

# Does Marketing Products as Remedies Create “Get Out of Jail Free Cards”?

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Our research investigates the marketing of preventive and curative “remedies” (products and services that offer ways of mitigating risk by decreasing either its likelihood or severity). Examples include debt consolidation loans and smoking cessation aids. Like risk-avoidance messages, advertisements for remedies aim to reduce risk—by advocating the use of the branded product or service promoted by the marketer. In a series of experiments, we demonstrate that remedy messages undermine risk perceptions and increase risky behavioral intentions as consumer problem status rises. Ironically, remedies undermine risk avoidance among those most at risk—a boomerang effect with negative consequences for consumer welfare.

The traditional approach to reducing risk focuses on the behavior itself and encourages risk avoidance. Efforts to improve public welfare via social marketing often employ risk avoidance messages. For example, abstinence-type programs for drugs and sex are commonly targeted at teenagers. These “just say no” campaigns and similar public service messages typically emphasize the problems or costs of risky behavior (e.g., health risks of drug use or unprotected sex) and encourage people to avoid the risky behavior. Such risk messages serve as “no entry” signs warning people to stay out of the problem domain.

Another approach to reducing risk focuses on the promotion of “remedies”—products and services that offer solutions to, or ways of mitigating, risk by decreasing either its likelihood or severity. For the purposes of this research, we distinguish between two kinds of remedies: curative and preventive. Curative remedies counter the risk after it has been incurred by reducing the severity of the consequences. For example, nicotine-replacement products offer to help smokers quit and thereby reduce the severity of health consequences of smoking, and debt consolidation loans claim

to reduce the negative consequences of debt accumulation. In contrast, preventive remedies counter the risk before it is incurred. For example, condoms reduce the likelihood of sexual disease transmission, and fluoride treatments reduce the likelihood of cavities. Both curative and preventive remedy messages target those at risk or in harm’s way and offer to “take the risk out of” risky behavior.

The purpose of this research is to investigate the effects of remedy messages on risk perceptions and intentions to engage in risky behavior. Although the intended objective of remedy messages seems consistent with traditional avoidance messages (i.e., to reduce overall risk), this research investigates whether marketers’ remedy messages have unintended consequences that undermine risk avoidance by consumers. That is, does remedy marketing create “get out of jail free cards” that boomerang on risk perceptions and thereby reinforce risky behavior among consumers? To our knowledge, there has been no systematic effort in consumer behavior to investigate remedies as a class of products and services with consequences for risk perceptions and, in turn, risky behavior.

*Intended Outcomes of Remedies.* Research on persuasive messages to curb risky behavior has been premised on one or more of the following theoretical frameworks: protection motivation theory, the health belief model, subjective expected utility theory, and the theory of reasoned action. For example, recent metaanalyses of research on protection motivation theory found that increases in threat appraisal (probability and severity) and coping appraisal (response efficacy and self-efficacy) were associated with adaptive coping (i.e., stopping a risky behavior or main-

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taining or starting a protective behavior; Floyd, Prentice-Dunn, and Rogers 2000; Milne, Sheeran, and Orbell 2000). All of these models propose that health-protective behavior is a function of the probability and severity of health outcomes, the perceived effectiveness of the protective behavior, and the perceived costs and barriers to action (for a review, see Weinstein [1993]). An extension of these models to non-health-related risky behaviors seems self-evident.

Within the framework provided by these models, risk avoidance messages attempt to reduce risky behavior by heightening the perceived risks (i.e., probability and severity of outcomes) of a behavior. For example, traditional anti-tobacco advertising emphasizes the health and addiction risks of smoking. People who perceive that the risks of smoking outweigh the benefits will be less likely to start smoking or more likely to quit. Remedy messages for smoking-related risks can also be understood using a similar analysis. For example, nicotine-replacement products aim to reduce continued smoking by improving the perceived effectiveness of attempts to quit through use of the cessation aid. Based on this framework, both risk avoidance and remedy messages should (via the path of risk perceptions and efficacy, respectively) reduce risky behavior. Specifically, this framework leads to the following prediction for remedy messages:

- H1a:** Remedy messages increase perceived effectiveness of protective behaviors and, thereby, reduce intentions to engage in risky behavior.

