading to more favorable evaluations in conditions of compatibility appears to underlie these effects. The findings underscore the regulatory fit principle that accounts for the persuasiveness of message framing effects and highlight how processing fluency may contribute to the "feeling right" experience when the strategy of goal pursuit matches one's goal.

AutoBarn.com is a company that sells automobile parts and accessories on the Internet (<http://www.autobarn.com/>). In promoting their Steel Horse Revolution Swing Away Bike Carrier, the persuasion claim focuses on "great looks and exceptional engineering. This bike carrier does it all" (AutoBarn.com, 2001b). However, when promoting their Deluxe Emergency Road and Safety Kit, a different approach is taken: "Don't be stranded with a disabled vehicle without an emergency road and safety kit" (AutoBarn.com, 2001a). One distinction between the two persuasion claims is the focus on the desirable end states that would result from benefits gained (i.e., acquiring great looks and exceptional engineering by getting the bike carrier) versus the undesirable end states that would result from benefits lost (i.e., getting stranded by not having the emergency road and safety kit).

Considerable research has examined the role played by message framing in persuasion processes, especially in health-related communications (e.g., Meyerowitz & Chaiken, 1987; Rothman, Salovey, Antone, Keough, & Martin, 1993; Tykocinski, Higgins,

& Chaiken, 1994). However, the pattern of results regarding the effectiveness of gain frames that focus on desirable end states versus loss frames that focus on undesirable end states has been inconsistent. Some have shown greater persuasiveness in gain frames (e.g., Maheswaran & Meyers-Levy, 1990; Rothman et al., 1993), whereas others have documented greater persuasive power in loss frames (e.g., Block & Keller, 1995; Kalichman & Coley, 1995; Maheswaran & Meyers-Levy, 1990; Meyerowitz & Chaiken, 1987). Although there is some evidence that moderating variables such as involvement or risky versus risk-averse behaviors may play a role in message-framing effects, a parsimonious explanation for the patterns of framing effects remains elusive, and the specific mechanisms underlying the persuasion effects of message frames are unclear.

A closer look at the literature offers some insight into what may account for these mixed effects in the framing research. In particular, Rothman and Salovey (1997) suggested that there are at least two ways in which message frames can be manipulated. The first concerns whether benefits deriving from a goal may or may not be attained. Here, gain information is framed in terms of benefits from a goal being attained, whereas loss information is framed in terms of benefits not being attained. A second way to manipulate message frames involves whether negative outcomes may or may not be avoided. Here, gain information refers to the negative outcome not being attained, and loss information refers to the negative outcome being attained. Thus, gain-framed messages may focus on attaining a positive or not attaining a negative outcome, whereas loss-framed messages may focus on attaining a negative or not attaining a positive outcome (Brendl, Higgins, & Lemm, 1995; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999).

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This conceptualization of gains and losses is consistent with regulatory focus theory (Higgins, 1987), which argues more broadly for two distinct self-regulation strategies. One strategy emphasizes the pursuit of gains (or the avoidance of nongains) and aspirations toward ideals, termed *promotion focus*; the other emphasizes the avoidance of losses (or the pursuit of nonlosses) and the fulfillment of obligations, termed *prevention focus*. Recent research has provided considerable evidence that these two self-regulatory strategies are associated with distinct strategic inclinations, whereby promotion focus is related to strategic eagerness, and prevention focus is related to strategic vigilance (for a review, see Higgins, 2000).

Importantly, although any specific goal may be pursued with either a promotion or prevention focus, some goals are more compatible with a particular self-regulatory strategy, resulting in a higher level of "fit" (Higgins 2000). For example, approach goals that strive toward a desirable end state tend to be more compatible with a promotion focus, whereas avoidance goals that seek to steer away from an undesirable end state tend to be more compatible with a prevention focus (Higgins, 2002). This higher level of fit occurs because striving for a gain involves more eagerness than guarding against a nongain, and guarding against a loss involves more vigilance than striving for a nonloss (Idson, Liberman, & Higgins, 2000).

In the present research, we make the distinction between the two ways in which message frames can be construed and propose an explanation based on regulatory fit to account for the message-framing effects. Specifically, we suggest that increased persuasion occurs when the end state as defined by desirability (i.e., gain vs. loss frame) is compatible versus incompatible with regulatory focus (i.e., promotion vs. prevention). That is, a gain frame is more effective when the message highlights promotion concerns, whereas a loss frame is more persuasive when the message emphasizes prevention concerns. For example, an advertisement for grape juice that focuses on getting energized should be more persuasive than a message that focuses on not getting energized, whereas a message that highlights not preventing clogged arteries should be more effective than a message on preventing clogged arteries. Thus, the main objective of this research was to demonstrate the compatibility effects in persuasion on the basis of regulatory fit.

A second objective was to examine if these compatibility effects of regulatory focus on message frame may account for previous findings in the message-framing literature. Specifically, some studies have shown that a loss frame is more effective under high involvement as manipulated by heightened vulnerability to certain health risks, and a gain frame is more effective when such vulnerability is low (e.g., Block & Keller, 1995; Maheswaran & Meyers-Levy, 1990). Yet others report increased effectiveness of gain frames relative to loss frames even under conditions of high involvement (for a review, see Rothman & Salovey, 1997). To the extent that individuals are more likely to focus on negative outcomes when perceived risk is high and on positive outcomes when perceived risk is low, heightened vigilance under high perceived risk conditions and heightened eagerness under low perceived risk conditions suggest that regulatory fit may account for message-framing effects previously reported. Specifically, when individuals feel vulnerable, heightened vigilance associated with prevention focus should result. In such conditions, a loss frame representing higher regulatory fit should be more persuasive than a gain frame.

In contrast, when individuals do not feel threatened, heightened eagerness associated with a promotion focus should result, making a gain frame more persuasive.

Thus, we wished to examine the moderating effect of perceived risk on message frame and in turn garner confidence for the underlying rationale involving heightened vigilance and eagerness means under conditions of compatibility. We argue that when people perceive themselves to be vulnerable to certain negative outcomes, they are likely to focus on the negative aspects of the situation (e.g., health problem). Loss-framed messages emphasizing benefits lost would thereby represent a high-level fit and be more persuasive than gain-framed messages. In contrast, when perceived risk is low, people are likely to focus on the positive outcomes (e.g., health benefit). Gain-framed messages emphasizing benefits gained would thus represent a high-level fit and be more persuasive. Such theorizing is consistent with recent work by Kelly and Rothman (2002), who found that a gain-framed message urging the recipients to get a medical examination is more effective than a loss-framed message when the objective of the examination is to attain a health benefit, whereas the reverse is observed when the objective is to avoid a health problem.¹

A final objective of this research was to explore the mechanism underlying these compatibility effects. To do so, we drew on two streams of research. First, the stereotype literature has suggested that people can more readily process information that is consistent versus inconsistent with the stereotype, because consistent information is expected and hence conceptually more fluent (e.g., Bodenhausen & Lichtenstein, 1987; Fiske & Neuberg, 1990; Macrae, Milne, & Bodenhausen, 1994). For example, Sherman, Lee, Bessenoff, and Frost (1998) showed that respondents in a perceptual identification task can more readily identify trait words implied by stereotypically consistent than inconsistent behaviors. Second, numerous studies examining the effects of fluency have shown that processing fluency leads to enhanced affective judgment. This effect of processing fluency on judgment has been demonstrated using a variety of stimuli across different settings where fluency may be the result of prior exposure (e.g., Lee, 2001; Mandler, Nakamura, & Van Zandt, 1987; Seamon et al., 1995), enhanced visual clarity (e.g., Reber, Winkielman, & Schwarz, 1998), or expectancy (e.g., Lee & Labroo, in press; Whittlesea, 1993). Relatedly, retrieval fluency has also been shown to lead to more favorable judgment. For example, Waelenke, Bohner, and Jurkowitz (1997) asked participants to name either 1 reason or 10 reasons for choosing a BMW over a Mercedes. The results showed that BMW was evaluated more favorably when retrieval

¹ We note that high versus low perceived risk as defined in the compatibility hypothesis is different from whether the advocated action is considered to be risky or risk averse (Kelly & Rothman, 2002; Rothman & Salovey, 1997). *Risk aversion* is defined as a preference for a sure outcome over a gamble of equal or greater expected value; *risk seeking* is exhibited if the gamble is preferred (Tversky & Fox, 1995; Tversky & Kahneman, 1981). Thus, risky and risk-averse behavior is about taking chances, whereas perceived risk is the extent to which individuals think they are vulnerable. In fact, an individual may feel highly vulnerable to certain risks and hence will engage in risk-averse behavior. For instance, although a message recommending the use of sun lotion is advocating a safe, risk-averse behavior (because not using sun lotion would be risky), the recipient's perceived risk of getting skin cancer may still be quite high.

was easier in the 1-reason versus the 10-reasons condition. These two streams of research thereby suggest that when a message frame is consistent versus inconsistent with the way that individuals naturally think about issues that involve positive versus negative outcomes, the message may be easier to process. This subjective experience of processing fluency could in turn influence subsequent evaluations, resulting in more favorable attitudes. Consistent with this premise, Higgins and his colleagues suggested that people “feel right” when the means they select to attain their goal fits with their regulatory orientation. Further, this perception of feeling right can be transferred to the value of an object as the result of source confusion (Camacho, Higgins, & Luger, 2003; Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

Thus, in the context of this research, we propose that high levels of fit lead to more fluent processing of the message, which in turn accounts for the persuasion effects. Specifically, we suggest that promotion concerns highlighted in a gain frame and prevention concerns highlighted in a loss frame (i.e., compatibility conditions) fit with how people naturally think about these issues. Consequently, the ideas conveyed in the message are conceptually fluent and hence are more persuasive.

