

Health-Care Product Advertising: The Influences of Message Framing and Perceived Product Characteristics

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ABSTRACT

Message framing readily lends itself to marketing communication and advertising persuasion strategies. However, past research yields contradictory and inconsistent predictions as to whether positive or negative frames are more persuasive. This study examines the most appropriate message framing to present to consumers in print advertisements for health care products. Two experimental studies are conducted to investigate the moderating effects of product functions: perceived innovativeness and perceived risk on the processing of framed advertising messages. Findings of Study 1 indicate that messages for familiar products should be framed differently depending on perceived product functions (prevention vs. detection), but gain-framed messages are more persuasive for both new prevention and detection products. Results of Study 2 suggest that a mixed-framed message (combining gain and loss) could enhance message effectiveness only when subjects have prior experience. Similar to the role of product function, product perceived risk is found to moderate the framing effects on message effectiveness. © 2007 Wiley Periodicals, Inc.

The health care market has changed irrevocably in the last two decades with the emergence of health care consumers who, rather than being

passive, have taken a more active role in their own health care (Moorman & Matulich, 1993). However, consumers are faced with a bewildering set of health care choices and a confusing barrage of health-related information. The question of how consumers perceive health care messages arises. Researchers argue that advertisers should pay attention to how advertisement messages are presented to consumers because the way information is labeled or framed may significantly influence consumers' judgment and decisions about products (Ganzach & Karsahi, 1995; Smith, 1996). For example, positive framing emphasizes the benefits of purchasing the promoted product, and negative framing stresses the potential loss if consumers do not purchase it. Using appropriate message frames could increase the persuasiveness of messages to consumers, thereby increasing sales (Martin & Marshall, 1999). Therefore, understanding framing effects may aid the development of creative and effective advertising copy and layout (Arora, 2000).

However, the research stream regarding the persuasive effects from the use of the positive or negative framing of advertisements is not conclusive and there still exist some unresolved issues in framing research on choice behaviors (Homer & Yoon, 1992; Meyers-Levy & Maheswaran, 2004). Researchers also find that message framing may interact with other marketing variables, such as the price, and increase the effect of price on consumers' perceptions of performance risk when the message is framed negatively (Grewal, Gotlieb, & Marmostein, 1994). This research investigates situations in which people have varying degrees of familiarity with health care products, testing the idea that responses to advertising are influenced by the framing of the advertisement and perceptions of product characteristics. Prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981) and health care studies (Banks et al., 1995; Rothman, Martino, Bedell, Detweiler, & Salovey, 1999) explain preference behavior based on subjective information interpretation and previous experience. When consumers face a new health care product and have no usage experience and few expectations, how do they evaluate it? How would these evaluations differ from situations where consumers are already familiar with that particular product? How should advertisers frame messages for products of varying degrees of newness? Should they emphasize potential gains resulting from using the product or the negative consequences of not buying the product? Will the effectiveness of positively framed advertising differ from negatively framed advertising, and will these effects be the same for familiar and new health care products? In what circumstances will a mixed frame (combining gain and loss) increase or limit the message effectiveness? Examining these issues will help health care advertisers develop appropriate message framing for particular types of products.

THEORETICAL BACKGROUND AND HYPOTHESES

Message Framing and Health-Care Product Functions

Turning first to persuasion studies that have adopted the framing postulate, research has shown that different types of health care behaviors (prevention vs. detection) elicit different evaluative reactions to the content of the theme of a message. An important difference between prevention and detection behavior is the perceived degree of proximal risk (Banks et al., 1995). Even though detection behaviors are performed to minimize long-term risks (e.g., finding diseases at an early stage when prognosis is improved), they carry the immediate “risk” of discovering a potentially fatal disease (e.g., discovering an abnormality in the breast). Prospect theory suggests that risky options are preferred when people consider losses. Thus, the performance of detection behaviors should be best facilitated by loss-framed messages. In contrast, several studies provide evidence for an advantage of gain framing when the primary function of the advocated behavior is to prevent the onset of an illness. Adopting a prevention behavior can be seen as less risky or, in the language of prospect theory, a risk-averse option. A positive framing is assumed to be more persuasive in this context because a reassuring or optimistic theme of a message is more consistent with a behavior that serves to maintain or improve one’s health. Of the prevention behaviors that have been investigated, researchers conclude that doing exercise (Robberson & Rogers, 1988), using infant car seats (Christophersen & Gyulay, 1981), and sunscreen (Rothman, Salovey, Antone, Keough, & Martin, 1993) are promoted best by gain-framed messages. Investigations of detection behaviors reveal an advantage for loss-framed messages in promoting breast self-examination (Meyerowitz & Chaiken, 1987), mammography screening of breasts (Banks et al., 1995), and skin cancer examinations (Block & Keller, 1995). In other words, people may respond differently to gain- versus loss-framed messages depending on whether the target behavior is a prevention behavior or a detection behavior.

The relative effectiveness of positively or negatively framed messages is contingent on the type of health behaviors. Applying this concept in health care marketing, purchasing prevention products can be treated as prevention behaviors and purchasing detection products as detection behaviors. For example, many mouth rinses may be described as a prevention product because mouth rinses are used to prevent the buildup of dental plaque and the development of gum disease. However, other mouth rinses—called disclosing rinses—serve as detection products since they are used to detect the presence of dental plaque and the onset of gum disease. Based on this classification of health behaviors, the present research addresses different health care products to test the generality of the assumption that health care marketers should choose different framed messages depending on these product functions.

H1: The impact of message framing will vary according to the nature of the product/behavior advocated. Specifically, positive framing will have a greater favorable impact on attitude and intention regarding the purchasing of prevention health care products, whereas negative framing will have a greater favorable impact on detection health care products.

Framing and Perceived Product Newness

Previous literature (Kahneman & Tversky, 1984) assumed that the concept of utility and value includes decision values and experienced values. Experienced value is defined as the degree of pleasure or pain, satisfaction or anguish in the actual experience of an outcome. This assumption is part of the conception of an idealized decision maker who is able to predict future experience with perfect accuracy and evaluate options accordingly. Most health studies focused on decision value that is the contribution of anticipated outcome to the overall attractiveness or aversiveness of an option in a choice. However, when people face a new health-related product, the experienced value of using the product is hard to estimate and sometimes it could be close to zero. The common mismatch of these two values add another element of uncertainty in many decision problems and may be evident when people face a new health care product and have no usage or even similar experiences. Moreover, health messages are mostly likely to be seen and received when they are believable and consistent with past experience, and salient or relevant to consumer (Weinstein, 1988). What if people do not have any past experience? Will the relationship between framing and prevention/detection behavior continue to apply with products of different degrees of innovativeness? It may be that adding the risk associated with newness may tip the balance against the loss-framed messages, which traditionally have been concluded to be more effective for situations of adopting a detection product. The arguments are as follows.