Thus, both risk-avoidance messages (typically promoted by public advocacy and government organizations) and remedy messages (typically promoting a branded product or service) would seem to have similar intended outcomes that benefit social welfare by reducing overall risk among consumers.

*Unintended Outcomes of Remedies.* In contrast to traditional models, risk compensation research that has analyzed aggregate behavior suggests that remedies may have unintended outcomes that harm consumer welfare. According to risk compensation, a remedy reduces the costs or risks of a target behavior—and people may trade away some of this gain in safety and engage in riskier behavior. Researchers have found evidence of risk compensation for various remedies in problem domains that include driving (e.g., Calkins and Zlatoper 2001), cycling (e.g., Rodgers 1996), drinking alcohol (Rogers and Greenfield 1999), and HIV/AIDS (Richens, Imrie, and Copas 2000). However, research in this tradition has been criticized for its use of aggregate methods (Dulisse 1997) and for the lack of evidence for the role of subjective risk perceptions or other psychological processes. In addition, Stetzer and Hoffman (1996) found that less than half of participants exhibited compensating behaviors. These findings beg the question: when will risk compensation occur, or why do some individuals compensate and others do not?

## THE MODERATING ROLE OF PROBLEM STATUS

Our conceptual framework proposes that consumers' problem status moderates the impact of remedies on risk perceptions and risky behavior. *Problem status* is defined as an individual's current relationship to the problem domain. When problem status is low, people's actions suggest that the costs of the risky behavior are perceived to outweigh the benefits so it is perceived as relatively unattractive; hence, people reside outside the problem domain and do not engage in the risky behavior. But to the extent the behavior has attractive aspects, approach-avoidance conflict may exist and, as the balance shifts from costs to benefits, problem status rises. Whenever some aspects of a behavior (e.g., peer approval of smoking) are seen as attractive and behavior is held in check by perceived risks (e.g., dying of smoking-related illnesses), promoting an alternative as "reduced risk" can shift the balance of approach-avoidance forces. Interestingly, our conceptualization suggests that the presence of a brand that is promoted in this way can lead people into a product category they otherwise might not have entered. Problem status is highest for people within the problem domain: the benefits of the risky behavior are perceived to outweigh the costs so it is perceived as relatively attractive and people engage in the risky behavior. (In terms of the traditional health models that we have discussed, problem status is inversely related to current protective behavior.) Of course, as problem status rises, so too does actual risk. More important, however, is the relationship between problem status and perceived risk—which remedy messages are expected to affect as follows.

For consumers outside the problem domain, the risky behavior is, by definition, relatively unattractive (i.e., the costs outweigh the benefits). The remedy message should signal to these consumers that the behavior is risky (else why would a remedy exist?) and should be avoided. Thus, the remedy message should heighten risk perceptions (and, as a result, should reduce risky behavior) when problem status is low. However, as problem status rises, the risky behavior is perceived as increasingly attractive relative to costs and consumers are more likely to enter the problem domain. The existence of a remedy could suggest to these consumers that the risk is manageable; put simply, the remedy takes some of the risk out of risky behavior. To illustrate, nicotine-replacement products should signal to committed non-smokers that smoking is risky and should thereby heighten risk perceptions and further reduce the likelihood of smoking behavior. In contrast, smokers (committed, occasional, and even beginning smokers, who by definition find some aspects of smoking attractive) are likely to perceive that nicotine replacement products lower the risks of smoking, which could encourage risky smoking behavior. Thus, a remedy message reduces risk perceptions (and, as a result, can increase risky behavior) when problem status is high. The latter represents a presumably unintended outcome of rem-

edy messages and lies in direct contrast to hypothesis 1a derived from traditional models.

Based on our conceptual framework, the net result is that problem status should moderate the effect of remedy messages on risk perceptions. Specifically, our framework leads to the following prediction for remedy messages:

**H1b:** As problem status rises, remedy messages undermine risk perceptions and increase intentions to engage in risky behavior.