In the first three experiments reported below, we seek to demonstrate the compatibility effect under regulatory fit conditions. Specifically, we show that when individuals are highly vigilant to avoid a negative outcome (as induced through prevention focus, Experiments 1 and 2, or high perceived risk, Experiments 2 and 3), loss frames are more persuasive. Conversely, when individuals are eager to approach a positive outcome (as induced through promotion focus, Experiments 1 and 2, or low perceived risk, Experiments 2 and 3), gain frames are more persuasive. The subsequent three experiments show that facilitated processing fluency occurs under conditions of compatibility, as demonstrated by self-reports of processing ease (Experiment 4A), perceptual identification (Experiment 4B), and the number of support arguments generated (Experiment 5). Taken together, the findings from these experiments provide support for a general model that offers a parsimonious account for the persuasiveness of gain versus loss frames.

Experiment 1

In Experiment 1, we examined the relationship between regulatory concerns highlighted in a persuasion appeal and the frame of the persuasion appeal. We expected that messages focused on promotion concerns would be more persuasive when presented in a gain versus a loss frame. In contrast, appeals focused on prevention concerns should be more persuasive in a loss versus a gain frame. Note that although promotion-focused messages may emphasize gains (in the positive domain) or nongains (in the negative domain), and prevention-focused messages may emphasize losses (in the negative domain) and nonlosses (in the positive domain), we use the term *gain frame* to refer to messages framed positively (i.e., gains or nonlosses) and the term *loss frame* to refer to messages framed negatively (i.e., nongains or losses). Thus, a 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) between-subjects design was used.

Method

A total of 116 students at Stanford University (mean age = 22.21 years, 53 women) participated in the study for \$5. Members of the student

community received an e-mail invitation to take part in a marketing study to examine consumers' perceptions of current products in the marketplace. Run in small groups ranging from 5 to 10, participants were presented with a questionnaire that contained a color advertisement for Welch's grape juice.² They were told to review the appeal as if they were viewing it in a magazine and then respond to a series of questions. To enhance external validity, the content from Welch's grape juice Web site (<http://www.welchs.com>) was modified to create an advertising appeal for each of the four conditions. Adapted from Aaker and Lee (2001; Experiment 1), each of the appeals reads as follows:

Drink Welch's Grape Juice! Welch's Grape Juice has been a favorite for more than six generations. Today, our classic Purple Grape Juice has been joined by a wide variety of wholesome juices to please your taste. They're all made with the same attention to quality as the original.

The two independent variables were manipulated by altering the appeals following this introduction. Half of the participants were in the promotion-focus condition and read advertising content relating to energy creation:

Further, preliminary medical research suggests that drinking purple grape juice may contribute to the creation of greater energy! Growing evidence suggests that diets rich in Vitamin C and iron lead to higher energy levels. According to research by the United States Department of Agriculture, Welch's Purple 100% Grape Juice has more than three times the naturally-occurring Vitamin C and iron than other juices. Our Concord grapes and Niagara grapes are harvested only at the peak of flavor so that Welch's Grape Juice is great tasting as well as energizing. Plus, it is simply fun to drink!

The appeal closed with, “We're proud to say that everything bearing the Welch's label meets the very highest standards for great taste, enjoyment, and energy.”

The other half of the participants were in the prevention-focus condition and reviewed advertising content relating to cancer and heart disease prevention:

Further, preliminary medical research suggests that drinking purple grape juice may contribute to healthy cardiovascular function. Growing evidence suggests that diets rich in antioxidants may reduce the risk of some cancers and heart disease. According to research by the United States Department of Agriculture, Welch's Purple 100% Grape Juice has more than three times the naturally-occurring antioxidant capacity of other juices. Purple grape juice's antioxidants are commonly attributed to the flavonoids contained in the juice that help keep arteries clear so that blood can flow freely. Therefore, it is healthy to drink!

The appeal closed with, “We're proud to say that everything bearing the Welch's label meets the very highest standards for great taste, goodness, and healthiness.”³

² The product described is not related to Welch's, which is the registered trademark of Welch's Company. Permission to use “Welch's” in the stimuli was granted by Welch's Company.

³ In this experiment, as well as in remaining experiments where regulatory focus was manipulated, a manipulation check was included whereby participants were asked to indicate the degree to which their thoughts were focused on the promotion benefits (e.g., gaining energy) and prevention benefits (e.g., keeping arteries unclogged) in the appeals. In all experiments, the check results suggested that the regulatory focus manipulation operated as intended.

Frame was manipulated via the tagline shown in the appeal. Specifically, within the promotion-focus conditions, the gain-frame tagline "Get Energized!" highlighted a desirable end state of getting energized, whereas the loss-frame tagline "Don't Miss Out on Getting Energized!" made salient an undesirable end state of missing out on getting energized. For the prevention appeal, the gain-frame tagline was "Prevent Clogged Arteries!" and the loss frame tagline was "Don't Miss Out on Preventing Clogged Arteries!"

After reading the appeal, participants rated their attitudes toward the brand using 7-point scales anchored by *negative-positive*, *unfavorable-favorable*, *bad-good*. They also responded to demographic measures and a set of ancillary measures. To assess the extent of risk that was associated with the promotion and prevention concerns, 75 participants were randomly selected to respond to four measures involving the potential risks posed by clogged arteries and low energy. Specifically, they were asked to indicate, using 7-point scales, the extent to which they thought (and were concerned) that low energy and clogged arteries "place one's health at risk" (1 = *not at all*, 7 = *very much*). Finally, participants were debriefed and thanked.

Results

To test the proposed compatibility effect, a Brand Attitude Index was created by averaging the three attitude items ($\alpha = .93$). The results of a 2 (regulatory focus) \times 2 (frame) between-subjects analysis of variance (ANOVA) yielded the expected Regulatory Focus \times Frame interaction, $F(1, 112) = 6.53, p < .05$ (see Figure 1). Follow-up planned contrasts showed that participants exposed to the promotion appeal had more favorable attitudes in the gain-frame condition than in the loss-frame condition ($M = 5.76$ vs. 5.17), $t(112) = 1.92, p < .05$.⁴ In contrast, participants exposed to the prevention appeal had more favorable attitudes in the loss-versus gain-frame condition ($M = 5.84$ vs. 5.31), $t(112) = 1.66, p < .05$. No other effects were significant ($F_s < 1$).

To examine if promotion and prevention appeals varied in the degree to which they were associated with risk, we first averaged the two items included in the promotion risk check ($r = .87$) and the two items included in the prevention risk check ($r = .71$). Then, a 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) \times 2 (risk type: promotion risk vs. prevention risk) repeated-measures ANOVA was conducted, with risk type as a

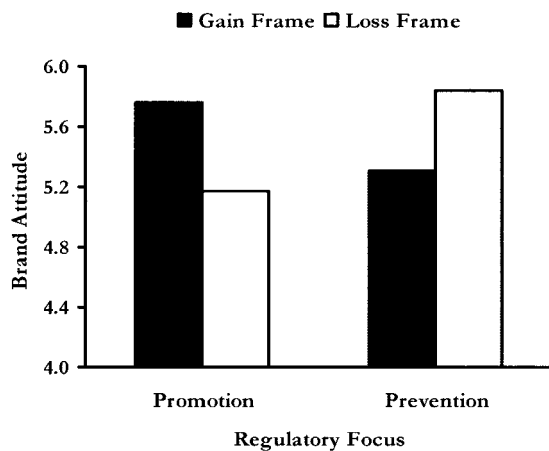


Figure 1. Experiment 1: Brand attitude as a function of regulatory focus and message frame.

within-subject factor. The results yielded only a main effect of risk type, whereby clogged arteries ($M = 5.26$) were seen as placing one's health at higher risk than low energy ($M = 4.24$), $F(1, 71) = 24.87, p < .001$, indicating that prevention appeals were associated with higher perceived health risk than promotion appeals.