Studies of newness and framing come to different conclusions from those researching prevention/detection behaviors and framing effects. Effective framing is viewed as a function of the riskiness of the behavior (Block & Keller, 1995). Because purchasing a “detection product” may seem high in risk, negatively framed messages seem preferred. Negative-consequence information increases consumers’ need for information about the relevant attribute, negative consequences of purchasing, and ways to avoid their occurrence (Burnkrant & Sawyer, 1983). This increased need for information affects consumers’ levels of information acquisition and elaboration. Moreover, sometimes gain-framed messages create boomerang effects, shifting consumer attitudes in the opposite direction from that intended by the advocacy. They happen especially for detection products (Cox & Cox, 2001). Such boomerang effects happen when the messages are highly discrepant from the subjects’ prior

attitudes (Dignan, Block, & Cosby, 1985). Gain-framed messages are viewed as providing relatively weak arguments for detecting because these arguments do not provide consumers with a sufficient justification for enduring the short-term costs of the target detection behavior. In contrast, loss-framed messages are viewed as providing more powerful arguments for why consumers should endure the short-term discomfort of having a health problem possibly detected (Cox & Cox, 2001).

However, literature on framing and innovativeness (newness) appears to favor positive framing for innovations (e.g., Cox & Locander, 1987; Mayer et al., 1992; Sedikides, 1992), suggesting that positive framing should be used to reduce the perceived risk in new product promotion. Framing has been shown to have a much stronger effect when consumers have little or no related product experience. The research of Hoch and Ha (1986) suggests that the framing effects are stronger when the product experience is nondiagnostic (ambiguous) but are weakest (or overwhelmed) when the product experience is diagnostic (unambiguous). Also, Wang (1996) suggests that framing effects are more pronounced when a decision maker's preferences are weak, and the effects become less pronounced when a decision maker is highly involved in the decision task. It is predicted, therefore, that the framing effects will be enhanced when applied in new product advertisements, where the viewer of an ad cannot have any product experience to draw on. A recent study by Broemer (2004) echoes such a point of view that negatively framed messages are more persuasive when symptom imagination is relatively easy, and positively framed messages are more effective when symptom imagination becomes relatively difficult.

From the discussion above, an interaction effect of product newness and message framing on message effectiveness is expected in the cases of prevention and detection products separately and framing effects become stronger as product unfamiliarity increases. Figure 1 shows the expected interaction effect of product newness and message framing on message effectiveness for prevention products, and Figure 2 depicts the expected interaction effect of product newness and message framing on message effectiveness for detection products. To sum up, the hypotheses are stated as follows:

- H2:** For *prevention* products, there will be a significant difference in the message effectiveness of an advertisement between the positive and negative framing for a familiar product, and a greater difference for a new product. Positively framed messages will be more effective for both familiar and new prevention products.
- H3:** (a) For *detection* products, there will be a significant interaction effect between framing effects and product innovativeness. Negative framing will be more effective for advertising a familiar detection product, but positive framing will be more persuasive for adver-

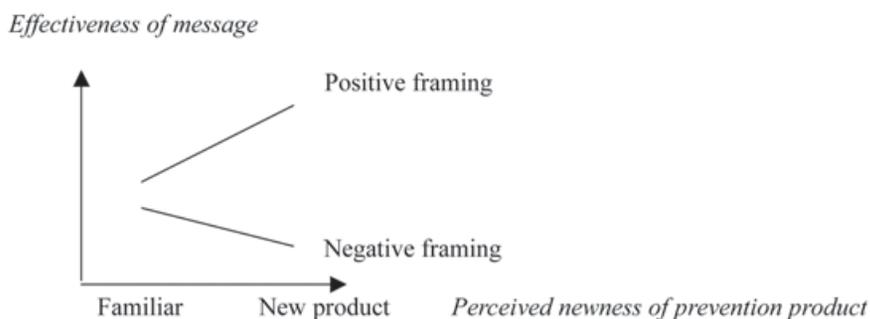


Figure 1. Expected interaction effect of product newness and message framing on message effectiveness of a prevention product.

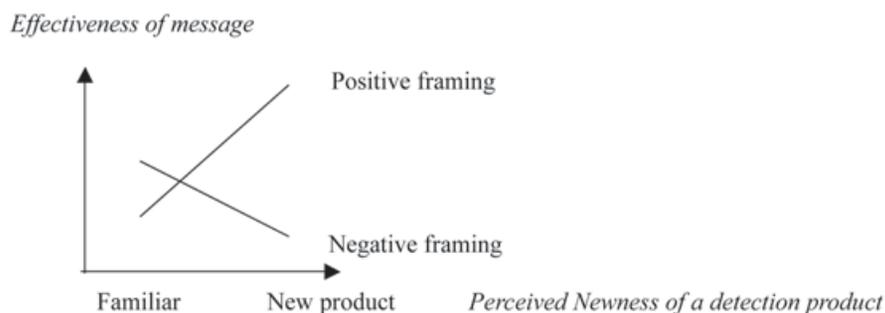


Figure 2. Expected interaction effect of product newness and message framing on message effectiveness of a detection product.

tising a new detection product. (b) For *detection* products, differences between positive and negative framing effects will become more significant for a new product than those for a familiar product.

STUDY 1

In the experiment, it was important to choose a product that consumers could evaluate on attributes that facilitate information processing. Two criteria were considered based on previous consumer research. The product should be involving and should have the potential to be framed positively or negatively (Homer & Yoon, 1992). The products also had to be ones in which respondents could find different levels of product innovativeness (i.e., one should be familiar but the other should be unfamiliar to the respondents) (Martin & Marshall, 1997; Oliver, Robertson, &

Mitchell, 1993). Based on these criteria, dental products were chosen as the test product category.

Students were selected for the subject pool because of a basic familiarity with dental care products. The entire sample indeed had bought dental care products during the past 3 months. The participants consisted of 267 undergraduate students (130 males and 137 females) from three business courses at a large university in the United Kingdom. However, five participants had to be removed from the analysis because their questionnaires were incomplete. In the final sample of 262 respondents, age ranged from 17 to 28 years with mean (M) = 19.69 and standard deviation (SD) = 1.36.

