

## Exploring Message Framing Outcomes When Systematic, Heuristic, or Both Types of Processing Occur

Joan Meyers-Levy

*Carlson School of Management  
University of Minnesota*

Durairaj Maheswaran

*Stern School of Business  
New York University*

Mixed findings have emerged in message framing studies, even when such studies employ the same general type of framing, such as goal framing. This article attempts to show that by extending the heuristic–systematic model-based explanation of message framing effects to incorporate conditions that may prompt both systematic and heuristic processing, this theory may accommodate some of the aberrant findings. The research reported shows that by varying a message issue's risky implications and its personal relevance, 2 factors that potentially influence the type of processing people employ, systematic, heuristic, or concurrently both types of processing were evoked and influenced people's judgments, causing alternative patterns of message framing effects to occur. The results offer insight into how each of these types of processing can affect message framing outcomes, and they imply that certain seemingly aberrant findings in the literature can be reconciled with this extended theory.

There is growing agreement that different mechanisms account for alternative types of message framing effects, such as those produced by risky choice, attribute, and goal framing (for a discussion of these distinctions, see Levin, Schneider, & Gaeth, 1998). However, conflicting findings often emerge even within a given type of message framing study, making it difficult for any single theory to account for all of the findings.

This research focuses on messages that vary in goal framing and aims to reconcile some of the conflicting findings in the goal framing literature with the heuristic–systematic model (HSM)-based explanation of message framing effects that has been offered by Maheswaran and Meyers-Levy (1990). This explanation proposes that messages expressed using positive versus negative goal frames can differ in their persuasiveness depending on whether individuals employ systematic or heuristic processing at the time of message processing. This article attempts to enhance our understanding of such message framing effects by investigating two issues. First, how is message framing likely to affect persuasion

when people engage in a third, hybrid type of processing, namely concurrent systematic *and* heuristic processing? Second, can people's reliance on this hybrid type of processing account for some of the unexpected findings observed in the goal framing literature, thereby expanding the number of studies accounted for by the HSM-based explanation of message framing effects?

To begin, we describe briefly how the same message can be expressed in terms of positive or negative goal frames. Then we review the HSM-based explanation of message framing effects and clarify how some seemingly conflicting message framing findings may be attributable to participants' use of this third and, to date, overlooked manner of processing message framing stimuli, namely, the concurrent use of systematic *and* heuristic processing.

### THE HSM-BASED EXPLANATION OF MESSAGE FRAMING EFFECTS

Goal framing studies that involve persuasive communications generally examine how people's judgments of a single message-advocated position, act, or object may differ as a

function of how the message is framed. Messages that are framed positively stress either the benefits gained or the negative consequences avoided if one accepts a course of action (e.g., “You will reduce [avoid increasing] your risk of developing lung cancer should you quit smoking”). Negatively framed messages stress either the negative consequences incurred or the benefits foregone if one does not accept such action (e.g., “You will increase [not reduce] your risk of developing lung cancer should you not quit smoking”).<sup>1</sup>

Maheswaran and Meyers-Levy (1990) proposed that message framing effects of this sort might be understood in terms of dual processing theories such as the HSM (Eagly & Chaiken, 1993). According to this theory, when people rely predominately on systematic processing, perhaps owing to the high personal relevance of a message issue, negatively versus positively framed messages should be more persuasive. This follows because those who employ systematic processing base their judgments on detailed scrutiny and the perceived diagnosticity of message data (Meyers-Levy & Malaviya, 1999). Because negative information has been shown to be non-normative in most instances and often is unexpected, it tends to be viewed as more diagnostic than positive information (Fiske, 1980), causing systematic processors to assign it greater weight during judgment formation (Taylor, 1991). Consequently, when conditions favor the dominant use of systematic processing, negatively versus positively framed messages should produce greater persuasion or more favorable judgments.

On the other hand, when relatively uneffortful, so-called heuristic processing occurs, which would be expected when the personal relevance of a message issue is low, positively versus negatively framed messages are likely to be more persuasive. This should occur because those who rely predominately on heuristic processing base their judgments on simple decision rules that often relate to surface message features. Message framing constitutes such a surface feature, and the hedonic principle holds that people generally approach or accept that which is positive but eschew or reject

that which is negative (Higgins, 1998). Thus, it follows that when conditions foster heavy reliance on heuristic processing, more favorable judgments should occur when messages are framed positively rather than negatively.