Discussion

The results of Experiment 1 provide support for the hypothesis that promotion-focused and prevention-focused appeals are differentially effective depending on how they are framed. Consistent with the regulatory fit principle, appeals focused on promotion concerns were more effective when presented in a gain versus a loss frame. Conversely, appeals focused on prevention concerns were more effective when presented in a loss versus a gain frame.

Further, the preliminary results on perceived risk suggest that different regulatory concerns may indeed be associated with different levels of risk (Higgins 2002): Participants indicated that clogged arteries (a prevention concern) placed one's health at risk more than low energy (a promotion concern). Thus, our findings may also be interpreted as evidence that gain frames are more effective than loss frames when perceived risk is low, whereas the converse is true when perceived risk is high. To the extent that high perceived risk leads to increased vigilance as people focus more on potential negative outcomes (e.g., cardiovascular disease and cancer) than on positive outcomes (e.g., energy creation and enjoyment), with the reverse being true of low perceived risk, these results indeed suggest that perceived risk may moderate the framing effects. That is, consistent with the predictions of regulatory fit, an appeal is more persuasive when the outcome focus of the information and the corresponding vigilance or eagerness is compatible versus incompatible with the message frame.

One limitation of Experiment 1, however, involves the particular risk measures used. These measures focused only on the extent to which risk was associated with promotion and prevention concerns rather than the extent to which participants thought their own health was at risk. What remains unclear, therefore, is whether participants in the prevention-focus condition indeed perceived their own health to be more at risk (as in prior literature) and thus became more prevention focused, resulting in their being more persuaded by the negative frame. Thus, Experiment 3 was conducted with three goals in mind, to (a) garner additional support for the regulatory fit explanation that may account for the effect of perceived risk on message frame; (b) further investigate the role of regulatory focus, perceived risk, and message frame on persuasion; and (c) offer some insight on the relationship between regulatory focus and perceived risk.

Experiment 2

In Experiment 2, we tested the hypothesis that both regulatory focus and perceived risk would moderate message-framing effects. To the extent that high perceived risk makes negative outcomes more salient and hence prompts greater vigilance, whereas low perceived risk makes positive outcomes more salient and hence

⁴ One-tailed tests were performed on all planned contrasts in this research.

encourages greater eagerness, we further predicted that a loss-framed, prevention-focused appeal would be most persuasive under high perceived risk, and a gain-framed, promotion-focused appeal would be most persuasive under low perceived risk.

To achieve the objectives of Experiment 2, message frame, regulatory focus, and perceived risk were included as independent variables in the design. We used a different product category in Experiment 2 (sunscreen lotion) to increase generalizability and created a fictitious brand (SUNSKIN™) to reduce potential variance created by the use of real brands. Frame and regulatory focus were manipulated in a conceptually similar manner as in Experiment 1. To operationalize perceived risk, we relied on a manipulation based on two subject profiles: individuals living in warm versus cold climates, where the sensitivity to potential sunburn varied. The underlying insight is that people who are constantly exposed to certain potential risks on a daily basis often may not perceive themselves to be at risk, even though they may in fact be more vulnerable to the negative consequences (Lindell & Earle, 1983; MacGregor, Slovic, Mason, & Detweiler, 1994). Compared with those from cold climates, people from warm climates are likely to be desensitized to the danger of overexposure to the sun; hence, their subjective perception of risk would be lower than the risk perception of people living in colder regions. Thus, participants recruited from California should perceive themselves as less at risk of getting sunburned than those recruited from the Midwest. To garner more confidence in this perceived risk manipulation, we also relied on participants' self-reported perceived risk rating as a manipulation check for location in the model (to be discussed below).

A 2 (frame: gain vs. loss) \times 2 (regulatory focus: promotion vs. prevention) \times 2 (risk: high vs. low) between-subjects design was used. A Regulatory Focus \times Frame interaction would provide further support that regulatory focus moderates the framing effects, replicating the findings in Experiment 1. A Risk \times Frame interaction would provide support that perceived risk moderates the framing effects. Further, if high versus low perceived risk prompts people to focus more on negative versus positive outcomes (i.e., become more prevention focused), a Regulatory Focus \times Risk interaction should also be observed such that participants recruited from the Midwest would find the prevention appeal more persuasive (and the promotion appeal less persuasive) than those from California.

Method

A total of 163 students from two universities participated in the study. Seventy-six participants were from the University of California, Los Angeles (mean age = 21.23 years, 36 women), and 87 participants were from Northwestern University (mean age = 19.76 years, 49 women). Participants from California (low-risk condition) and the Midwest (high-risk condition) were asked to review an advertisement for SUNSKIN™, a new all-natural sun treatment, created for a new advertising campaign.

Regulatory focus and frame were manipulated in the content of the advertisement. Participants randomly assigned to the promotion-focused, gain-frame condition read, "Enjoy life! Bask in the warm rays of the sun, feeling completely happy. Let SunSkin™ be a part of your daily routine." The appeal closed with "Enjoy Life. SUNSKIN™." In contrast, those assigned to the promotion-focused, loss-frame condition read, "Don't miss out on enjoying life! Not being able to bask in the warm rays of the sun may stand in the way of your feeling completely happy. Let SUNSKIN™

be a part of your daily routine." The appeal closed with "Don't Miss Out on Enjoying Life. SUNSKIN™." Participants in the prevention-focused, gain-frame condition read, "Be safe! Know that you are risk free from sunburns, feeling completely relaxed. Let SunSkin™ be a part of your daily routine." This appeal closed with "Be Safe. SUNSKIN™." Finally participants assigned to the prevention-focused, loss-frame condition read, "Don't miss out on being safe! Not knowing you are risk-free from sunburns may stand in the way of your feeling completely relaxed. Let SUNSKIN™ be a part of your daily routine." This appeal closed with "Don't Miss Out on Being Safe. SUNSKIN™."

The appeal also explained that everyone needs sunscreen and that

PABA, or para-aminobenzoic acid, is the original compound that is the basic ingredient of sunscreens. However, it can stain clothes and sometimes irritate the skin. In contrast, SunSkin™ has a unique all-natural formula with newer ingredients called PABA-esters that never stain clothing and are good for people with sensitive skin. Plus, it never needs to be re-applied after going into the water.

Participants were then asked to complete a questionnaire that assessed their attitudes toward the SUNSKIN™ brand using 7-point scales anchored by *negative-positive*, *favorable-unfavorable*, and *bad-good*, followed by demographic questions. Finally, to assess the degree to which participants perceived themselves to be at risk for getting sunburned, they were asked, "What is the likelihood of your getting sunburned in the next year?" (1 = *not at all likely*, 7 = *very likely*). They were then debriefed and thanked.

Results

Manipulation checks. To assess if participants from the two samples differed in their perceived risk of getting sunburned, a 2 (location) \times 2 (regulatory focus) \times 2 (frame) between-subjects ANOVA was conducted. There was a main effect of risk whereby Midwestern participants thought they were more likely to get sunburned in the coming year ($M = 4.29$) than their Californian counterparts ($M = 3.30$), $F(1, 155) = 4.01$, $p < .05$, suggesting that the risk manipulation operated as intended. No other effects were significant.

Hypotheses testing. The three attitude items were averaged to form the Brand Attitude Index ($\alpha = .88$). To examine the moderating effects of perceived risk on the message-framing effects, both location and participants' perceived risk of getting sunburned were included in the model as covariates. Thus, a regression analysis was conducted by regressing brand attitude on regulatory focus (coded 1 for promotion focus, -1 for prevention focus), location (1 for Midwest, -1 for California), message frame (1 for gain, -1 for loss), and perceived risk of getting sunburned (transformed into deviation score by rescaling the values to -3 to +3). The results showed that the effect of location was marginally significant ($\beta = .15$), $t(147) = 1.90$, $p = .06$, whereby those in the high perceived risk Midwest sample had more favorable attitudes than those in the low perceived risk California sample ($M = 5.03$ vs. 4.48). As hypothesized, the Regulatory Focus \times Frame interaction was significant, replicating the results of Experiment 1 (see Figure 2A). Specifically, there was a positive interaction between regulatory focus and frame ($\beta = .28$), $t(147) = 3.60$, $p < .001$, indicating that a gain frame was more effective than a loss frame for promotion-focused appeals ($M = 5.16$ vs. 4.62), $t(147) = 2.51$, $p < .005$, and the reverse was true for prevention-focused appeals ($M = 5.09$ vs. 4.74), $t(147) = 1.74$, $p < .05$. Also as expected, there was a negative interaction between location and frame ($\beta = -.26$), $t(147) = -3.28$, $p = .001$; for the Midwest participants who