If supported, this finding would be significant for four reasons: (1) the unintended (and harmful) effect of remedy messages on consumers within the problem domain lies in direct contrast to the predictions of traditional models regarding the intended (and beneficial) effects of remedy messages on all consumers; (2) our research proposes problem status as a moderator and risk perceptions as a mediator for the boomerang effects of remedies, in contrast to aggregate research on risk compensation that is silent on process and boundary conditions; (3) from a consumer-welfare perspective, remedy messages harm those consumers most in need of help (i.e., those with high problem status who are either sampling or engaging in the risky behavior); and (4) from a public-policy perspective, the marketing activities of companies promoting branded remedies may, inadvertently, be undermining the risk-avoidance messages of social welfare agencies.

## EXPERIMENT 1

Experiment 1 investigates the moderating role of problem status on the impact of remedy messages in the domain of smoking behavior. Smoking is recognized as the number one cause of preventable disease and death in the United States, and the risk of addiction and the fear of not being able to quit have been identified as drivers of smoking avoidance behaviors (Romer, Jamieson, and Ahern 2001). This fear seems justified when “the vast majority of smokers want to quit, but only a little more than 2 percent successfully quit each year” (U.S. Surgeon General 2000, 3). How does problem status—in this case, current smoking behavior—affect consumer reactions to remedy messages for smoking cessation aids?

The present experiment focuses on a popular type of curative remedy for smoking—nicotine-replacement products. Indeed, media advertising expenditures for such products were \$71 million in 2001 (Competitive Media Reporting 2002). A remedy message for nicotine-replacement products is designed to make quitting seem easier; that is, quitting with the cessation aid is claimed as more effective than quitting unaided. In accordance with traditional models of health protective behavior, smoking-cessation aids should therefore reduce smoking behavior—consistent with hypothesis 1a. In contrast, our framework predicts that smoking cessation aids may have unintended outcomes for smoking behavior. Specifically, for nonsmokers who are unattracted to smoking, a nicotine-replacement message

should reinforce the perception that smoking is risky due to its addictive nature—the existence of the remedy is proof of the risk. As smoking frequency rises reflecting increased attraction to smoking, however, the remedy may instead be interpreted as evidence that the risks of smoking are manageable—because consumers who want to quit can use the remedy to do so. As a result, the remedy should undermine risk perceptions and, in turn, decrease smoking cessation intentions as problem status rises—consistent with hypothesis 1b.

## Method

*Subjects and Design.* The experiment was a 2 (message: remedy vs. no remedy)  $\times$  3 (problem status: never vs. occasional vs. everyday smoker)  $\times$  2 (questioning: indirect vs. direct) mixed design. Both smokers and nonsmokers (as self-reported in the survey) were recruited on a college campus at a popular location. Of the 97 college students recruited to participate in the survey, 50 participants saw the no-remedy message (20 nonsmokers, 5 former smokers, 12 occasional smokers, and 13 everyday smokers), and 47 participants saw the remedy message (17 nonsmokers, 4 former smokers, 12 occasional smokers, and 14 everyday smokers).

*Materials and Procedure.* In the cover story, participants were asked to evaluate Web site materials. Some participants were exposed to a remedy message containing information about the benefits and features of a leading brand of inhaler as a smoking cessation aid. The no-remedy message contained information about how to quit smoking unaided. After exposure to the message, participants recorded their thoughts in an open-ended, thought-listing task and then answered a series of attitude and behavioral intention measures toward smoking that were measured both indirectly and directly. Because personal risk assessments are optimistically biased (e.g., Weinstein 1998), we expected indirect questioning to be a more sensitive measure.

Smoking responses were first elicited using an indirect questioning technique. Following Rindfleisch and Crockett (1999), participants were asked to judge risk perceptions and behavioral intentions toward smoking for a specific college student smoker. Smoking-cessation intentions were measured on 0%–100% scales with four items that asked for the likelihood that participants would “continue to smoke your usual brand” (reverse coded), “switch to the safest cigarette available,” “decide to quit smoking as soon as possible,” and “decide to quit smoking in the next 5 years.” Participants also rated the likely success and ease of quitting with the aid of a remedy and unaided on seven-point scales. Participants rated the risks of smoking on five-point scales (anchored by “very small risk/very large risk”) and the positive consequences of smoking on five-point scales (“strongly disagree/strongly agree”). The risk scale was adopted from Rindfleisch and Crockett (1999) and included 24 items measuring addiction, health, social, financial, and other risks (e.g., “getting lung cancer,” “spending a lot of

money on cigarettes"). The positive consequences scale included eight items related to health benefits (e.g., "smoking is relaxing," "smoking is a pleasant taste experience").