This HSM-based theory of message framing effects was supported in Maheswaran and Meyers-Levy’s (1990) research, and it appears to account for the results of a number of message framing studies, although often this requires assumptions about whether certain study factors favored the dominant use of systematic or heuristic processing (e.g., Meyerowitz & Chaiken, 1987; Wilson, Chaiken, & Axsom, 1986). Still, aberrant findings sometimes occur, which has been the case in studies where the risky implications or perceived efficacy associated with the message has varied (e.g., Block & Keller, 1995; Rothman, Salovey, Antone, Keough, & Martin, 1993). Specifically, when there has been high risk that the message-prescribed action might not produce the desired outcome (e.g., low message efficacy), and thus these highly risky implications presumably elicited predominately systematic processing (Sorrentino & Short, 1986), the HSM-based prediction was upheld. That is, persuasion was greater when message framing was negative rather than positive. However, when such risk was low (e.g., high message efficacy), and hence heuristic processing presumably prevailed, the predicted persuasion advantage for the positively versus negatively framed message was not supported. Instead, null effects emerged.

Although these null effects in the low risky implications condition are not amenable to a unique explanation, they raise an intriguing and overlooked possibility given the absence of any evidence that this condition actually prompted exclusive reliance on heuristic processing as was presumed. Specifically, because the message issues investigated ostensibly were of high relevance to their college-age study participants (e.g., sexually transmitted disease, skin cancer), the personal relevance of these issues was likely to have been high (Block & Keller, 1995), which could have triggered a high level of systematic processing as well. Hence, we suggest that participants in the aberrant outcome conditions may have engaged concurrently in systematic processing, due to the high personal relevance of the message issue, *and* heuristic processing, due to the low risk associated with the message issue. Indeed, a number of studies show that such joint systematic–heuristic processing can occur (Chaiken & Maheswaran, 1994). If our speculation is accurate, these seemingly aberrant findings in fact may be compatible with the HSM-based explanation of message framing effects because the persuasion advantage of the negatively framed message, wrought by people’s use of systematic processing, may have been neutralized by the persuasion advantage of the positively framed message, wrought by people’s simultaneous use of heuristic processing. As a result, message framing effects should be and were absent. Table 1 clarifies how the message framing effects obtained in some previous studies may be compatible

---

<sup>1</sup>Note that positive and negative message framing differs from the two motivational strategies that Higgins’ (1998) regulatory focus theory discusses, namely promotion and prevention strategies. Per this theory, a promotion focus is concerned with *the presence or absence of positive outcomes*, whereas a prevention focus is concerned with *the presence or absence of negative outcomes*. Not only do regulatory focus and message framing differ in their conceptual underpinnings, but the types of wording that qualify as either positive or negative message framing are confounded in their compatibility with different regulatory foci (cf., Tykocinski, Higgins, & Chaiken, 1994). To clarify, consider the two ways of operationalizing positively framed statements, namely, stressing (a) a benefit that will be gained if one adopts a particular course of action, or (b) a negative consequence that will be avoided if one adopts such action. Positive framing expressed as a benefit to be gained would be compatible with a promotion focus as it concerns *the presence of a positive outcome*, whereas positive framing expressed as a negative consequence that could be avoided would be compatible with a prevention focus because it concerns *the absence of a negative outcome*.

TABLE 1  
Reconciling Some Framing Effect Findings with the HSM Explanation of Message Framing

| <i>Research</i>                                   | <i>Message Topic</i>   | <i>Risky Implications</i>  | <i>Personal Relevance</i>  | <i>Message Framing Findings</i>   |
|---|--|--|--|---|
| Block & Keller (1995)                             | Experiment 1<br>Advocates prevention of sexually transmitted disease                                     | High risk (low efficacy)—told that (non)compliance reduces (increases) risk by 20%<br>Low risk (high efficacy)—told that (non)compliance reduces (increases) risk by 80%   | No manipulation check but assumed to be high personal relevance  | On attitudes and intentions<br>For high risky implications/high personal relevance, negative > positive<br>For low risky implications/high personal relevance, no framing effect  |
|   | Experiment 2<br>Advocates prevention of skin cancer  | High risk (low efficacy) for detection measures<br>Low risk (high efficacy) for prevention measures  | No manipulation check but assumed to be high personal relevance  | On attitudes and intentions<br>For high risky implications/high personal relevance, negative > positive<br>For low risky implications/high personal relevance, no framing effect  |
| Rothman, Salovey, Antone, Keough, & Martin (1993) | Experiment 1a<br>Advocates prevention and detection of skin cancer                                       | Assumed to be high risk for detection measures, yet low risk for prevention measures   | Manipulation check indicates personal relevance was high for women and low for men   | On intentions<br>For high risk/high personal relevance (detection/women), negative > positive<br>For high risk/low personal relevance (detection/men), positive > negative<br>For low risk/high or low personal relevance (prevention/men and women), no effect of message framing <sup>a</sup> |
|   | Experiment 1b<br>Identical to Experiment 1a  | Assumed to be low risk for both sexes due to the protection the non-White participants' dark skin pigmentation afforded them   | Manipulation check indicates low personal relevance for both sexes   | On intentions<br>Positive > negative  |
|   | Experiment 2<br>Identical to Experiment 1a but stimulus presented in form of a relatively slick pamphlet | Although the authors assume risk to be low due to use of prevention measures, manipulation check shows that women's perception of the risk to others was both comparable to that observed in Experiment 1 and greater than men's perception, which was markedly lower than it was in Experiment 1. Thus, risky implications appear to be high for women but low for men. | Due to "skewed data," no manipulation check reported. However, assuming that risk to self is indicative of personal relevance, such checks suggest that personal relevance was low for both sexes, as men and women reported comparable yet much lower ratings of self-risk in Experiment 2 vs. 1a despite the use of an identical message | On behavior compliance measure<br>For high risk/low personal relevance (women), positive > negative<br>For low risk/low personal relevance (men), no effect of message framing <sup>b</sup>   |

*Note.* HSM = heuristic-systemic model.