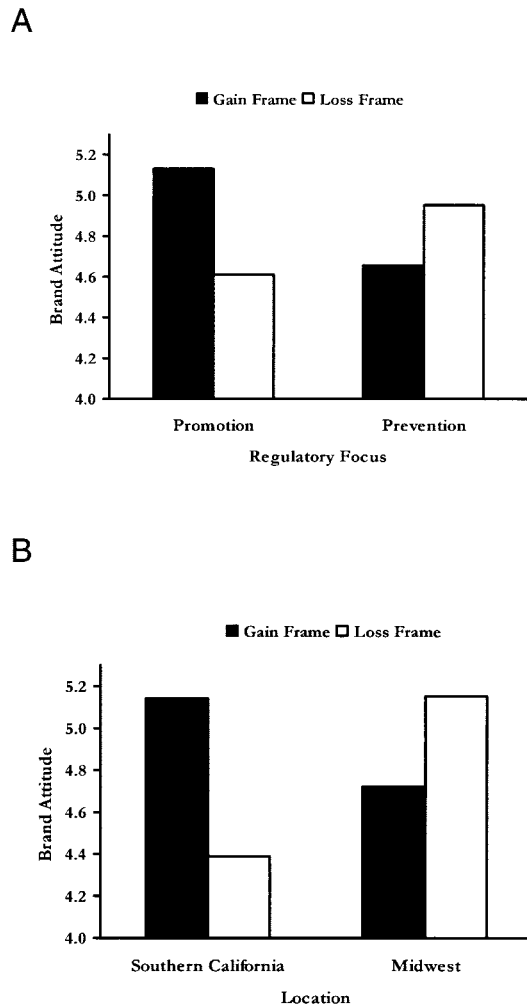


Figure 2. Experiment 2. A: Brand attitude as a function of regulatory focus and message frame. B: Brand attitude as a function of location and message frame.

perceived a higher risk of getting sunburned, a loss-framed appeal was more effective than a gain-framed appeal ($M = 5.24$ vs. 4.81), $t(147) = 2.05$, $p < .05$, whereas the opposite was observed for California participants whose perceived risk was low ($M = 5.14$ vs. 4.39), $t(147) = 3.30$, $p < .001$ (see Figure 2B).

The interaction between perceived risk of getting sunburned and frame was, however, not significant ($t < 1$). Although not predicted, the Location \times Perceived Risk interaction was significant ($\beta = .14$), $t(147) = 3.54$, $p = .001$, suggesting that the higher the perceived risk among the Midwest participants, the more persuasive the message. And conversely, the lower the perceived risk among the California participants, the more persuasive the message. Contrary to the hypothesis regarding regulatory focus and risk, neither the Regulatory Focus \times Location interaction ($\beta = -.11$), $t(147) = -1.39$, $p = .17$, nor the Regulatory Focus \times Perceived Risk interaction ($\beta = .004$, $t < 1$) were significant. However, the three-way interaction between regulatory focus, perceived risk, and frame was significant ($\beta = .09$), $t(147) = 2.38$, $p < .02$, and the three-way interaction between regulatory focus,

location, and perceived risk was marginally significant ($\beta = .07$), $t(147) = 1.68$, $p = .09$.

To better understand these interactions, separate regression analyses were conducted for the two samples. For participants from the Midwest sample, the main effect of perceived risk was significant ($\beta = .17$), $t(79) = 3.19$, $p = .002$, whereby higher perceived vulnerability of getting sunburned was associated with more favorable attitudes. There was a marginal effect of frame ($\beta = -.17$), $t(79) = 1.62$, $p = .10$, indicating that loss-framed appeals were more persuasive than gain-framed appeals ($M = 5.24$ vs. 4.81). The Regulatory Focus \times Frame interaction was marginally significant ($\beta = -.18$), $t(79) = 1.74$, $p = .09$. Subsequent contrasts showed that for these Midwest participants, a prevention-focused appeal was more effective when presented in a loss versus a gain frame ($M = 5.63$ vs. 4.81), $t(79) = 2.75$, $p < .005$, whereas message frame did not make a difference for promotion-focused appeals ($M = 4.81$ vs. 4.93 ; $t < 1$). No other effects were significant.

For participants from the California sample, the results showed that the main effect of frame was significant ($\beta = .34$), $t(68) = 2.93$, $p = .005$. However, contrary to their Midwestern counterparts, they had more favorable attitudes toward the gain- versus loss-framed appeal ($M = 5.14$ vs. 4.39). The effect of perceived risk was marginally significant ($\beta = -.11$), $t(68) = -1.94$, $p = .06$. For the California participants, lowered perceived risk of getting sunburned was associated with more favorable brand attitudes. The Regulatory Focus \times Frame interaction was also significant ($\beta = .35$), $t(68) = 3.08$, $p = .003$. Subsequent analyses showed that a promotion-focused appeal was more persuasive in a gain versus a loss frame ($M = 5.51$ vs. 4.19), $t(68) = 4.46$, $p < .001$, whereas frame did not make a difference for the prevention-focused appeal ($M = 4.57$ vs. 4.65 ; $t < 1$). Finally, the three-way interaction between regulatory focus, frame, and perceived risk was significant ($\beta = .13$), $t(68) = 2.16$, $p < .05$. Subsequent analyses showed that for the promotion-focused appeals, the two main effects were both significant. Specifically, a gain frame was more persuasive than a loss frame ($\beta = .71$), $t(35) = 4.88$, $p < .001$, and lower perceived risk was associated with more favorable attitudes ($\beta = -.18$), $t(35) = -2.32$, $p = .03$. For prevention-focused appeals, the Risk \times Frame interaction was marginally significant ($\beta = -.16$), $t(33) = -1.82$, $p = .08$, indicating that a gain frame was more persuasive than a loss frame for low perceived risk participants, and the reverse held for high perceived risk participants. Table 1 reports the mean rating of brand attitudes for the two samples as a function of regulatory focus, message frame, and perceived risk using a median split within each sample.

Discussion

These findings provide further evidence that regulatory focus moderates the effect of message frame on persuasion, thereby replicating the results of Experiment 1, and offer support for the robustness of the compatibility effect on the basis of regulatory fit. The pattern of results involving perceived risk was, however, less clear. When geographical location was used as a proxy for perceived risk, the results provided support for the compatibility hypothesis. That is, a gain frame was more persuasive than a loss frame for the low perceived risk California participants who may have been desensitized to the potential danger of the sun, whereas

Table 1
Experiment 2: Brand Attitude as a Function of Perceived Risk, Regulatory Focus, and Frame

Appeal	High perceived risk		Low perceived risk	
	Gain frame	Loss frame	Gain frame	Loss frame
Midwest				
Promotion				
<i>M</i>	5.52	5.20	4.28	4.53
<i>SD</i>	1.02	0.99	1.06	0.72
Prevention				
<i>M</i>	4.74	5.74	4.92	5.43
<i>SD</i>	0.90	0.58	1.02	1.40
California				
Promotion				
<i>M</i>	5.33	3.63	5.74	4.88
<i>SD</i>	0.80	0.85	0.85	0.99
Prevention				
<i>M</i>	4.26	4.52	5.14	4.60
<i>SD</i>	1.16	1.03	0.66	0.94

a loss frame was more persuasive than a gain frame for Midwest participants who were more concerned about such potential danger. A slightly different pattern of results emerged, however, when perceived risk was operationalized as a measured variable. The interactions involving location and perceived risk suggest that participants from the two samples responded differently to the appeals, even after controlling for their difference in perceived vulnerability to potential sun damage. Although a loss frame was generally more effective than a gain frame for Midwest participants, and a gain frame was more effective than a loss frame for California participants, the hypothesized Perceived Risk \times Frame interaction was observed only in the California sample and only for prevention-focused appeals.

In summary, the effects of perceived risk as a moderator of framing effects showed a slightly different pattern across the two operationalizations of perceived risk. The hypothesized results were observed when perceived risk was operationalized using a geographical proxy, but our hypothesis received only partial support when the self-reported measure was used. Although one may argue that the inconsistencies observed across the two operationalizations may be a matter of calibration and that the self-reported ratings of perceived risk might not be comparable between the two samples, nonetheless the results involving perceived risk are not conclusive. Further, interpretation of the data using either geographic boundaries or participants' self-report as a proxy of perceived risk may be problematic because of potential confounds that are difficult to eliminate. To address these issues and better understand the moderating role of perceived risk, Experiment 3 was designed such that perceived risk was manipulated rather than measured.