Method

The experiment tested the relative effectiveness of gain- and loss-framed messages to promote prevention and detection behaviors with different degrees of product familiarity in a 2 (message framing: gain, loss) \times 2 (product function: prevention, detection) \times 2 (product newness: familiar, new product) factorial design. A pilot study with a sample of 12 students from one tutorial class was conducted 2 weeks before the experiment to make sure the quality of leaflets was acceptable, and the questions in the booklets were clearly understood. Prior to the experiment, the treatment booklets were randomized. The researcher went to classes at the beginning of the lectures. Students were asked to participate in the experiment voluntarily. They were instructed that the study was about dental care routines to understand consumer behavior regarding health care products. Participants received a premanipulation questionnaire, followed by a gain- or loss-framed leaflet that described an oral hygiene product (either new or familiar) that either prevented or detected dental health problems. They were also given a postmanipulation questionnaire for indicating their own attitude and intention concerning the product. Participants followed the instructions in the booklet, answered the questions in order, and were instructed to take as much time as they needed. Guidelines of the APA mandate that any necessary deception be explained to participants as soon as possible following participation. Special attention was given to ensure that no participants would seek out those fictitious products used in the experiment. At this point, participants were asked not to discuss the study with anyone who was in other business courses. The lectures continued. The experiment lasted about 25 min.

Product Newness and Product Manipulations. A pretest was conducted to develop the proposed manipulations in product types and product newness. The pretest covered 15 dental products, consisting of both prevention and detection functions. The products included some existing products in market, some new products, and fictitious products. Sixty-eight undergraduates from a business course read each product intro-

duction and use instruction, and rated the degree of perceived product newness for each product with the use of a scale from 1 (*very new to me*) to 7 (*very familiar to me*). Four products chosen for the experiment were dental gum (familiar prevention product), disclosing gum (familiar detection product), rinse capsules (innovative prevention product), and disclosing strips¹ (innovative detection product). DENTAGOLD, a fictitious brand, was created to avoid any possible confounding effects due to prior familiarity or attitude of participants toward the sponsored brand.

Message-Framing Manipulations. Participants read about the importance of using dental care products for keeping their teeth healthy. For example, the positive framing condition contained the following excerpts (the negative framing condition contained in parentheses) in the familiar detection product:

- People who use disclosing gum periodically before brushing are taking advantage of a safe and effective way to detect areas of plaque accumulation. (People who don't use disclosing gum periodically before brushing fail to take advantage of a safe and effective way to detect areas of plaque accumulation.)
- With disclosing gum, you can be more confident that your teeth and gums are healthy. You will also enjoy fresh breath. (Without disclosing gum, you may be less confident that your teeth and gums are healthy. You might also suffer from bad breath.)

Advertisements (Leaflets). Two graduate students in graphic design at the University of Edinburgh helped the author to design the professional-looking leaflets. The dental health information was presented in a 1-page, two-sided print leaflet in three folds. Eight different leaflets were developed. Care was taken to ensure that the positively and negatively framed versions of the advertisements provided the same quality and amount of information, except for the obvious gain/loss distinction and product functions. The pictures were chosen to be consistent with the copy so as not to provide additional brand-related information. Aside from specific details about the particular behavior promoted, all advertisements presented the same general information about how the product can improve dental health. The leaflet was divided into six sections: (a) keeping your teeth for life, (b) you and your gums, (c) preventing (detecting) gum disease, (d) benefits of using the product (costs of not using the product), (e) description of product, (f) how to use the product, and (g) where to get the product.

¹ Rinse capsules and disclosing strips are fictitious products, created from some existing product (e.g., fresh breath tablets and whitening strips) but designed to provide new ways to protect oral health.

Premanipulation Measures

1. *Dental history.* A series of items assessed participants' dental hygiene practices and dental health background. These items included questions about frequency of brushing and flossing teeth, frequency of visiting a dentist, and timing of the last visit to a dentist. Participants were also asked whether they suffered from any form of gum disease. It was important to confirm that it did not confound with the researched variables across the groups.
2. *Sources of dental care information.* Two questions about sources of dental care information and advertisements were asked.
3. *Manipulation check on product newness.* Two questions assessed the differences between perceptions of familiar and new products. In each question, the rating was made on a 7 point-scale with 1 indicating *very new to me* and 7 *very familiar to me*. The reason for asking before the experiment was to avoid learning effects after reading the test advertisement (leaflet).
4. *Purchase experience regarding dental care products.* Participants were asked whether they ever purchased nine listed dental care products to provide a better view about their routine purchase behavior in oral care products.
5. *Demographics.* A series of items from the UK census sample questions assessed general demographic information, including participants' age, gender, and ethnic background.

Postmanipulation Measures

1. *Behavioral intention.* Intention is often found to be a strong predictor of behavior (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). In this study, behavioral intention was measured in terms of the likelihood of buying, using and recommending the product to family or friends on a three-item 7-point semantic differential scale consisting of *likely/unlikely*. The items were derived from past research (Maheswaran & Meyers-Levy, 1990) and the item anchors were very similar or identical to other attitudinal measures in consumer research (Batra & Stephens, 1994; Homer & Yoon, 1992) and particularly those studies that have shown a positive relationship between attitude and purchase intention (Bagozzi & Warshaw, 1990; Homer, 1990). Here, behavioral intention was used to measure the message effectiveness. This method was used in Banks et al. (1995) and Rothman, Martino et al. (1999).
2. *Opinions of the leaflet.* The measure with five items was adopted from Smith (1996). Participants indicated how interesting, annoying, good, informative, and appealing they found the advertisement

on 7-point semantic differential scales. An index was created by calculating the mean of the five items.

3. *Manipulation check on framing.* One question assessed the information framing manipulation. Respondents had to state whether the leaflet they read emphasized the costs, benefits, or neither of using/not using the product.

Analyses and Findings

Data Screening. The data were first screened for multivariate analyses by testing all variables for assumptions for normality and linearity (Williams, Clarke, & Borland, 2001). No evidence of skewness for those independent and dependent variables were found (skewness values fell inside the range of -1 to $+1$). An initial set of analyses was conducted to determine whether any of the routine care or demographic variables moderated behavioral intention. Because no moderating effects were obtained, all analyses are presented collapsed over these factors. The reliability of the scales was checked and the following Cronbach's alphas were obtained: opinions of the leaflet = 0.74, and behavioral intention = 0.89. These numbers exceed the suggested lower limit (0.7), indicating that those scales were satisfactorily reliable. Participants in the eight conditions demonstrated comparable understanding of the basic information presented in the leaflet, $F(7, 262) = 0.41, p = .89$, suggesting that the eight versions of the leaflet were equally comprehensible and that opinions of the advertisements would not confound the experiment's results.