<sup>a</sup>While the null effect of message framing observed among women in this condition aligns directly with HSM-derived predictions, the null effect that emerged for men may have obtained because the low levels of both risk and personal relevance greatly reduced men's message processing, making men entirely insensitive to variations in message framing.

<sup>b</sup>As suggested in footnote <sup>a</sup>, due to the low levels of both risky implications and personal relevance experienced by men in this condition, men's message processing may have been so greatly reduced that they were entirely insensitive to variations in message framing.

with this extended HSM-based explanation of message framing effects.

## STUDY OVERVIEW AND PREDICTIONS

A study was conducted to explore the preceding possibility. To do so, we manipulated explicitly both the personal relevance of and the degree of risk associated with the message issue or advocacy. Thought-listing and recall measures also were administered because they could shed light on whether participants indeed employed significant levels of systematic, heuristic, or concurrently both types of processing in the anticipated conditions. In accord with much previous research (e.g., Maheswaran & Meyers-Levy, 1990), message-related thoughts and recall served as indicators of the use of systematic processing, and simple evaluative thoughts indicated the use of heuristic processing.

Different types of processing were expected to occur and determine the influence of message framing in the four conditions produced by the risky implications and personal relevance manipulations. High levels of each of these factors should promote the use of systematic processing, and low levels of each should encourage heuristic processing (e.g., Eagly & Chaiken, 1993; Sorrentino & Short, 1986). Thus, predictions were straightforward both when risky implications and personal relevance were high and when they were low. In the former condition, systematic processing should dominate, rendering persuasion greater when message framing was negative rather than positive. In the latter condition, heuristic processing should prevail, producing greater persuasion when message framing was positive rather than negative.

We also reasoned that heuristic processing would prevail and produce a persuasion advantage for a positively versus negatively framed message when the risky implications of the message issue were high, but its personal relevance was low. This prediction was based on extant research, which indicates that people exhibit a robust self-optimism bias, perceiving that others, rather than themselves, are far more vulnerable to risk and negative outcomes (Raghubir & Menon, 1998; Weinstein, 1980). Thus, unless people are led to believe quite explicitly that a risk is relevant to themselves, they may be likely to discount or minimize it (Kirscht, 1983; Krantz, Grunberg, & Baum, 1985). Such reasoning suggests that, under these conditions, heuristic processing prompted by the low personal relevance of the issue, should dominate any systematic processing prompted by the high risky implications, causing persuasion to be greater for a positively versus negatively framed message.

On the other hand, when participants were informed explicitly and saliently that the risky implications of the message issue were low but its personal relevance was high, it seemed likely that the influence of neither factor would dominate the other. Instead, each factor might exert its own influ-

ence on processing, resulting in concurrent systematic and heuristic processing. Further, because the heightened persuasive impact of the negatively (positively) framed message, caused by systematic (heuristic) processing, was likely to offset the persuasion *disadvantage* produced by this same message when heuristic (systematic) processing also occurred, no effect of message framing on persuasion was anticipated in this condition.

If these anticipated types of processing occur in the appropriate conditions, they should be manifested in certain types of thought and recall measures. Clearly main effects of risky implications and personal relevance should occur on message-related thoughts and recall as well as on simple evaluative thoughts. Specifically, message-related thoughts and recall, which are indicators of systematic processing, should increase when risky implications or personal relevance is higher, whereas simple evaluative thoughts, an indicator of heuristic processing, should increase when each of these factors is lower. More important, the risky implications and personal relevance factors might interact. A given type of processing is likely to be greater when it is the sole type that is prompted and draws on a consumers' cognitive resource pool than when it co-occurs with another type that also draws on this pool. Hence, reflecting contrasts of when one versus two types of processing should occur, our theorizing suggests that the two indicators of systematic processing should be greater in the high personal relevance condition when risky implications are high versus low, whereas the indicator of heuristic processing should be greater in the low risky implications condition when personal relevance is low as opposed to high. In addition, the indicators of systematic processing should be highest and the indicators of heuristic processing should be lowest in the high personal relevance-high risky implications condition because in this condition alone systematic processing should occur exclusively.

Each of the preceding predictions is examined in the following study.