Experiment 3

The objective of Experiment 3 was to examine whether perceived risk moderates the message frame effects and to further

investigate whether the regulatory fit principle might underlie the results of Experiments 1 and 2. Greater confidence for a regulatory fit account would be gained if the results yielded a Perceived Risk \times Message Frame interaction that conceptually paralleled the effects found in Experiments 1 and 2 involving regulatory focus and message frame. By manipulating rather than measuring risk, this experiment allowed for a more precise assessment of the perceived risk effects. It also addressed one limitation in Experiment 1 regarding the operationalization of risk. That is, although there is some evidence suggesting that participants considered clogged arteries more health threatening than low energy, it is unclear if participants in the prevention-focus condition perceived their own health to be more at risk (from having cardiovascular disease or cancer) than those in the promotion-focus condition (from having low energy). A risk manipulation that directly impacts the participants' perception of their own exposure to certain negative outcomes was therefore adopted in Experiment 3. To examine the moderating effects of perceived risk on message frame, we relied on a 2 (perceived risk: high vs. low) \times 2 (frame: gain vs. loss) between-subjects design. We manipulated risk by varying the likelihood that participants would perceive themselves to be at risk for mononucleosis and held regulatory focus constant across the appeals.

Method

A total of 81 students from Stanford University (mean age = 20.64 years, 49 women) participated in this study for \$5. Participants were told that they would take part in a health-related study in which they would be asked to review an advertisement and then answer a set of health-related questions. To heighten external validity, we used the brand name of a real product (SUPRANOX), which had been discontinued, and adapted information on some of its ingredients to create the product description for the ad. Specifically, participants were told that they were reading an advertisement that recently appeared in the *New York Times* about SUPRANOX, which was described as an all-natural supplement that fights mononucleosis.

The four conditions were created by varying content in the advertisement. Frame was manipulated at both the introduction and the end of the appeal. Participants randomly assigned to the gain-frame condition read, "Enjoy life! Know that you are risk free from mononucleosis. Let SUPRANOX™ be a part of your daily routine." The appeal closed with, "It is important to enjoy life. SUPRANOX™ helps you do that—by allowing you to fight an illness even before you have it. Enjoy Life. SUPRANOX™." In contrast, participants assigned to the loss-frame condition read, "Don't miss out on enjoying life! Not knowing that you are risk free from mononucleosis? Let SUPRANOX™ be a part of your daily routine." This appeal closed with, "It is important not to miss out on enjoying life. SUPRANOX™ helps you do that—by allowing you to fight an illness even before you have it. Don't Miss Out on Enjoying Life. SUPRANOX™."

Risk was manipulated by conveying that one could contract mononucleosis on the basis of frequent versus infrequent behaviors. Borrowing from Menon, Block, and Ramanathan (2002), we used scenarios suggesting that the probability of getting mononucleosis was either high (i.e., exposure via frequent behaviors) or low (exposure via infrequent behaviors). All participants read the following paragraph:

Mononucleosis is so common that by the age of 40 over 85% of all individuals have already had the illness! This may seem hard to believe, especially to those who cannot imagine ever having had a mono-like illness. Because most people who contract mono have such

a mild case, they never realize that a past scratchy sore throat or an unusual bout of fatigue was actually mono. Although anyone can contract the illness, the disease is most commonly seen by physicians in young adults between the ages of 15 and 30, especially those living in close contact to schools, colleges, and military bases. Mono can occur year-round, but most cases develop in the early spring.

Participants in the high perceived risk condition read that they would be at high risk if they kissed, shared a toothbrush, shared a razor, had sex without a condom, engaged in oral sex, shared bottles of water or soda, or got a manicure. Participants in the low perceived risk condition read that they would be at high risk if they got a tattoo, used needles, pierced body parts such as nipples, nose, tongue, or belly button, were accidentally jabbed by a needle, had multiple sex partners during the same time period, were subject to the use of unsterilized equipment in a doctor's office, or had a blood transfusion.

Near the end of the appeal, all participants read that the tablet form of SUPRANOX contains many leading-edge, natural antioxidant nutrients like coenzyme Q10, L-glutathione, lutein, lycopene, the full carotenoid complex, and green tea extract, which are described to be extremely important in the fight against free radical damage to cells and systems of the body. Participants were then asked to complete a questionnaire that assessed their attitudes toward the SUPRANOX brand using 7-point scales anchored by *negative-positive*, *unfavorable-favorable*, and *bad-good*. They also responded to questions that included product knowledge and demographic questions. Finally, to assess the degree to which they perceived themselves to be at risk for getting mononucleosis, participants were asked to indicate on 7-point scales if they were concerned that they were at risk for mononucleosis, the extent to which they believed they were at risk for mononucleosis, and the likelihood that they might someday contract mononucleosis. All were then debriefed and thanked.

Results

Manipulation checks. The three perceived risk items were averaged to form an index of perceived risk of getting mononucleosis ($\alpha = .86$). The results of a 2 (perceived risk) \times 2 (frame) ANOVA on the perceived risk index showed a main effect of risk, whereby participants presented with the high-frequency behaviors ($M = 4.11$) perceived themselves to be more at risk for mononucleosis than those presented with the low-frequency behaviors ($M = 3.36$), $F(1, 77) = 5.03$, $p < .05$. No other effects were significant.

Hypotheses testing. A Brand Attitude Index was created as in the prior experiments ($\alpha = .95$). A 2 (perceived risk) \times 2 (frame) ANOVA was conducted to determine whether perceived risk moderates the effect of message frame on persuasion. As predicted, only the Perceived Risk \times Frame interaction was significant, $F(1, 77) = 11.11$, $p = .001$ (see Figure 3). Subsequent planned contrasts showed that participants in the low-risk condition found the gain-framed appeal ($M = 4.88$) to be more persuasive relative to the loss-framed appeal ($M = 3.67$), $t(77) = 2.55$, $p < .01$. In contrast, participants in the high-risk condition found the loss-framed appeal ($M = 4.61$) to be more persuasive than the gain-framed appeal ($M = 3.70$), $t(77) = 2.15$, $p < .05$.

Discussion

The results of Experiment 3 provide support for the hypothesis that individuals in high-risk versus low-risk situations tend to be differentially persuaded by message frames. The data show that appeals focusing on scenarios perceived as low risk are indeed

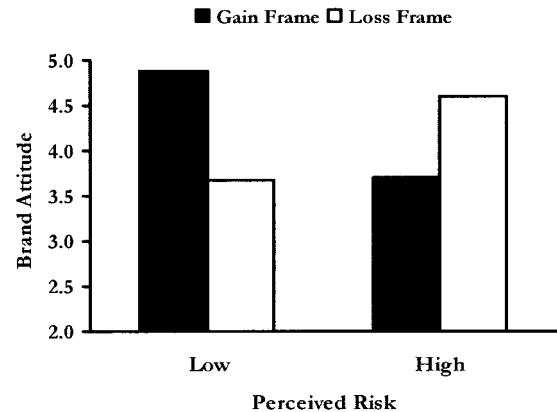


Figure 3. Experiment 3: Brand attitude as a function of perceived risk and message frame.

more effective when presented in a gain versus a loss frame. Conversely, appeals focusing on scenarios perceived as high risk are more effective when presented in a loss versus a gain frame. These findings are conceptually consistent with the results of Experiments 1 and 2, which demonstrate that prevention appeals that are associated with higher perceived risk are more persuasive when presented in a loss versus a gain frame, and the converse for promotion appeals that are associated with lower perceived risk. The results from the three experiments thus provide support for the premise that perceived risk, operationalized via geographical location (Experiment 2) or frequency of behaviors (Experiment 3), moderates the message-framing effects. To the extent that high risk makes negative outcomes more salient and hence prompts participants to be more vigilant, these results are also consistent with the compatibility hypothesis on the basis of regulatory fit.

The moderating effect of perceived risk also helps to reconcile past findings in the literature where involvement as operationalized by perceived risk has been put forth as a key moderator of framing effects. Specifically, researchers have argued that a negativity bias underlies the effectiveness of a loss versus a gain frame when involvement is high (e.g., Meyerowitz & Chaiken, 1987; see also Block & Keller, 1995), and affect transfer is responsible for the persuasiveness of a gain versus a loss frame when involvement is low (e.g., Maheswaran & Meyers-Levy, 1990). The present results suggest that compatibility between perceived risk and message frame (rather than involvement per se) determines the effectiveness of gain versus loss frames.

Although supportive of a regulatory fit account, findings from these experiments also raise an important question: What is the mechanism that leads to increased persuasion? We propose that when message frame matches the regulatory focus of the content of the appeal, the message is easier to process. That is, a message frame that fits the highlighted concerns renders the message conceptually more fluent. This processing fluency in turn leads to heightened persuasion. Indeed, Higgins and his colleagues suggested that under regulatory fit conditions, people have an "it just feels right" experience, which may be transferred to subsequent judgments (Camacho et al., 2003). For example, people place higher values on a coffee mug when the strategy they use to acquire the mug is compatible with their regulatory orientation

(Higgins et al., 2003). People also judge a conflict resolution to be more “right” when the manner of resolution fits their regulatory focus (Camacho et al., 2003), an effect that appears to be driven by the transference of the positive “feeling right” experience to higher monetary or moral value.