Participants then answered a similar set of questions that measured their behavioral intentions and risk perceptions directly. Participants first rated their likelihood of smoking/ quitting and success and ease of quitting (using the same wording as the previous scale items; for equivalence, non-smokers were asked to assume that they smoke). Participants also rated the personal risks of smoking (six items) and the personal consequences of smoking (four items) on five-point scales. Finally, all participants provided some background information that included smoking status (operationalized as current smoking frequency), which was measured by asking participants to indicate whether they were nonsmokers, occasional smokers, or everyday smokers (coded as 1, 2, and 3, respectively). Data from former smokers were omitted.

## Results

**Manipulation Check.** The remedy's effectiveness was measured by comparing ratings for success and ease of quitting with the aid of a remedy to similar ratings for quitting unaided. As intended, participants rated quitting success higher with a remedy aid under indirect questioning ( $M_{aid} = 5.12$  (1.28) vs.  $M_{unaid} = 4.36$  (1.62),  $F(1, 81) = 5.81$ ,  $p = .02$ ). Participants also rated quitting easier with a remedy aid under indirect questioning ( $M_{aid} = 3.94$  (1.54) vs.  $M_{unaid} = 2.67$  (1.66),  $F(1, 82) = 6.42$ ,  $p = .01$ ). Differences under direct questioning were marginal ( $F(1, 83) = 2.96$ ,  $p = .09$ ;  $F(1, 82) = 3.15$ ,  $p = .08$ , respectively). Overall, these results indicate that we successfully created a message that led the remedy to be perceived as relatively effective by smokers and nonsmokers.

**Analysis Plan for Dependent Variables.** Scale averages for indirect and direct questioning techniques were constructed for (1) risk perceptions (risk and positive consequences, the latter reverse coded), and (2) smoking-cessation intention measures. These averages were analyzed via MANOVAs, with message (remedy vs. no remedy) as a between-subjects factor, problem status (smoking frequency) as a covariate, and questioning (indirect vs. direct) as a within-subject factor. For brevity's sake, only effects of relevance to the hypotheses are reported in the text.

For risk perceptions, MANOVA of the indirect and direct scale averages (coefficient  $\alpha = 0.90$  and  $0.78$ , respectively) revealed the expected two-way interaction of message and problem status ( $F(1, 73) = 7.53$ ,  $p < .01$ ). The nature of this interaction can be understood by examining the coefficient of the problem status covariate, nested in each message condition. In support of hypothesis 1b, the coefficient is lower after exposure to the remedy message than after exposure to the no-remedy message under indirect questioning ( $b_{rem} = -0.19$  (.11) vs.  $b_{no\ rem} = 0.27$  (.10)). In other words, risk perceptions rise with smoking frequency (reflecting problem status) after exposure to the no-remedy message but decline with smoking frequency after exposure to the

remedy message. A similar pattern of results is obtained under direct questioning ( $b_{rem} = -0.38$  (.13) vs.  $b_{no\ rem} = -0.13$  (.13)). Thus, the remedy message undermines risk perceptions as problem status rises, supporting hypothesis 1b.

For smoking-cessation intentions, MANOVA of indirect and direct intention averages (reliability analysis is inappropriate due to the mutually exclusive nature of some of the items) revealed the expected two-way interaction of message and problem status ( $F(1, 80) = 4.06$ ,  $p < .05$ ). The nature of this interaction can be understood by examining the coefficient of the problem status covariate, nested in each message condition. In support of hypothesis 1b, the coefficient is lower after exposure to the remedy message than after exposure to the no-remedy message under indirect questioning ( $b_{rem} = -5.91$  (2.68) vs.  $b_{no\ rem} = 4.16$  (2.60)). In other words, stop-smoking intentions rise with smoking frequency (reflecting problem status) after exposure to the no-remedy message but decline with smoking frequency after exposure to the remedy message. A similar pattern of results is obtained under direct questioning ( $b_{rem} = -9.75$  (3.43) vs.  $b_{no\ rem} = -6.62$  (3.33)), where smoking-cessation intentions decline as smoking frequency increases, especially after exposure to the remedy. Thus, the remedy message undermines stop-smoking intentions as problem status rises, thereby increasing risky behavior intentions. Overall, these results support hypothesis 1b.