## METHOD

### Participants

One hundred forty-seven undergraduate students participated in the study in small groups for extra course credit. Each individual was distributed randomly a booklet containing the experimental materials.

### Procedure

Participants were told that the study concerned the health issue of heart disease and the role that cholesterol plays in it. The first page of the booklet manipulated the personal relevance of this issue for participants. After reading some background material about the role of cholesterol in heart disease,



participants next learned of a new low cholesterol product called LeanBeef, which purportedly could affect people's susceptibility to heart disease by affecting their cholesterol level. The risky implications associated with this product were manipulated. In addition, the framing of the health- and product-related information was varied by casting it in terms of the benefits gained by reducing one's cholesterol intake and consuming the advocated product (positive framing) or the benefits foregone by not engaging in these behaviors (negative framing).

After reading these materials, participants completed several dependent measures. First, their product judgments were assessed. Then they reported their thoughts about the materials and completed a message-recall task. Finally, participants completed several manipulation checks, a confound check, and then were debriefed.

### Independent Variables

**Personal relevance.** Personal relevance was manipulated by varying the extent to which the focal health issue was claimed to be important to people within participants' age group. In the high personal relevance condition, participants were informed that recent research at Harvard Medical School showed that even individuals under age 25 are at risk of acquiring coronary heart disease because one's susceptibility to the disease is determined during one's late teens and 20s. In the low personal relevance condition, participants were apprised that this research showed that primarily those over age 65 were at high risk for acquiring the disease because susceptibility increases with age.

**Risky implications.** The risky implications associated with the advocated LeanBeef product were varied in a paragraph that preceded the advocacy. This material discussed a large, rigorous, and reputable test in which individuals purportedly consumed LeanBeef regularly over a 9-month period. In the low risky implications condition, participants were informed that 98% of these individuals experienced a significant reduction in their cholesterol level, whereas 2% reported an increased level. In the high risky implications condition, these statistics were changed to 80% and 20%, respectively.

**Message framing.** Although all study participants received factually equivalent health information and claims advocating LeanBeef, the framing of this information was varied. In the positive framing condition, statements were framed in terms of the benefits gained by reducing one's cholesterol intake and buying LeanBeef. In the negative framing condition, the same statements were framed in terms of the benefits lost by not reducing one's cholesterol intake and not buying LeanBeef. The following two statements exemplify such positive (negative) framing:

By using (not using) this brand of meat, you can (fail to) cut down your dietary intake of cholesterol and fat.

By choosing (not choosing) LeanBeef, you will (will not) discover a healthier meal option. And you'll enjoy (miss out on) the healthy, protein-rich meal that the meat provides.

### Dependent Variables

**Judgments.** Participants' judgments about LeanBeef were obtained on six 7-point items: *not at all/extremely useful*, *extremely unfavorable/favorable*, *extremely bad/good idea*, *would not/would consider buying soon*, *would not/would consider buying in the future*, and *more/less likely to buy low cholesterol products such as LeanBeef*. These highly correlated items were averaged to form a single judgment index ( $\alpha = .88$ ).

**Thoughts and recall.** Participants' thoughts about the message were coded reliably by two independent judges ( $\alpha = .90$ ) into the following categories: total number of thoughts produced, number of message-related thoughts (e.g., "Using LeanBeef reduces cholesterol"), and number of simple evaluative thoughts (e.g., "LeanBeef is an interesting idea"). The judges also classified participants' recall for correct gist of the message ( $\alpha = .91$ ).

**Manipulation checks.** To assess how personally relevant participants perceived the message, three 7-point scales examined how interesting, involving, and relevant to themselves the material was. In addition, the perceived risky implications of the advocated product were assessed on two 7-point scales that probed the extent to which there could be risky implications and drawbacks concerning the use of LeanBeef. Because the items associated with each factor were highly correlated, they were averaged to form separate personal relevance ( $\alpha = .91$ ) and risky implications ( $r = .79$ ) indexes.

Following procedures used by Meyerowitz and Chaiken (1987), both the positivity and the negativity of the framing manipulations were examined. On 7-point scales, participants assessed both the extent to which they stood to gain and to lose important health benefits by buying/not buying low-cholesterol products such as LeanBeef and the extent to which they felt the message stressed the positive and the negative implications of buying such products. The two positivity ( $r = .82$ ) and negativity ( $r = .91$ ) items in each set were highly correlated and were averaged to form separate message framing indexes.

Finally, a confound check explored whether different levels of threat or fear were evoked by the message framing manipulation. On 7-point scales, participants indicated how *fearful*, *tense*, *nervous*, *anxious*, *reassured*, *relaxed*, and *comforted* the message made them feel. The last three items were reverse-scored. Because these items formed one factor, they were averaged to form a single index ( $\alpha = .69$ ).

## RESULTS

All data were analyzed as a 2 (low or high risky implications) by 2 (low or high personal relevance) by 2 (positive or negative message framing) between-subject factorial. Treatment means for all measures are provided in Table 2, and degrees of freedom are 1, 139 unless indicated otherwise.