Manipulation Check on Product Newness. Participants' perceptions regarding product newness were examined to confirm perceived differences between familiar and new products. Depending on the assigned version (prevention or detection product), participants rated one existing product and one new product on 7-point familiarity scales. The greater the perceived difference between familiar and new products, the more successful the manipulation (i.e., the rating for a familiar product should be much higher than that of a new product). Because the manipulation was conducted at the product level, comparisons of means were adopted for testing statistical significance across different product conditions. As hoped, examination of the product familiarity ratings indicated that the participants could distinguish between the two levels of product newness ($M_{\text{familiar product}} = 3.73; M_{\text{new product}} = 1.64; p < .01$). Two separate T tests were examined for prevention and detection products, and the differences in perceived newness were significant ($M_{\text{familiar prevention product}} = 4.87$ with $SD = 2.01$, and $M_{\text{new prevention product}} = 1.77$ with $SD = 1.18$; $M_{\text{familiar detection product}} = 2.58$ with $SD = 2.02$, and $M_{\text{new detection product}} = 1.52$ with $SD = 1.09$). A significant difference of perceived newness was also found between the familiar detection product and the new prevention product ($p < .05$). The lower means for detection products suggested that in general detection products

were less familiar among dental care products. A possible reason might be that people watched some prevention product commercials (e.g., dental gum) or saw them on the shelf before (e.g., brands such as Colgate, Boots, and Oral B) and became familiar with the social desirability of using them for prevention. Although the perceived difference between familiar and new detection products was smaller than that for prevention products, the statistical significance confirmed that the manipulations were sufficiently effective for both cases.

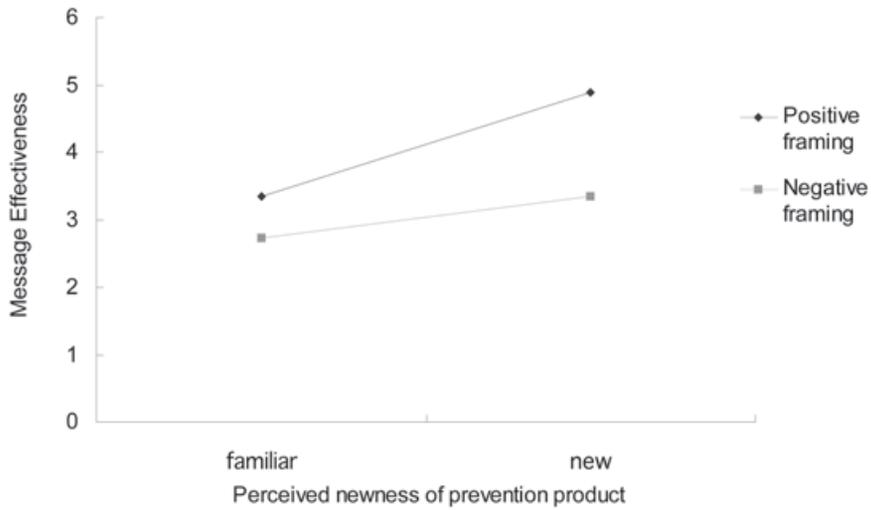
Manipulation Check on Message Framing. To assess whether the framing manipulation was perceived as intended, participants rated whether the leaflet placed more emphasis on the benefits associated with purchasing the advertised product or the costs associated with not buying it. The result of the chi-square test was significant, suggesting that those in the loss-framed conditions judged the leaflets as emphasizing the costs of not using the product, whereas those in the gain-framed conditions judged the leaflets as emphasizing the benefits of using the product. This suggests that the manipulation of message framing was successful and that respondents correctly identified the emphasis that the leaflets were designed to convey.

Hypotheses Testing. First of all, a significant three-way interaction of message framing, product function, and perceived product newness was found on participants' behavioral intention with $F(1, 262) = 6.38, p < .01$. Treatment means are summarized in Table 1. A significant interaction effect between message framing and product function was observed, $F(1, 262) = 4.92, p < .05$. These results lend support for H1 that gain framing was more effective in advertising prevention products, but loss framing was more effective in promoting detection products. In addition, a significant two-way interaction effect between framing and product newness was also found, $F(1, 262) = 6.91, p < .01$. An interaction effect between product newness and message framing on behavioral intention of prevention health care products was also tested with post hoc tests with Bonferroni adjustment. As expected, the interaction effect was found significant, $F(1, 130) = 4.36, p < .05$, which is depicted in Figure 3. H2 was supported. For detection products, consistent with the arguments, the interaction effect between message frame and product newness was significant, $F(1, 132) = 12.42, p < .01$, which is depicted in Figure 4. More

Table 1. Summary of Treatment Means in Study 1.

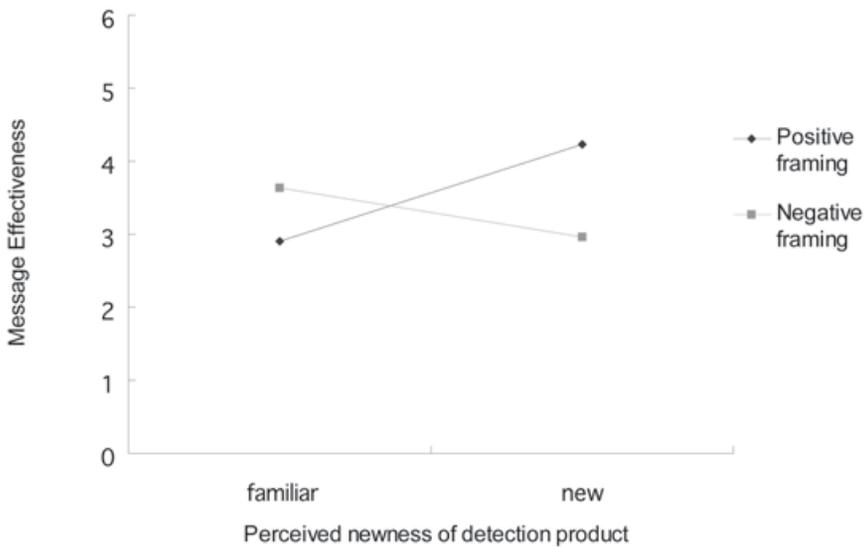
	Positive Framing	Negative Framing
Familiar prevention product	3.33	2.73
New prevention product	4.88	3.33**
Familiar detection product	2.91	3.64*
New detection product	4.23	2.96**

* $p < .05$; ** $p < .01$.



Note: Message effectiveness was measured on the index of behavioral intention; higher numbers indicate higher behavioral intention, resulting in higher message effectiveness.