## EXPERIMENT 2

Experiment 1 provides evidence that remedy messages undermine risk perceptions and increase risky behavior intentions as problem status rises. As smoking increased, risk perceptions declined and quitting intentions also declined—where continuing to smoke rather than quit results in greater exposure to risk via the risky behavior. This result seems rather detrimental to consumer welfare—the remedy message boomeranged on the very consumers (smokers) that it was intended to help. We conducted a follow-up field study using another sample of consumers and another smoking remedy message to test the robustness of this finding.

## Method

**Subjects and Design.** The experiment was a two-group (message: remedy, control), between-subjects design. The sample consisted of clients of a Veterans' Affairs Medical Center who were mailed surveys and received a financial gift as an incentive to participate. A total of 99 individuals (46 who had never smoked and 53 smokers) returned the survey. (As in the preceding experiment, data from former smokers were omitted.)

**Materials and Procedure.** Participants were exposed to one of two advertisements for a remedy (a fictional non-prescription patch for smoking cessation) or a control product (a memory-boosting pill). Participants rated the product's effectiveness on a five-point scale (with endpoints

“does not work” and “works very well”), in addition to other ad-related items. Participants also completed a filler task (inserted for the purpose of another study). Participants then indicated their intentions toward various behaviors on 0–10 scales (with endpoints “never” and “often”), including the target behavior “I will smoke cigarettes.” Finally, participants answered various background questions, including regarding their smoking status.

## Results

**Manipulation Checks.** The effectiveness of the products did not vary by condition ( $M_{rem} = 3.29$  (1.24) vs.  $M_{contr} = 2.91$  (1.41);  $F(1,95) = 1.58$ ,  $p = .21$ ), and neither did other ad-related items (ad liking, believability; omitted for brevity’s sake), suggesting that we were successful in creating reasonably equivalent target and control ads. Product effectiveness was standardized ( $M = 0$ ,  $SD = 1$ ) and used as a covariate in subsequent analyses.

For the smoking intention measure, ANOVA revealed a main effect of smoking status ( $F(1,91) = 104.68$ ,  $p < .01$ ), qualified by an interaction with ad message ( $F(1,91) = 4.44$ ,  $p < .05$ ). For nonsmokers, the ad message had no effect on smoking intentions ( $M_{rem} = 0.05$  (0.22) vs.  $M_{contr} = 0.40$  (2.0);  $F < 1$ ); for smokers, the remedy message increased smoking intentions relative to the control group ( $M_{rem} = 6.00$  (3.35),  $M_{contr} = 4.66$  (3.19);  $F(1,49) = 4.75$ ,  $p < .05$ ). As problem status rises, exposure to a remedy message leads to a boomerang effect that increases intentions to engage in a risky behavior. In this study, smokers traded away the potential safety gain of quitting with the aid of the remedy by planning to engage in more frequent smoking behavior. This finding supports that of experiment 1 in another population sample using another remedy message.

## EXPERIMENT 3

Thus far, our investigation has centered on remedies for risky behavior in the health domain (i.e., smoking). Indeed, we have previously noted that traditional models have emerged from the health sciences. However, the effects of remedies seem generalizable to other domains, including financial behaviors. In the present study, we investigate consumer reaction to debt consolidation loans as a function of credit card usage behavior. Consumer behavior in this domain is striking: only 37% of American cardholders always pay the full amount owed, the average debt is \$3,815, and credit card debt and bankruptcy filings are growing dramatically among young adults (Dolliver 2004; Haddad et al. 2001). Meanwhile, calls have been made to improve regulation of so-called credit counselors who market debt-consolidation loans (Punch 2003). How does problem status—in this case, current credit card usage—affect consumer reactions to remedy messages for debt consolidation loans?