## Manipulation Checks

Only a main effect of risky implications emerged on the risky implications index ( $F = 162.55, p < .001$ ). As expected, participants associated greater risky implications with LeanBeef when 20% versus 2% of test participants were claimed to experience heightened cholesterol levels on using the product ( $M_s = 4.08$  vs.  $2.55$ ).

The personal relevance manipulation check index revealed only a main effect of personal relevance ( $F = 77.57, p < .001$ ). As anticipated, the message was viewed as more personally relevant when participants were told that heart disease was of concern to individuals of their own age group ( $M = 5.30$ ) versus senior citizens ( $M = 3.80$ ).

Analyses on the two indexes that assessed the positivity and the negativity of the framing manipulation each revealed only main effects of framing. Consistent with expectations, participants felt that the message conveyed more positive information when it was framed positively ( $M = 5.34$ ) rather than negatively ( $M = 4.05; F = 68.07, p < .001$ ), and they felt that the message conveyed more negative information when it was framed negatively ( $M = 5.05$ ) rather than positively ( $M = 2.86; F = 196.08, p < .001$ ).

Finally, participants' responses on the threat and fear index revealed no significant effects ( $ps > .14$ ). Thus, it appears unlikely that any treatment effects observed on other measures are attributable to participants' different levels of such emotions across conditions.

## Judgments

Participants' judgments about LeanBeef revealed several lower order effects, but they were qualified by a three-way interaction of risky implications, personal relevance, and message framing ( $F = 24.68, p < .001$ ). The interaction of personal relevance and message framing was significant in both the high ( $F = 97.21, p < .001$ ) and low ( $F = 8.82, p < .01$ ) risky implications conditions. Figure 1 displays the effects on product judgments.

The findings observed when high risk was associated with the advocacy both conceptually replicated those reported by Maheswaran and Meyers-Levy (1990) and were compatible with the HSM-based explanation of message framing effects as these researchers conceived it. When systematic processing was thought to prevail because participants associated high risky implications with the product, and its personal relevance was high, participants displayed more favorable product judgments when the message was framed negatively rather than positively ( $F = 49.79, p < .001$ ). However, when such risky implications were high, but the product was of low personal relevance, their product judgments were more favorable when the message was framed positively rather than negatively ( $F = 49.82, p < .001$ ). This latter finding, which presumably is attributable to people's self-optimism bias, supports the logic that risky implications are unlikely to foster appreciable systematic processing if they are perceived to be of no genuine consequence to oneself. Instead, under such conditions, heuristic processing, fostered by the message's low personal relevance, is likely to quash and dominate any systematic cognition.

Different outcomes were obtained, however, when the product was associated with low risky implications. Here, as expected, when participants associated low risky implications with the product and the product's personal relevance was low such that reliance on heuristic processing should dominate, participants produced more favorable product

TABLE 2  
Treatment Means for All Measures

|                                     | High Risky Implications |                |                |                | Low Risky Implications |                |                |                |
|-------------------------------------|-------------------------|----------------|----------------|----------------|------------------------|----------------|----------------|----------------|
|                                     | High Relevance          |                | Low Relevance  |                | High Relevance         |                | Low Relevance  |                |
|                                     | Positive Frame          | Negative Frame | Positive Frame | Negative Frame | Positive Frame         | Negative Frame | Positive Frame | Negative Frame |
| Risk index                          | 4.22                    | 4.19           | 4.00           | 3.92           | 2.50                   | 2.72           | 2.55           | 2.42           |
| Personal relevance index            | 5.26                    | 5.22           | 3.83           | 3.50           | 5.32                   | 5.39           | 4.21           | 3.67           |
| Positivity of message framing index | 5.44                    | 4.25           | 5.50           | 3.72           | 5.17                   | 4.19           | 5.26           | 4.03           |
| Negativity of message framing index | 2.67                    | 5.03           | 2.78           | 5.28           | 3.22                   | 4.78           | 2.79           | 5.11           |
| Threat/fear index                   | 2.13                    | 2.37           | 2.17           | 2.02           | 2.29                   | 2.15           | 2.23           | 2.10           |
| Product judgments                   | 4.47                    | 5.88           | 5.51           | 4.12           | 5.26                   | 5.01           | 5.58           | 4.50           |
| Overall thoughts                    | 5.61                    | 5.72           | 5.40           | 5.17           | 5.67                   | 5.39           | 5.11           | 5.06           |
| Message-related thoughts            | 4.50                    | 4.61           | 3.05           | 2.78           | 3.61                   | 3.56           | 2.58           | 2.67           |
| Simple evaluative thoughts          | .72                     | .56            | 1.60           | 1.56           | 1.50                   | 1.28           | 1.79           | 1.72           |
| Message-related recall              | 5.78                    | 5.56           | 4.40           | 4.06           | 4.61                   | 4.67           | 3.79           | 4.17           |