We propose that individuals’ processing fluency experience underlies the perception that a message feels right. That is, when a message frame is consistent versus inconsistent with the way in which individuals naturally think about issues that involve positive versus negative outcomes, the message becomes easier to process. This ease of processing is subsequently transferred to more favorable attitudes (Higgins et al., 2003). In the next set of experiments, we explored such a processing fluency mechanism under compatible conditions to gain further insight into the regulatory fit account. To provide a convergent picture of the role of fluency, we examined the impact of regulatory focus and message frame on individuals’ perceived ease of processing (Experiment 4A) and perceptual identification (Experiment 4B). We concluded with Experiment 5, which was conducted to determine whether this fluency mechanism is being driven by increased support arguments generated under conditions of compatibility or by a feeling of enhanced effectiveness of the appeal.

Experiment 4A

The objective of Experiments 4A and 4B was to determine whether processing fluency underlies the moderating effects of regulatory focus on message frame. A design similar to that of Experiment 1 was used, with the critical dependent measure being ease of processing (Experiment 4A) and perceptual identification (Experiment 4B; e.g., Johnston, Dark, & Jacoby, 1985; Masson & Caldwell, 1998). If participants in the compatible conditions experience more fluent processing than those in the incompatible conditions, a Regulatory Focus \times Frame interaction should be observed for the ease of processing measure. Thus, a 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) between-subjects design was used.

Method

One hundred nineteen undergraduate students from Stanford University (mean age = 20.85 years, 70 women) took part in the experiment for \$5. As in Experiment 1, participants were presented with an advertisement for Welch’s grape juice. They were asked to evaluate the brand using 7-point scales anchored by *negative–positive*, *unfavorable–favorable*, and *bad–good*, and then rated the information presented in the appeal in terms of its ease of processing (1 = *difficult to process*, 7 = *easy to process*) and comprehensibility (1 = *difficult to understand*, 7 = *easy to understand*). To determine whether compatibility may have affected participants’ motivation to process the appeals, they were also asked to indicate on a four-item scale how involved they were while processing the information (1 = *not at all involved*, *not at all interested*, *skimmed it quickly*, *paid little attention*; 7 = *very involved*, *very interested*, *read it carefully*, *paid a lot of attention*). Finally, participants responded to some risk measures and demographic questions. All were debriefed and thanked.

Results and Discussion

Manipulation checks. To determine if the promotion and prevention appeals varied in the degree to which they were associated with risk, a 2 (regulatory focus) \times 2 (frame) \times 2 (risk type)

repeated-measures ANOVA was conducted, with risk type as a within-subject factor. The results yielded a main effect of risk type, whereby clogged arteries ($M = 6.06$) were seen as placing one’s health at higher risk than low energy ($M = 4.19$), $F(1, 115) = 125.87$, $p < .001$. Replicating the findings in Experiment 1, the prevention appeal was indeed considered to be associated with higher risk than the promotion appeal. No other effects were significant.

To determine whether involvement plays a role in the observed effects, the four items of involvement were averaged to form an Involvement Index ($\alpha = .86$). The results of a 2 (regulatory focus) \times 2 (frame) ANOVA showed that none of the effects was significant ($F < 1$), suggesting that the persuasion effects observed are not driven by involvement.

Hypotheses testing. The results of a 2 (regulatory focus) \times 2 (frame) ANOVA on the Brand Attitude Index ($\alpha = .93$) yielded the expected Regulatory Focus \times Frame interaction, $F(1, 115) = 4.59$, $p < .05$, replicating results obtained in the prior experiments. Participants in the promotion-focused condition marginally preferred the gain-framed appeal to the loss-framed appeal ($M = 5.80$ vs. 5.40), $t(115) = 1.43$, $p = .08$, whereas those in the prevention-focused condition preferred the loss- to the gain-framed appeal ($M = 5.79$ vs. 5.31), $t(115) = 1.59$, $p = .05$.

The ease of processing and comprehension measures were averaged to form a Processing Fluency Index ($r = .80$). The results of a 2 (regulatory focus) \times 2 (frame) ANOVA showed only a significant interaction, $F(1, 115) = 6.11$, $p < .05$ (see Figure 4A). Participants in the promotion-focused condition found the gain-framed appeal to be easier to process than the loss-framed appeal ($M = 5.57$ vs. 5.02), $t(115) = 1.85$, $p < .05$. Conversely, participants in the prevention-focused condition found the loss-framed appeal to be easier to process than the gain-framed appeal ($M = 5.69$ vs. 5.16), $t(115) = 1.66$, $p = .05$. These results are consistent with the premise that ease of information processing is facilitated when framed information is compatible with regulatory focus or risk.

For more direct support that fluency underlies the compatibility effect, mediational analyses were conducted. First, the result of a regression analysis showed that the Regulatory Focus \times Frame interaction had a significant effect on brand attitude ($\beta = .22$), $t(115) = 2.14$, $p = .03$. In a second regression analysis, the Regulatory Focus \times Frame interaction on processing fluency was also significant ($\beta = .27$), $t(115) = 2.47$, $p = .02$. Finally, when processing fluency was included in the model as a predictor of brand attitude, the effect of processing fluency was significant ($\beta = .36$), $t(115) = 4.50$, $p < .001$, and the Regulatory Focus \times Frame interaction became nonsignificant ($\beta = .12$), $t(115) = 1.24$, $p > .20$. These results show that the three conditions necessary to establish mediation were fulfilled (Baron & Kenny, 1986), thereby providing support for the mediational role of processing fluency. Further analyses on the mediated effect suggest that this effect is indeed significant ($z = 2.12$, $p < .05$; Goodman, 1960; Sobel, 1982).

The results of Experiment 4A thus provide evidence for the fluency mechanism underlying the compatibility effects. However, one limitation of these results is that the measure of processing fluency relies on participants’ self report of processing ease, and these responses were collected after participants evaluated the brand. Hence, participants’ processing fluency ratings might have

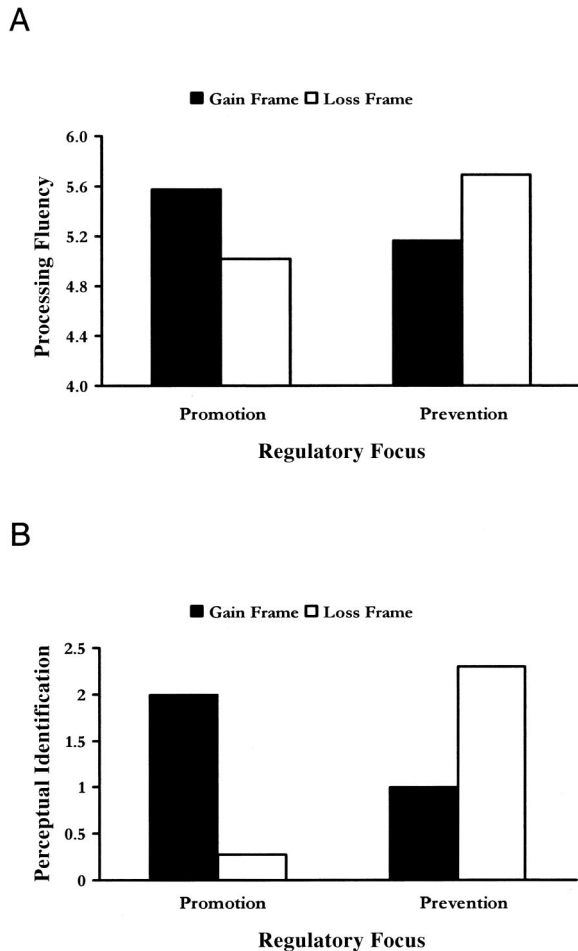


Figure 4. A: Processing fluency as a function of regulatory focus and message frame (Experiment 4A). B: Perceptual identification as a function of regulatory focus and message frame (Experiment 4B).

been biased by their brand evaluations. Experiment 4B was conducted to more directly measure participants' processing fluency of the message by using a perceptual identification task.

Experiment 4B

The objective of this experiment was to provide more direct evidence that processing fluency underlies the moderating effects of regulatory focus on message frame. Similar to Experiment 4A, a 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) between-subjects design was used, with the main modification being the dependent measure and context. In this study, participants were asked to perform a perceptual identification task after reviewing the content of a Web site. For this task, target words were presented very briefly on the computer screen, and participants were asked to identify the words. If participants indeed experienced greater fluency in processing the message under compatible versus incompatible conditions, they should have been better able to identify the words presented.