Figure 3. Message effectiveness of positive and negative framing on prevention health care products.



Note: Message effectiveness was measured on the index of behavioral intention; higher numbers indicate higher behavioral intention, resulting in higher message effectiveness.

Figure 4. Message effectiveness of positive and negative framing on detection health care products.

participants in the negatively framed condition showed stronger behavioral intention (2.92 from the index of three 7-point scales) than those in the positively framed condition (3.64 from the index), supporting H3(a). H3(b) was supported because framing effects were significantly stronger in promoting the new detection product ($4.23 - 2.96 = 1.17$) than in the familiar detection one ($3.64 - 2.91 = 0.73$). The finding supported previous literature that framing effects would be strongest when the product experience is unfamiliar (ambiguous) and will be weakest (or overwhelmed) when the product experience is familiar (unambiguous) (Hoch & Ha, 1986). These results suggest the moderating role product newness on framing effects in message effectiveness.

The results supported the predicted relation between product newness and message frame for both prevention and detection products. Specifically, respondents showed higher behavioral intention for new promoted products (prevention or detection) in the gain-framed leaflet, and the framing effects were stronger in promoting new products than in promoting familiar products. According to prospect theory, loss-framed information may increase one's perceived risk, causing them to be more willing to perform risky behaviors. To use products for health detection can be constructed as risky behavior (it could identify illness), whereas to consume a product for health prevention can be constructed as a relatively safe alternative (it maintains one's healthy status). For health-related behaviors, loss-framed information may lead people to feel concerned about their present health status. This concern may cause them to be more risk seeking in their orientation toward a behavior, as suggested by prospect theory. When the behavior is seen as risky but worthwhile, feeling at-risk may facilitate performance of that behavior. It was this line of reasoning that led Meyerowitz and Chaiken (1987) to predict an advantage for negative framing on breast self-examination. However, this study showed that product newness could moderate the relationship between risk seeking and loss framing. Positive framing has been found to invoke a good mood, which can be linked to favorable evaluations of a target, particularly when the information describing the target is ambiguous or neutral (Mayer, Gaschke, Braverman, & Evans, 1992; Sedikides, 1992). Positive framing should be more effective for scenarios of facing innovative products with no prior experience than negatively framed ones and would enhance favorable attitudes toward the product. Therefore, when describing new products, advertisers should strive to present things in the most positive manner possible—the glass is half full rather than half empty, you will gain important benefits of using the product. The findings were also consistent with those from Hoch and Ha (1986) that in the context of product evaluation, the more ambiguous a consumer's experience with a product, the more his or her evaluations are susceptible to how the product is described. Framing effects were enhanced when participants faced new products.

STUDY 2

After using product functions to operationalize the levels of product risk, different dimensions of product perception were considered to further manipulate product perceived risk in this study. In a health care context, two fundamental dimensions should be taken into account to evaluate perceived risk associated with product use: (a) severity of the health threat without using the product, and (b) salience of side effects associated with using the product. Severity of the health threat would enhance consumers' purchase intention, but the severe side effects accompanied with the product usage would diminish the purchase intention. It occurs frequently in travel scenarios. For example, insect repellent is usually safe to use for protecting insect bites, which could be a mild problem, but sometimes could be uncomfortable for travelers. Thus, it can be viewed as a product coping with mild sickness without much hazard. Using such a product should be perceived as low risk to a consumer. On the other hand, antimalaria tablets are used for combating malaria, which is a serious disease. However, there are side effects of the medicine, some of which can be serious or fatal. Therefore, its perceived risk could be high for a consumer.

In this study, products associated with *high* perceived risk are operationalized in coping with *serious* health threats and carrying possible *salient* side effects. Products associated with *low* perceived risk are manipulated as coping with *mild* health threats and carrying *little* side effect. Because risk-averse options are preferred when people consider benefits or gains, positively framed messages may be more likely to facilitate the promotion of products with low perceived risk. With products with high perceived risk, negatively framed information increases consumers' need for information about the relevant attribute, its negative consequences, and ways to avoid their occurrence (Burnkrant & Sawyer, 1983). This increased need for information affects consumers' levels of information acquisition and elaboration. Loss-framed messages are viewed as providing more powerful arguments for why consumers should endure the potential severe side effects for coping with salient health threats. Replicating the results in Study 1 and previous research above, the hypothesis is structured as follows:

- H4:** Product perceived risk will moderate framing effects in message effectiveness. Positive framing will be more effective in promoting products with low perceived risk, and negative framing will be more effective in products with high perceived risk.

There is one more framing manipulation combining gain and loss information into one message to promote a particular health behavior (Treiber, 1986; Wilson, Wallston, & King, 1990), which was not included in Study 1. Mixed-framed messages arouse the conflict as to the risks involved in

compliance and noncompliance, but provide a satisfactory solution to the conflict at the same time (Janis & Mann, 1977). Furthermore, Wilson et al. (1990) find that a mixed-framed message decreases the number of cigarettes smoked by people with a low desire to quit but not by people with moderate or high desire to quit. Farrell et al. (2001) indicate that a mixed-framed message might closely reflect what happens in clinical practice for clinicians and patients and include it as part of a study of message framing in safety of blood for transfusion. Considering the combination of positive and negative framing may help us to compare the framing effects in a systematic way and understand how message framing affects intention and attitude.

From Study 1, it was found that respondents preferred positively framed messages for familiar products to negatively framed ones. However, if a message combines positive and negative frames, how would consumers react and process the information? Although there is very limited literature existing, previous studies imply that a message combining positive and negative framing, not only provides the advantage of fear appeals by negative framing but also arouses positive favorable attitudes by positive framing (Treiber, 1986). Treiber (1986) suggests that although the positive framing approach could be highly successful, further increases in compliance would have been obtained if greater conflict is aroused (e.g., through a fear-inducement film). Early studies regarding the merits of using a two-sided message show that it is more effective for respondents who are relatively more educated and have prior familiarity with the scenario described in the message (Chu, 1967). Therefore, the advantages of mixed frames should be limited to situations where people already know and understand the fears and/or potential benefits delivered in the message with some prior product usage experiences. For situations involving new products, the prediction will follow findings in Study 1 and literature suggesting that positive framing will generate a heuristic cue for positive affect, leading to favorable attitudes toward the new products (Isen, 1993; MacInnis & Jaworski, 1989).

- H5:** (a) For familiar products, a mixed-framed message will be more effective than a positively framed message or a negatively framed one. (b) For new/unfamiliar products, a positively framed message will be more effective than a negatively framed message or a mixed-framed one.