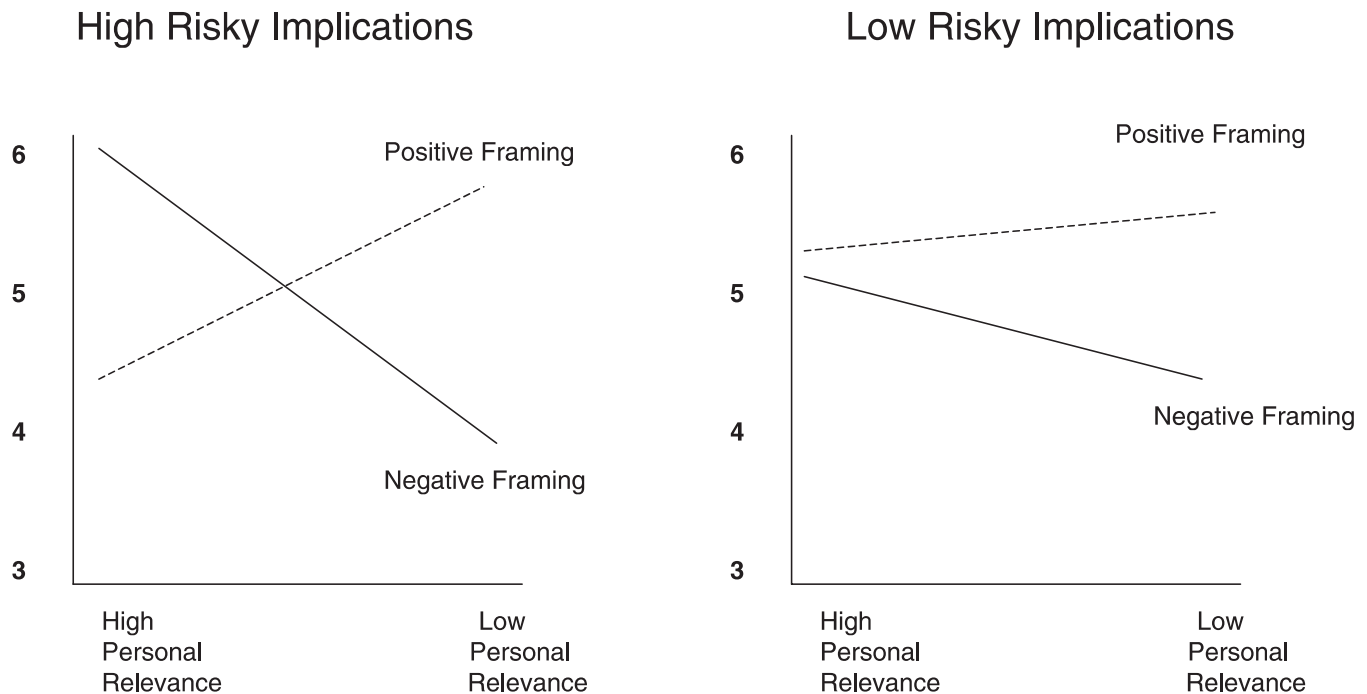


FIGURE 1 Three-way interaction of risky implications by personal relevance by message framing on product judgments.

judgments in response to the positive rather than the negative message framing ( $F = 18.54, p < .001$ ). On the other hand, when participants associated low risky implications with the product, but its personal relevance was high, both systematic and heuristic processing were anticipated to co-occur, and we predicted that message framing effects would not appear. This prediction was upheld ( $p > .22$ ), suggesting an important extension to the extant HSM-based explanation of message framing effects. It appears that under appropriate conditions, systematic and heuristic processing can co-occur such that the persuasion advantage associated with the two opposing message frames may offset each other and in fact eliminate message framing effects.

### Thoughts and Recall

Examination of participants' thought and recall data was critical, for it should offer evidence about whether the anticipated types of systematic or heuristic processing or both truly (co-)occurred in the predicted conditions. Analysis of total number of thoughts revealed no significant treatment effects ( $ps > .13$ ). However, the two indicators of systematic processing, namely message-related thoughts and message recall, produced several effects. Each of these measures revealed a main effect of risky implications ( $F = 24.17, p < .001$  and  $F = 16.36, p < .001$ , respectively) and personal relevance ( $F = 102.57, p < .001$  and  $F = 44.19, p < .001$ , respectively). More message-related thoughts and message recall were produced when personal relevance (message-related thoughts,

$Ms = 4.07$  vs.  $2.77$ ; recall,  $Ms = 5.15$  vs.  $4.10$ ) and risky implications (message-related thoughts,  $Ms = 3.74$  vs.  $3.10$ ; recall,  $Ms = 4.95$  vs.  $4.31$ ) were high rather than low.