Method

Forty-four undergraduate students from Northwestern University (mean age = 20.67 years, 28 women) took part in the study for \$5. All participants were individually seated in front of a computer and were asked to click on a button that brought up a Web page for Welch's grape juice (the same content that was used in Experiments 1 and 4A). Participants were asked to click on a link to proceed to the next page for further instruction when they finished reviewing the Web page. They were then presented with a perceptual identification task. Participants were instructed that some words would be flashed very quickly on the computer screen one at a time, followed by a series of # signs. They were to type in the word they thought they saw, and if they could not see anything, they were to guess what the word might be. After they typed in the word, they were to hit "Enter," and the next word would be presented. A total of 40 words (8 target and 32 filler words) was shown at a presentation rate of 50 ms each, back masked until participants hit "Enter." Of the 8 target words, 4 were associated with the promotion-focused message (*vitamins, enjoy, active, energy*) and 4 were associated with the prevention-focused message (*disease, arteries, cancer, clogged*). The first five trials served as practice trials and used filler words, and the 8 target words were randomly ordered with the remaining 27 filler words. At the end of the perceptual identification task, participants were debriefed and thanked.

Results and Discussion

A 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) \times 2 (target type: promotion vs. prevention) repeated-measures ANOVA was conducted, with target type being a within-subject factor. The results showed a marginal target type effect, $F(1, 40) = 3.86, p = .06$, whereby participants identified more target words related to the promotion than the prevention message ($M = 0.81$ vs. 0.49). Neither the main effect of regulatory focus or frame nor the two-way interactions involving target type were significant ($F_s < 1$). However, the Regulatory Focus \times Frame interaction was significant, $F(1, 40) = 10.35, p = .003$ (see Figure 4B). Consistent with expectations, participants presented with the promotion-focused message identified more target words when they were in the gain- versus loss-framed condition ($M = 2.00$ vs. 0.27), $t(40) = 2.82, p = .007$. In contrast, those presented with the prevention-focused message identified more target words when the message was loss versus gain framed ($M = 2.30$ vs. 1.00), $t(40) = 2.12, p = .04$. The three-way interaction was not significant, $F(1, 40) = 1.39, p > .20$.

In sum, results from Experiments 4A and 4B provide evidence that participants experienced greater processing fluency when message frame was compatible with regulatory focus. Further, this experience of fluency appears to be the mechanism underlying the regulatory fit effect on persuasion. However, what remains unclear is the nature of the fluency mechanism. That is, how exactly does fluent processing lead to enhanced evaluative judgment? Work related to processing fluency suggests two possible accounts. One possibility is that when the message is easy to process, participants may have a better understanding of the support arguments and hence are more persuaded. An alternative account is that more fluent processing may be associated with heightened levels of perceived effectiveness, leading to more favorable attitudes. Experiment 5 was conducted to address these questions in order to unpack the fluency mechanism that appears to be driving the compatibility effects.

Experiment 5

The main objective of Experiment 5 was to further our understanding of the specific nature of the processing fluency mechanism. We examined whether processing a high-fit message may result in individuals having a better understanding and hence greater appreciation of the benefits outlined in the appeal. If that is the case, arguments in support of the advocated goal of the message should come to mind more readily, thereby leading to more favorable brand attitudes. Alternatively, ease of processing may make the appeal seem more persuasive and effective. In this light, perceived effectiveness of the message should mediate brand attitudes.

To illuminate the specific nature of the fluency process, we relied on the same stimuli used in Experiments 1 and 4 but included two additional measures. First, we asked participants to provide reasons why one might want to drink Welch's grape juice. If more fluent processing underlies the compatibility effects found in the previous experiments, a greater number of support reasons should be generated in conditions of compatibility versus incompatibility. Furthermore, if more favorable attitudes are the result of participants' cognitive responses, support reasons should mediate the compatibility effects. Second, we asked participants their perception of the appeal's effectiveness. If more favorable attitudes are the result of participants' subjective experience of processing fluency, then perceived effectiveness of the message should lead to the compatibility effects, independent of the number of support arguments. Thus, a 2 (regulatory focus: promotion vs. prevention) \times 2 (frame: gain vs. loss) between-subjects design was used.

Method

One hundred forty-two undergraduate students from Stanford University (mean age = 21.38 years; 64 women, 47 participants did not indicate their sex) took part in the study for \$5. Participants were presented with an advertisement for Welch's grape juice and then were asked to evaluate the brand using 7-point scales anchored by *negative-positive*, *unfavorable-favorable*, and *bad-good*. Following the attitudinal measures, participants were asked to write down the reasons why one might want to drink Welch's grape juice. They were also asked to indicate how effective and believable they thought the content of the advertisement was (1 = *ineffective, not believable*; 7 = *effective, believable*). Finally, participants responded to the same risk measures and demographic questions as in Experiments 1 and 4A. All were then debriefed and thanked.

Results and Discussion

Manipulation checks. To examine if promotion and prevention appeals varied in the degree to which they were associated with risk, a 2 (regulatory focus) \times 2 (frame) \times 2 (risk type) repeated-measures ANOVA was conducted, with risk type as a within-subject factor. The results yielded a main effect of risk type, whereby clogged arteries ($M = 6.12$) were seen as placing one's health at higher risk than low energy ($M = 4.30$), $F(1, 138) = 149.18$, $p < .001$. Replicating earlier findings, the prevention appeal was indeed associated with higher risk than the promotion appeal. The Regulatory Focus \times Risk Type interaction was also significant, $F(1, 138) = 4.41$, $p < .05$. Participants in the prevention appeal condition perceived low energy to be less of a health risk than those in the promotion appeal condition ($M = 3.97$ vs. 4.63), $F(1, 138) = 5.74$, $p < .02$; whereas the health risk posed by

clogged arteries was not perceived to be different by participants in the two appeal conditions ($F < 1$).

Hypotheses testing. The results of a 2 (regulatory focus) \times 2 (frame) ANOVA on the Brand Attitude Index ($\alpha = .93$) yielded the expected Regulatory Focus \times Frame interaction, $F(1, 138) = 3.38$, $p = .06$, replicating results obtained in the previous experiments. Follow-up contrasts showed that participants in the promotion-focused condition marginally preferred the gain-framed appeal to the loss-framed appeal ($M = 5.54$ vs. 5.18), $t(138) = 1.27$, $p = .10$, whereas those in the prevention-focused condition preferred the loss-framed appeal to the gain-framed appeal ($M = 5.21$ vs. 4.76), $t(138) = 1.67$, $p < .05$. No other effects were significant.

The results of a 2 (regulatory focus) \times 2 (frame) ANOVA on the number of support reasons showed only a significant Regulatory Focus \times Frame interaction, $F(1, 138) = 10.23$, $p = .002$. As expected, more support reasons were generated when message frame was compatible with the regulatory focus of the message. Specifically, participants exposed to the promotion appeal generated more support reasons in the gain- versus loss-frame condition ($M = 3.71$ vs. 2.97), $t(138) = 2.41$, $p = .01$, and those exposed to the prevention appeal generated more support reasons in the loss- versus gain-frame condition ($M = 3.53$ vs. 2.78), $t(138) = 2.16$, $p = .02$.

Next, the two effectiveness measures were averaged to form an Effectiveness Index ($r = .79$). The results of a 2 (regulatory focus) \times 2 (frame) ANOVA on effectiveness also showed only a significant interaction, $F(1, 138) = 7.31$, $p < .01$. Participants in the promotion-focused condition found the gain-framed message to be more effective than the loss-framed information ($M = 4.91$ vs. 4.18), $t(138) = 2.32$, $p = .01$. Conversely, participants in the prevention-focused condition found the loss-framed message to be more effective than the gain-framed message ($M = 4.67$ vs. 4.11), $t(138) = 1.57$, $p = .05$.

The results of these analyses show that regulatory fit played a role in participants' evaluation of the message and that more fluent processing occurred under regulatory fit conditions. To provide more detailed insight into the processing fluency mechanism underlying the compatibility effects, we next ran two sets of mediational analyses; the first involved the number of support arguments as the mediator, and the second involved the Effectiveness Index.

In the first set of analyses, the Regulatory Focus \times Frame interaction was shown to have a marginally significant effect on attitude toward the brand ($\beta = .20$), $t(138) = 1.94$, $p = .06$. A second regression showed a significant Regulatory Focus \times Frame interaction on the number of support reasons generated ($\beta = .37$), $t(138) = 3.20$, $p = .002$. However, when the number of support reasons is included in the model as a predictor of brand attitude, the Regulatory Focus \times Frame interaction remained marginally significant ($\beta = .18$), $t(137) = 1.66$, $p = .10$, and the support-reasons effect was not significant ($\beta = .06$), $t < 1$. These results indicate that support arguments generated by the participants did not mediate the persuasion effects under compatibility conditions.