Method

The experiment tested the effectiveness of different message frames in promoting health care products in a 3 (message framing: gain, loss, mixed) \times 2 (product perceived risk: low, high) \times 2 (product newness: familiar, new product) between-subjects design. Participants were assigned randomly to one of 12 conditions. A traveling context was used in this study. Accord-

ing to Dawood (1989), up to half of all international travelers are likely to experience some kind of adverse effect upon their health as a result of an overseas trip, and a number of studies document health problems experienced by the U.K. holiday-makers (Petty, 1989). Health issues associated with international and domestic tourism attract the interest of researchers from a wide range of social sciences, including health care marketers (Clift & Sage, 1996). Researchers recognize that this is an interface between health and tourism and is an integral part of the tourist experience (Ryan, 1991). Tourist concerns have moved from economic costs to health and safety issues (Evans & Stabler, 1995). Health and well-being have been considered as one of the major risk factors in tourism, and perceived risk in health is found to be the most important risk factor in travel experience (Lepp & Gibson, 2003). Purchasing travel health care products is one effective risk-reduction strategy tourists may adopt. The context of traveling could facilitate an understanding of consumer perceptions of health care products in conjunction with the findings of Study 1.

From the literature on fear appeals (Job, 1988), this study proposes that health care products should have the following characteristics:

1. A health threat should exist before the product is purchased.
2. The health threat event should appear likely.
3. It should be clearly specified that the purchase will offset the health threat.
4. The product should be effective in reducing the level of health threat.

Common health threats in traveling include illness induced by traveling itself, infection, and skin care. Thirteen products related to problems listed above were selected and tested in a pretest. Based on the pretest results, four tested products were chosen in two levels of product newness and perceived risk: repellent cream (familiar product with low perceived risk), antimalaria tablets (familiar product with high perceived risk), melatonin (innovative product with low perceived risk), and 3-in-1 hepatitis tablets (innovative product with high perceived risk).²

Participants consisted of 283 undergraduate students (121 males and 162 females) from business courses at a large university in the United Kingdom. Eighty-six percent of the participants made at least *one* international trip during the past 12 months, including 33.1% traveling more than *three times*. All participants claimed that they had purchased travel-related products before. These suggest that participants were able to

² Replacing sleeping pills, melatonin is a new hormone replacement therapy for combating jet lag (a mild health problem in traveling) without the hazards or side effects of drugs (National Sleep Foundation, 2003). Although it might not be new to the U.S. customers, participants in this study showed low familiarity toward it in the pretest. Three-in-1 Hepatitis tablets are fictitious products and are designed to cope with Hepatitis A, B, and C at the same time.

relate to the risk of travel-related problems. Three participants were deleted from the analysis because of missing data. Age in the final sample with 280 respondents ranged from 17 to 27 years with $M = 19.74$ and $SD = 1.62$.

Similar to the administration procedure in Study 1, participants were instructed that the purpose of the study was to learn about traveling behavior. They were given a three-part booklet containing the stimulus materials: a premanipulation questionnaire, a gain-, loss-, or mixed-framed advertisement that described for either a new or familiar traveling health care product that coped with health problems, and a post-manipulation questionnaire for indicating their own attitude and intention concerning the product.

Message Framing Manipulations. Respondents read about the importance of using the travel health care product for protecting travel health. For example, the positive framing condition contained the following excerpts (the negative framing condition contained in parentheses) in the familiar product with low perceived risk:

- People who use insect repellent benefit from a safe and effective way to reduce insect bites. (People who don't use insect repellent lose out on a safe and effective way to reduce insect bites.)
- With insect repellent, you can be more confident of your travel health, allowing you relax and enjoy your trip. (Without insect repellent, you may be less confident of your travel health and less able to relax and enjoy your trip.)

Advertisements (Leaflets). Similar to Study 1, the travel health information was presented in a one-page, two-sided print leaflet in three folds that was designed to appear professional. Twelve versions were developed, differing in framing, product newness, and perceived risk. Although Treiber (1986) was the first one examining the effectiveness of mix frames of positive and negative consequence, his results might confound with modality of presentation that negative information was presented in a film and positive information was presented in a written handout. In this study, the manipulation of mixed-framed messages followed Farrell et al. (2001) (p. 1337). The paragraphs from positive and negative frame were combined in a message with careful consideration of equal weights from gain and loss frames. Care was also taken to ensure the same quality, amount of information, and the pictures across conditions. TRAV-ELMED, a fictitious brand, was created to avoid any possible confounding effects.

Premanipulation and Postmanipulation Measures. Measures in Study 2 were exactly the same as those used in Study 1, but some questions were revised to be travel-related. The premanipulation measures

included travel history,³ individual perceptions of health risk,⁴ manipulation check on product newness, purchase experience of travel health care products, and demographics.

Analyses and Findings

The reliability of the scales was checked with the following Cronbach's alphas obtained: opinions of the leaflet = 0.84, and behavioral intention = 0.91, indicating that those scales were sufficiently reliable. Participants' overall reaction to the leaflet was examined to confirm that the subjects had similar attitudes and comparable understanding of the basic information presented in the leaflet across conditions; $F(11, 280) = 0.76$, $p = .68$). As with Study 1, the data were screened for assumptions for normality and linearity and possible moderators of demographics, travel history, individual perceptions of health risk and related product purchase experiences. Because no moderating effects were obtained, all analyses are presented collapsed over these factors.

Manipulation Check on Product Newness. Two *T* tests were examined for products in different levels of perceived risk (low vs. high), and the perception differences were significant (both *p* values are less than .01): $M_{\text{familiar product with low perceived risk}} = 5.72$ with $SD = 1.55$, $M_{\text{new prevention product with low perceived risk}} = 1.87$ with $SD = 1.40$, $M_{\text{familiar product with high perceived risk}} = 4.55$ with $SD = 2.00$, and $M_{\text{new prevention product with high perceived risk}} = 2.00$ with $SD = 1.37$. A significant difference of perceived newness was also found between the familiar product with high perceived risk and the new product with low perceived risk ($p < .05$). As expected, examination of the product familiarity ratings indicated that the participants could distinguish between the two levels of product newness, though the perceived difference between familiar and new products with high perceived risk was smaller than that for those with low perceived risk.

Manipulation Check on Message Framing. To assess whether the framing manipulation was perceived as intended, participants rated whether the leaflet placed more emphasis on the benefits associated with purchasing the advertised product, the costs associated with not buying it, both, or neither. A chi-square test was conducted, revealing a significant difference across three framing conditions. The manipulation of message framing was successful.