More important, the predicted interaction of risky implications and personal relevance emerged on both of these measures of systematic processing (message-related thoughts,  $F = 7.03, p < .05$ ; message recall,  $F = 6.07, p < .05$ ). As expected, when personal relevance was high, participants generated more message-related thoughts ( $F = 28.09, p < .001$ ;  $Ms = 4.56$  vs.  $3.58$ ) and message recall ( $F = 20.77, p < .001$ ;  $Ms = 5.67$  vs.  $4.64$ ) in the high rather than low risky implications condition in which systematic versus both types of processing presumably was used. Further, both of these measures of systematic processing peaked in the high risky implications–high personal relevance condition compared to all other conditions combined, (message-related thoughts,  $F(1, 43) = 53.76, p < .001, Ms = 4.56$  versus  $3.04$ ; message recall,  $F(1, 43) = 22.34, p < .001, Ms = 5.67$  versus  $4.28$ ).

The anticipated opposing pattern of effects emerged on the indicator of heuristic processing, namely the number of simple evaluative thoughts that participants generated. As expected, simple evaluative thoughts revealed main effects of both risky implications ( $F = 12.75, p < .01$ ) and personal relevance ( $F = 25.23, p < .001$ ). More such thoughts occurred when risky implications ( $Ms = 1.57$  vs.  $1.11$ ) and personal relevance ( $Ms = 1.67$  vs.  $1.01$ ) were low rather than high. Of greater interest, however, the anticipated interaction of risky implications and personal relevance also emerged on this indicator of heuristic processing ( $F = 4.84, p < .05$ ). As pre-

dicted, in the low risky implications condition, participants produced more simple evaluative thoughts in the low versus high personal relevance condition ( $F = 4.06, p < .05; Ms = 1.76$  vs.  $1.39$ ) where only heuristic versus both types of processing presumably was employed. In addition, the use of heuristic processing, as indicated by the number of simple evaluative thoughts, was at its nadir in the high risky implications–high personal relevance condition compared to all other conditions combined,  $F = (1.43) = 12.72, p < .001; Ms = .64$  versus  $1.58$ .<sup>2</sup>

In sum, the pattern of findings on each of these thought and recall measures is highly informative. Not only do the findings uphold the view that systematic or heuristic processing dominated in the three conditions where they were predicted to do so, but they also support the proposition that, indeed, concurrent systematic and heuristic processing took place in the low risky implications–high personal relevance condition.

## GENERAL DISCUSSION

A major premise underlying this research was that the influence of message framing on people's judgments would differ depending on whether individuals invoked predominately systematic, heuristic, or both types of processing. The findings not only support this view, but they also shed light for the first time on the effects that can occur when both types of processing co-occur. By examining such issues, this work extends the existing HSM-based explanation of message framing effects by considering how people are likely to respond to message framing when both systematic and heuristic processing *could be activated* due to the presence of precipitating conditions (e.g., high risky implications but low personal relevance) and when, in fact, they *are activated* to a significant extent (e.g., low risky implications but high personal relevance). Moreover, the results of our analysis suggest that by incorporating such events into the HSM-based account of message framing effects, the theory may indeed accommodate a number of otherwise inexplicable, aberrant findings as Table 1 suggests.

Consistent with deductions from the literature, it appears that both the degree of risky implications associated with an

advocacy and its level of personal relevance can influence the type of processing that people employ. Further, at least in situations where the presence of each of these factors is explicit and thus salient to individuals, the type of processing stimulated by one factor may either effectively quash that which is prompted by the other factor, or, alternatively, the type of processing fostered by each factor may exert its own influence, even if this means that alternative types of processing co-occur.

When both the level of personal relevance and the degree of advocacy-associated risky implications prompted the same type of processing (e.g., high risky implications and high relevance each fostered systematic processing), the results were straightforward and presumably occurred for reasons suggested by the HSM-based theory of message framing effects. When systematic processing dominated, an advantage of the negatively versus positively framed message occurred, apparently due to the greater perceived diagnosticity of the negatively framed information. When heuristic processing dominated (e.g., low risky implications and low relevance), the opposite outcome occurred, presumably reflecting the greater simple hedonic appeal of the positively framed message.

More interesting, however, were the results when the aforementioned two factors gave rise to the potential activation of different types of processing. We found that when the risky implications of a message were high, encouraging systematic processing, but the message's personal relevance was not, encouraging heuristic processing, people appeared to discount the impact of the risk for the most part and invoke predominately heuristic processing. Presumably they felt that because the risk posed no threat to them personally, they could effectively disregard it. In turn, given people's dominant reliance on heuristic processing, their judgments about the advocacy were based on the appeal of a surface message cue, namely, the hedonic favorableness of the message frame, so the positively framed message was more persuasive than the negatively framed one.