The preceding experiments also contrasted remedy messages with no-remedy control groups. We note, however, that remedy messages often include statements about risk

(to convince consumers of the need for the remedy). We attempt to disentangle the risk and remedy components of message effects by creating ads with comparable risk information but a message that touts prevention (i.e., risk-avoidance) versus a remedy. With the addition of a no-message control group, we can compare the effects of remedy and risk-avoidance messages to baseline.

## Method

**Subjects and Design.** The experiment was a three-group (message: risk avoidance, remedy, none), between-subjects design. Participants were staff and students (recruited from two local universities and a hospital) who received financial payment. A total of 72 subjects participated.

**Materials and Procedure.** Participants first responded to a set of questions regarding their credit card usage, including: “My credit cards are usually at their maximum credit limit”; “I frequently use available credit on one credit card to make a payment on another credit card”; “I always pay off my credit cards at the end of each month” (reverse coded); “I often make only the minimum payment on my credit card bills”; “I am seldom delinquent in making payments on my credit cards” (reverse coded); “I rarely go over my available credit limit” (reverse coded); and “I seldom take cash advances on my credit cards” (reverse coded). These seven-point scale items (with endpoints “strongly disagree” and “strongly agree”) were designed to create an index reflecting the problem status of participants.

In the remedy condition, participants were then exposed to an advertising message for a debt-consolidation program (advising how to manage, reduce, and eliminate credit card-related debt). In the risk-avoidance condition, participants were exposed to an advertising message for a financial advisory program (warning about the pitfalls of credit cards and the accumulation of debt). The ads were similar in layout, graphics, and other aspects. Participants then responded to two five-point scales rating the program featured in the ad: “not very effective/very effective” and “a bad idea/a good idea.” In the no-message control group, participants were not exposed to either message.

Participants then responded to a series of questions concerning their risk perceptions and behavioral intentions. Participants were asked to “rate the probability of declaring bankruptcy in your lifetime” on a 0%–100% scale. Participants were also asked “if declaring bankruptcy were to happen to you, how serious would it be?” and provided ratings on a seven-point scale (with endpoints “not at all serious” and “very serious”). Participants also provided behavioral intentions on a seven-point scale (with endpoints “definitely will not” and “definitely will”) for the following items: “Pay off the entire balance on credit cards each month” (reverse coded); “Keep three months’ worth of living expenses as a cushion in savings” (reverse coded); “Budget and track monthly living expenses” (reverse coded); “Refinance to extend the term of outstanding loans”; “Take

out a new loan when existing loans have not been paid off"; and "Spend money that you do not already have (e.g., buy-now-pay-later or other alternatives)." These items were designed to create an intention index toward risky behaviors.

## Results

**Manipulation Checks.** MANOVA of program ratings (coefficient  $\alpha = 0.75$ ) did not differ as a function of message ( $M_{rem} = 2.86$  (1.01) vs.  $M_{risk} = 3.13$  (1.02);  $F < 1$ ), indicating that risk avoidance and remedy messages were perceived as equally effective. A covariate reflecting problem status, constructed by averaging the seven credit card usage items (coefficient  $\alpha = 0.68$ ), was standardized ( $M = 0$ ,  $SD = 1$ ) and used in subsequent analyses.

For probability ratings, ANOVA revealed a significant effect of problem status ( $F(1, 54) = 4.10$ ,  $p < .05$ ), ad message ( $F(2, 54) = 3.81$ ),  $p < .05$ ), and their interaction ( $F(2, 54) = 4.69$ ,  $p < .05$ ). The nature of this interaction can be understood by examining the coefficient of the problem status covariate, nested in each message condition. (Planned contrasts are reported following each pair of coefficients.) In support of hypothesis 1b, the coefficient is lower after exposure to the remedy message than after exposure to no message ( $b_{rem} = -2.22$  (3.25) vs.  $b_{no msg} = 13.21$  (3.47);  $F(1, 36) = 4.04$ ,  $p = .05$ ). In other words, perceptions (do not) rise with problem status in the no-message (remedy) group. The risk message similarly boomeranged on probability perceptions ( $b_{risk} = -2.46$  (4.29) vs.  $b_{no msg}$ ;  $F(1, 35) = 7.85$ ,  $p < .01$ ).