³ Questions included number of trips during the past 12 months, number of international trips by plane, and number of regions they visited before.

⁴ Based on previous studies (Becker et al., 1977; Janz & Becker, 1984; Schneider & Lopes, 1986; Rosenstock et al., 1988; Slovic et al., 1989) and results from the pretest, nine items with 7-point scales assessed participants' travel health attitudes by measuring risk propensity, perceived susceptibility, perceived severity, and routine medicine-taking.

Results. A significant three-way interaction of message framing, product perceived risk, and product newness was found with $F(2, 280) = 4.27, p < .05$. Treatment means are summarized in Table 2. A two-way interaction was found between message framing and product perceived risk; $F(2, 280) = 4.18, p < .05$. Then, results from post hoc tests lend support for H4 that positive framing ($M = 3.94, SD = 1.23$) was more effective than negative framing ($M = 2.72, SD = 1.02$) in advertising products with low perceived risk, but negative framing ($M = 3.72, SD = 1.39$) was more effective than positive framing ($M = 3.22, SD = 1.45$) in advertising products with high perceived risk.

It was expected that for familiar products, a mixed-framed message would be more effective than either a positively or a negatively framed message due to both advantages of providing fear appeals by negative framing and arousing positive favorable attitudes by positive framing. However, for new products, a positively framed message would lead to higher behavioral intention than a negatively framed message or a mixed-framed message because of the heuristic cue and possible positive affect that the positive framing induced. A significant interaction effect between framing and product newness was found; $F(2, 280) = 9.84, p < .01$. Post hoc tests with Bonferroni adjustment for multiple comparisons were also performed. As expected, messages in mixed frames were more effective in terms of behavioral intention when products were associated with higher familiarity (familiar products) ($M_{\text{positive framing}} = 3.65; M_{\text{negative framing}} = 3.31; M_{\text{mixed framing}} = 4.22$). However, positive framing enhanced behavioral intention when products were perceived as less familiar (new products) ($M_{\text{positive framing}} = 3.94; M_{\text{negative framing}} = 2.91; M_{\text{mixed framing}} = 3.05$). Both H5(a) and H5(b) were fully supported. This study extended the findings of Study 1 regarding the effect of framed advertising in consumer purchase decisions and applied it to travel health care products. This study found that mixed framing could be a useful technique for presenting information about risks. When the product was familiar to consumers, a message combining gain and loss would be more effective than a message in a single frame (gain or loss). When the product was new to people, framing a message positively enhanced communication persuasion and increased consumers' purchase intentions.

Table 2. Summary of Treatment Means in Study 2.

	Positive Framing	Negative Framing	Mixed Framing
Familiar product with low perceived risk	3.94	3.22	4.44*
New product with low perceived risk	4.14	2.75	3.23*
Familiar product with high perceived risk	2.72	3.72	4.14*
New product with high perceived risk	3.82	3.03	2.89*

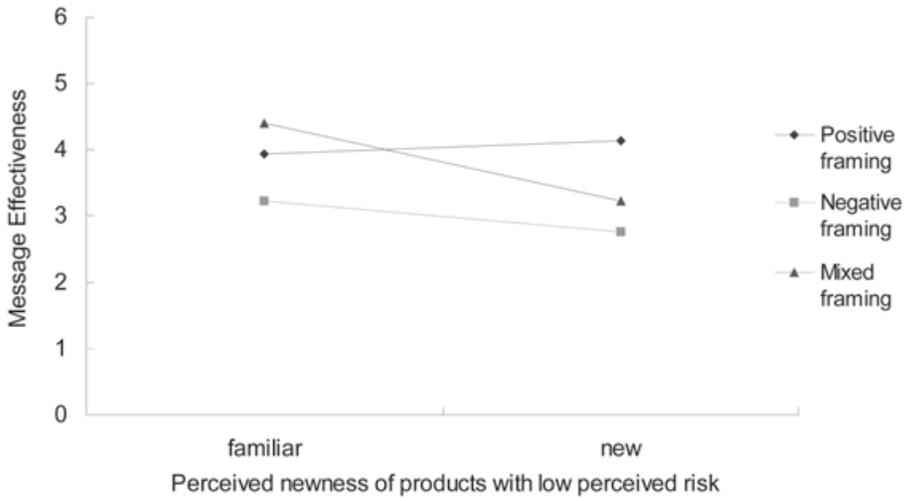
* $p < .05$.

The results were further analyzed according to different levels of product perceived risk, as separately depicted in Figures 5 and 6. When promoting products with low perceived risk, mixed and positively framed messages were found to be more influential than negatively framed messages and the enhancement effect of positive frame was greater for new products. Conversely, when advertising products with high perceived risk, negatively framed messages were found to be more effective only when respondents felt familiar with the products. Compared with loss-framed messages, superior effectiveness was found again in gain-framed messages when new product messages were presented.

Similar to Study 1, framing effects were stronger when products were perceived as new and positive framing enhanced favorable evaluations of new products. A new finding from Study 2 was that mixed-framed messages were more favorable when respondents already had prior product experience and could tell benefits and losses clearly. When products were new to them, positive framing was more likely to arouse positive affective reactions to the leaflet and favorable product evaluations. At this point, the two studies show similar patterns about how framing effects (positive vs. negative) work when product risk (i.e., operationalized in product function or perceived risk associated with product use) and product newness (unfamiliarity) are taken into consideration.