On the other hand, when individuals were informed explicitly that risky implications were low, encouraging heuristic processing, but personal relevance was high, encouraging systematic processing, there was no reason for individuals to disregard either factor, or for the impact of one type of processing to attenuate the other. Thus, in this case, individuals invoked both types of processing, and the systematic processing-produced advantage of the negatively framed message was canceled out by the heuristic processing-elicited advantage of the positively framed message, thereby eliminating any effect of message framing.

The explanation offered for our message framing outcomes was nicely supported by our analysis of the types of thoughts that people generated. Such analysis indicated that the anticipated types of processing apparently emerged in the appropriate conditions, presumably accounting for people's message framing-engendered judgments.

<sup>2</sup>Although not all contrasts are reported for the interactions that emerged on the two indicators of systematic processing (e.g., message-related thoughts and message recall) and the indicator of heuristic processing (e.g., simple evaluative thoughts), all such contrasts revealed the anticipated outcomes. Specifically, they showed that systematic processing was greater in the high versus the low personal relevance condition both when risky implications were high and when they were low. In addition, heuristic processing was greater in the high personal relevance condition when risky implications were low rather than high, and the same was true in the high risky implications condition when personal relevance was low versus high. Finally, each of these types of processing was insensitive to variations in the degree of risky implications when personal relevance was low.



The findings that we observed under conditions where the level of personal relevance and the degree of risky implications potentially encouraged different types of processing seem to be especially informative, as they reflect more complex, yet arguably more realistic conditions than do the single type of processing conditions that typically are studied. Still, it is possible that the particular outcomes we observed may have been dependent on the fact that our study participants were informed of the parameters of the message's risky implications and personal relevance quite explicitly and saliently. Thus, future research is needed that explores such conditions when these parameters are established less blatantly.

Other issues also merit further study. We focused on just two factors, risky implications and personal relevance, that can potentially influence the type of processing that people invoke. However, many other factors that have been largely overlooked to date also may influence whether people are likely to employ predominately systematic, heuristic, or both types of processing. For example, we are aware of no message framing studies that have presented their messages using nonprint media. Yet, the type of processing people use and thus their responses to message framing may differ if the message is presented via, say, broadcast rather than print media, owing to the externally versus self-controlled pacing of the message. That is, the relatively fast external pacing of broadcast media may foster greater use of heuristic processing, independent of the influence of other factors, such as risky implications and personal relevance. Hence, future research is needed to explore this issue and many others that challenge us in our search for a fuller, more all-encompassing understanding of message framing effects.

#### ACKNOWLEDGMENTS

We thank Nidhi Agrawal and Sunaina Velagaleti for their assistance.

#### REFERENCES

- Block, L. G., & Keller, P. A. (1995). When to accentuate the negative: The effects of perceived efficacy and message framing on intentions to perform a health-related behavior. *Journal of Marketing Research*, 32, 192–203.
- Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: The effect of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, 66, 460–473.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace.
- Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*, 38, 889–906.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. *Advances in Experimental Social Psychology*, 30, 1–46.
- Kirscht, J. P. (1983). Health behavior: A review of research and issues. *Health Psychology*, 2, 277–301.
- Krantz, D. S., Grunberg, N. E., & Baum, A. (1985). Health psychology. In M. R. Rosenzweig & L.W. Porter (Eds.), *Annual Review of Psychology* (pp. 349–383). Palo Alto, CA: Annual Reviews.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76, 149–188.
- Maheswaran, D., & Meyers-Levy, J. (1990). The influence of message framing and issue involvement. *Journal of Marketing Research*, 27, 361–367.
- Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination, attitudes, intentions, and behavior. *Journal of Personality and Social Psychology*, 52, 500–510.
- Meyers-Levy, J., & Malaviya, P. (1999). Consumers' processing of persuasive advertisements: An integrative framework of persuasion theories. *Journal of Marketing*, 63(4), 45–60.
- Raghubir, P., & Menon, G. (1998). AIDS and me, never the twain shall meet: The effects of information accessibility on judgments of risk and advertising effectiveness. *Journal of Consumer Research*, 25(1), 52–63.
- Rothman, A. J., Salovey, P., Antone, C., Keough, K., & Martin, C. D. (1993). The influence of message framing on intentions to perform health behaviors. *Journal of Experimental Social Psychology*, 29, 408–433.
- Sorrentino, R. M., & Short, J.-A. C. (1986). Uncertainty orientation, motivation, and cognition. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition* (pp. 379–403). New York: Wiley.
- Taylor, S. E. (1991). Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin*, 110(1), 67–85.
- Tykcinski, O., Higgins, E. T., & Chaiken, S. (1994). Message framing, self-discrepancies, and yielding to persuasive messages: The motivational significance of psychological situations. *Personality and Social Psychology Bulletin*, 20, 107–115.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 806–820.
- Wilson, D. K., Chaiken, S., & Axsom, D. (1986). *The cognitive mediation of message framing in persuasion*. Paper presented May, 1986 at the Midwestern Psychological Meetings, Chicago.