In the second set of mediational analyses, the Regulatory Focus \times Frame interaction had a significant effect on the Effectiveness Index ($\beta = .32$), $t(138) = 2.70$, $p = .008$. Importantly, when effectiveness was included in the model as a predictor of brand attitude, the interaction was no longer significant ($\beta = .02$, $t < 1$), but the effect of effectiveness was significant ($\beta = .55$), $t(138) = 9.60$, $p < .001$. These results suggest that the regulatory fit effect

on persuasion is mediated by perceived effectiveness of the message (Baron & Kenny, 1986). Further analyses on the mediated effect provide support that this effect is indeed significant ($z = 2.58, p < .01$; Goodman, 1960; Sobel, 1982).⁵

The compatibility effects observed in this study replicate those in the prior experiments and also provide more detailed insight into the processing fluency mechanism underlying these effects. Both heightened perceived effectiveness and a greater number of support reasons were observed in the compatibility conditions. However, mediational analyses show that perceived effectiveness and not the number of support reasons accounted for the interactive effects of regulatory focus and message frame on brand attitudes. These results are consistent with the findings reported by Higgins et al. (2003, Study 5) showing that regulatory fit led to respondents generating more suggestions to improve middle school as well as evaluating middle school programs to be more important, yet higher importance ratings were independent of respondents' suggestions to improve middle school. More importantly, these effects reflect a transfer of value from feeling right.

General Discussion

The objective of the current research was to examine the moderating role of both regulatory focus and perceived risk on message-framing effects and to put forth an explanation that accounts for the basic persuasion effects involving the differential effectiveness of gain- and loss-framed information. The results of these experiments show that gain frames are more persuasive when the appeal is promotion focused and when perceived risk is low. In contrast, loss frames are more persuasive when the appeal is prevention focused and when perceived risk is high. The mechanism underlying these findings appears to be one based on enhanced processing fluency when message recipients experience a match between message frame and regulatory focus of the content of the message. Further evidence in support of the processing fluency account is garnered by exploring the ease of information processing in conditions of high regulatory fit and by examining if more fluent processing leads to more favorable attitudes. The results of Experiments 4A and 4B provide convergent validity for this mechanism, demonstrating that processing fluency is indeed higher for gain-framed promotion appeals and for loss-framed prevention appeals as compared with loss-framed promotion appeals and gain-framed prevention appeals. Furthermore, processing fluency mediates the compatibility effects of regulatory fit on persuasion. The results of Experiment 5 show that in high regulatory fit conditions, more support reasons came to mind, and heightened effectiveness was perceived by participants. However, it was the perceived effectiveness that appeared to directly impact brand attitudes, thereby shedding light on the specific nature of the processing fluency mechanism.

In this light, one contribution of the current research is to extend prior message-framing research by demonstrating the moderating role of regulatory focus and perceived risk on the effectiveness of message frames. Although the current research conceptually replicates past findings regarding the critical role of involvement (as operationalized by perceived risk) on the message-framing effects (e.g., Block & Keller, 1995; Maheswaran & Meyers-Levy, 1990; Meyerowitz & Chaiken, 1987), it does not provide support for prior explanations for framing effects relying on involvement or

risky behaviors. Instead, the data are more parsimoniously explained by a regulatory fit principle whereby more favorable attitudes result under conditions of compatibility versus incompatibility between information presented in the appeal and the message frame. The results in Experiments 4A, 4B, and 5 suggest that processing fluency in regulatory fit conditions underlies the persuasion effects—a finding with important implications for health-related communications.

A second contribution of the current research is the empirical evidence in support of the theoretical distinction between the two ways in which message frames may be operationalized: one that focuses on end state (desirable and undesirable) and one that focuses on outcome (attain vs. not attain). This distinction is particularly useful in contexts where people's attitudes and behaviors may vary depending on the nature of the goals they hold and in the ways in which their goals are achieved (Crowe & Higgins, 1997). For example, a desirable outcome may be achieved via different strategies by maximizing the presence of gains or the presence of nonlosses. Similarly, an undesirable outcome varies in the routes by which it may be avoided by minimizing the presence of nongains or the presence of losses. Although this distinction between the two different ways in which gain and loss frames can be manipulated has been made (Apanovitch, McCarthy, & Salovey, 2003; Detweiler et al., 1999; Rothman & Salovey, 1997), this research provides a first demonstration of the interaction between these two operationalizations of message frame.

Furthermore, our present findings build on and extend recent developments in regulatory focus research. Regulatory focus theory proposes that people are more eager to strive toward gains than guard against nongains and that they are also more vigilant to guard against losses than strive toward nonlosses (Higgins, 2000; Idson et al., 2000). Higgins and his colleagues suggested that when people pursue goals in a strategic manner that suits their regulatory focus, they feel right about what they are doing, and it is this value experience that affects subsequent judgment of correctness, importance, and monetary value (Camacho et al., 2003; Higgins et al., 2003). Extending this notion of regulatory fit between individuals' strategy of goal pursuit and their regulatory orientation to message focus and message frame, we show that when the content of a message (i.e., whether it focuses on promotion or prevention concerns) is compatible with the message frame, the message "feels right" to the recipients. More specifically, high-fit messages match how people naturally think about promotion concerns (with eagerness) and prevention concerns (with vigilance) and thus are conceptually more fluent than low-fit messages. In the current studies, getting energized emphasizes a gain (gain frame, promotion focus), and missing out on getting energized emphasizes a nongain (loss frame, promotion focus). Conversely, missing out on preventing clogged arteries emphasizes a loss (loss frame, prevention focus), and preventing clogged arteries emphasizes a nonloss (gain frame, prevention focus). Thus, higher eagerness appears to be associated with the gain- versus loss-framed promotion appeal, and higher vigilance appears to be associated with the loss- versus gain-framed prevention appeal, resulting in their "feeling right." Similarly, a risky situation may also prompt higher vigilance; thus

⁵ A third set of regression analyses showed that the number of support reasons did not mediate participants' perceived effectiveness of the message.

a loss-framed appeal presented in a high-risk context also represents a better fit than one that is presented in a low-risk context. Our results demonstrate that enhanced processing fluency associated with higher eagerness and higher vigilance under regulatory fit conditions leads to more favorable attitudes. Thus, the current research shows that processing fluency may contribute to the “feeling right” experience that is transferred to subsequent evaluations of the product.

Although the current research shows that the compatibility effects based on the regulatory fit principle are driven by the transfer of processing fluency rather than by support arguments (Experiment 5), the possibility remains that other mechanisms (e.g., systematic processing) may be operant as well and thereby merit further attention. Recent research on regulatory focus has shown that respondents demonstrate higher motivational intensity under regulatory fit conditions (Idson et al., 2000). Aaker and Lee (2001) also presented results suggesting that respondents are more engaged under compatibility conditions, as demonstrated by better memory and greater discernment between strong and weak arguments. Future research is needed to explore when individuals’ judgments under regulatory fit conditions reflect transfer of processing fluency and when they reflect greater persuasion based on systematic processing of information.

Finally, limitations associated with the current research merit noting, particularly because they afford additional research opportunities. For example, all the experiments focused on persuasion effects among American participants. To what degree are the findings generalizable across cultural contexts? Recent research has suggested that relative to the United States, East Asian cultures tend to nurture a more accessible interdependent versus independent self-view (Singelis, 1994) and that interdependent individuals tend to be more prevention focused whereas independent individuals tend to be more promotion focused (Lee, Aaker, & Gardner, 2000). Thus, one route of exploration involves examining the interactive effects of regulatory focus and frame across individuals from the two different cultures, with members of the Western culture more likely to be promotion focused and those of the East Asian cultures more likely to be prevention focused. As an extension of the regulatory fit account, it would be interesting to examine if persuasion may be further enhanced when regulatory fit is compatible versus incompatible with self-view that may either be chronically accessible or temporarily primed.

Relatedly, different operationalizations of regulatory fit have been documented in the literature. For example, Higgins et al. (2003) demonstrated higher value assigned to the object when individuals’ chronic regulatory orientation, as measured by the strength of their ideal and ought self-guides, fits the strategy they use to select the object. In addition, Aaker and Lee (2001) demonstrated greater persuasion by matching the self-view highlighted in the message with the focus of the message content. In the current research, regulatory fit was operationalized by matching the regulatory focus of the message with the message frame. Thus, it is conceivable that any situation may be characterized by zero to multiple fits. Of interest would be research exploring the relationship between the number of regulatory fits present and the value of fit as well as the degree to which higher fit leads to enhanced persuasion. Furthermore, research on regulatory fit effects to date has focused on those experiences where the way to attain a goal (i.e., the message frame) is compatible with the regulatory focus of

the goal. Other important effects of regulatory fit involving levels of cognitive construal or temporal construal await future research (cf. Pennington & Roese, 2003), as do the emotional or cognitive processes that underlie these different compatibility effects.

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