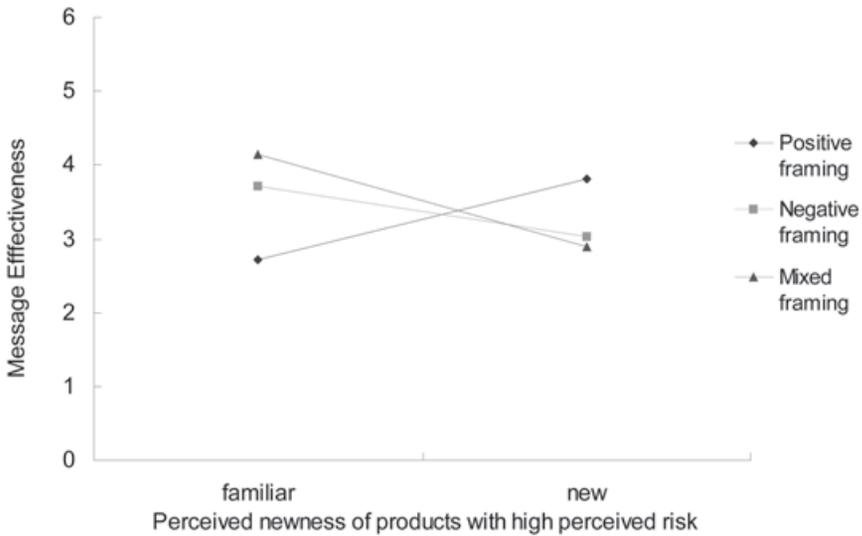
GENERAL DISCUSSION

One should not discount these two product factors from consumer perceptions, because these interaction effects suggest that product functions or product perceived risk influence consumers' product attitude and intention when message framing and perceived product innovativeness are considered simultaneously. Both studies corroborate earlier findings that message framing influences consumers' decisions. In addition, moderators of product characteristics are introduced, that is, perceived product newness, product functions, and perceived risk associated with health care products. Product functions are observed to moderate the message framing. For familiar products, gain-framed messages are more effective in promoting prevention products, and loss-framed messages are more persuasive in promoting detection ones. In addition, product perceived risk is found to moderate the framing effects. However, the results are somewhat inconsistent with the notion that positive frames are more effective in promoting prevention products/behaviors, whereas negative frames are more persuasive in advertising detection products/behaviors (e.g., Rothman Martino et al., 1999). In addition to product functions or perceived risks associated with a health care product, its perceived newness (i.e., low familiarity) may moderate framing effects in product advertising effectiveness.



Note: Message effectiveness was measured on the index of behavioral intention; higher numbers indicate higher behavioral intention, resulting in higher message effectiveness.

Figure 5. Comparison of message effectiveness of framing effects on products with low perceived risk



Note: Message effectiveness was measured on the index of behavioral intention; higher numbers indicate higher behavioral intention, resulting in higher message effectiveness.

Figure 6. Comparison of message effectiveness of framing effects on products with high perceived risk.

Study 1 demonstrates that participants indicate greater behavioral intention for the new products in the positively framed leaflets. It is also found that positive framing enhances favorable attitudes toward the product even for health detection products, and framing effects are stronger in promoting new products than in familiar products. Study 2 draws on Study 1 and related literature to explain why the strength of the relation between framed information and persuasion depends on consumer perceptions of product characteristics (perceived product risk and newness). Similar to the role of product function, product perceived risk is found to moderate the message effectiveness of framing effects. Specifically, positively framed information has a greater impact on participants' behavioral intention when the products are associated with low risk, but negatively framed information influences more when the products are associated with high risk. The manipulation of mixed frame is integrated into Study 2. The results of the studies also lend credence to the notion that influence of mixed-framed messages may be restricted to high product familiarity settings. Study 2 finds that messages in mixed frames are as effective as those in positive frames when products are perceived as familiar to participants. Nevertheless, positively framed messages are still most effective in advertising products that are perceived as new, compared with mixed framed or negatively framed messages, implying that positive frames serve as a heuristic cue in decision making.

One limitation of this study is that only two levels of product newness (existing familiar vs. new) are manipulated, which is to say that categorization can be oversimplified. Empirical study about different levels of product newness should be explored in future research. Second, goal framing is emphasized in this study. The other popular framing manipulation, attribute framing, has been examined in consumer research (for a review of framing taxonomy, see Levin, Schneider, & Gaeth, 1998). Most attribute framing research suggests the opposite pattern—that a positively framed message is more effective than a negatively framed one (e.g., Donovan & Jalle, 1999; Levin & Gaeth, 1988; Linville, Fisher, & Fischhoff, 1993). Future research may examine if the moderators tested in this research could be applicable to scenarios of attribute framing, which will be helpful for general framing research. Third, the laboratory settings might have created an artificially high attention. Quasiexperimental designs or natural settings will be also useful for future investigation. Fourth, this research focuses on the prepurchase decision processes (i.e., intention), leaving the domain of consumer usage and experience that occurs postpurchase largely unexplored. A comprehensive intervention should be developed to measure the long-term behavioral data. Finally, future research should take individual differences into consideration because prospect theory is a psychological theory of choice behavior that pays scant attention to individual cognitions, intentions, and dispositions. There have been

some researchers who have attempted to investigate the degree to which individual differences moderate framing effects, suggesting that framing effects can be enhanced, eliminated, or even removed depending on the characteristics of the situations or individual differences (Chang, 2005; Keller, Lipkus, & Rimer, 2003; Levin et al., 2002; Shiv, Britton, & Payne, 2004). Examining individual differences (cognition or affect) will help health care advertisers develop appropriate message framing for particular types of products aimed at different market segments.

CONCLUSION

The research concerns purchasing decisions for health care *products* rather than *behaviors*, examining consumer responses to advertising for dental and travel health products. To health care marketers, this research provides insights into how consumers respond to framed messages depending on perceived product newness and risk. The current research has emphasized the advantages of distinguishing between the functions or perceived risks of health care products but has done so at a rather broad and simple dichotomous level (prevention vs. detection or low vs. high perceived risk). The function or perceived risk associated with a health care product and its perceived newness should be considered when constructing a product message. Familiarity matters. For those products already familiar to consumers, prevention products should be promoted by gain-framed messages but detection products should be promoted by loss-framed messages. However, when launching new products, positively framed messages may be more persuasive for both prevention and detection products. It is also applicable to products with different levels of perceived risk. The results can be used in promoting health care service. For example, for marketers who are trying to gain new customers and would like to offer a trial membership (such as health clubs, dance studios, etc.), a positively framed message strategy could be recommended, because taking a trial membership is perceived to carry little risk. For service businesses offering checkups, such as screening for high blood pressure or cancer diagnostics, negatively framed message approaches appear warranted because of the detection purpose, which is perceived as higher risk. The theoretical approach and findings from this study may also have some relevance for the area of consumer relationship management. Consider the case of communicating with existing customers. Based on prospect theory, existing satisfied customers are expected to have steeper loss curves for loss situations. Thus, messages should be framed negatively, indicating the loss arising from not using the services or loss by switching to other untried services. However, new consumers without much experience would prefer risk-averse options, and messages should be framed posi-

tively, providing potential gain of using or purchasing the products/service. In addition to single-framed messages, an alternative advertising strategy combining gain- and loss-framed messages could be used to enhance the message effectiveness when promoting familiar products. The results imply that a mixed frame could be used in communicating with customers with product knowledge or expertise.

The present studies add to the framing literature insofar as they shed light on how consumers respond to differently framed messages, depending on perceived product newness and risk. Altering the frame of a persuasive message is a relatively straightforward task. An appropriately framed message should be incorporated into an existing health care marketing program or media campaign to increase its effectiveness.

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