For severity ratings, ANOVA also revealed a significant effect of ad message ( $F(2, 53) = 5.15$ ,  $p < .01$ ) and its interaction with problem status ( $F(2, 53) = 6.81$ ,  $p < .01$ ). In support of hypothesis 1b, the coefficient is lower after exposure to the remedy than after exposure to no message ( $b_{rem} = -0.31$  (0.11) vs.  $b_{no msg} = 0.06$  (0.14);  $F(1, 35) = 6.89$ ,  $p < .05$ ). In other words, perceptions of severity (do not) decline after exposure to the remedy (no-remedy) message. In contrast, perceptions of severity directionally increased after exposure to the risk-avoidance message ( $b_{risk} = 0.32$  (0.14) vs.  $b_{no msg}$ ;  $F(1, 34) = 1.48$ ,  $p = .23$ ). As a result, the remedy message boomeranged on severity perceptions whereas the risk-avoidance message did not.

For risky behavioral intentions, an index was created by averaging the six intention items. (We measured a broad array of behaviors for substantive reasons so reliability analysis is not meaningful.) ANOVA of the intention index revealed a significant effect of problem status ( $F(1, 54) = 4.19$ ,  $p < .05$ ), ad message ( $F(2, 54) = 3.82$ ,  $p < .05$ ), and their interaction ( $F(2, 54) = 3.53$ ,  $p < .05$ ). In support of hypothesis 1b, the coefficient is higher after exposure to the remedy than after exposure to no message ( $b_{rem} = 0.58$  (0.16) vs.  $b_{no msg} = 0.05$  (0.17);  $F(1, 36) = 5.25$ ,  $p < .05$ ). In other words, the remedy message boomeranged and increased risky behavioral intentions. In contrast, the risk-avoidance message did not ( $b_{risk} = 0.01$  (0.21) vs.  $b_{no msg}$ ;  $F < 1$ ).

Taken together, these results suggest that boomerang effects may particularly arise from remedy messages. For boomerang effects of risk-avoidance messages, prior literature has offered a variety of motivational explanations (e.g., dissonance reduction, defensive processing, maladaptive coping, seizing and freezing, reactance; Block and Williams 2002; Kassirjian and Cohen 1965; Liberman and Chaiken 1992; Ringold 2002; Rippetoe and Rogers 1987). Compared to risk-avoidance messages, remedy messages seem inherently less threatening to consumers engaging in a risky behavior—because the remedy itself offers a way to mitigate the threat. Nonetheless, we observed a greater boomerang effect for a remedy than a risk-avoidance message. We suggest that problem status (reflecting the relative attractiveness of the risky behavior) may drive motivated reasoning (Kunda 1990) about the remedy (either as a signal of risk or as a sign that the risk is manageable) that serves to reinforce the problem status quo. For consumers high in problem status, the remedy signals that the risk is manageable, leading to a boomerang effect on risk perceptions and risky behavior. Put simply, remedy messages suggest that a "get out of jail free card" is available to take the risk out of risky behavior. Consumers trade away protective gain provided by the remedy through intentions to engage in more risky behavior.

## EXPERIMENT 4

Experiments 1–3 operationalized problem status as current risky behavior (e.g., smoking frequency, credit card usage), reflecting consumers' current relationship with the problem domain. In our conceptualization, problem status reflects consumer perceptions that the benefits of a behavior outweigh its risks or costs, that is, the relative attractiveness of the problem domain. Of course, consumers who engage in a risky behavior will start to directly experience its costs—and perhaps to begin to acknowledge those costs while still remaining attracted to the behavior. If so, the balance of the costs and benefits of a behavior may begin to shift. Nonetheless, these consumers would like to find a way to continue enjoying the benefits of the risky behavior while reducing or managing the costs—and remedies promise to do so. In the present experiment, we measure consumers' subjective perceptions of the costs they have incurred through risky behavior—which we suggest drives motivated reasoning about the remedy as a "get out of jail free card." We examine a problem domain—high-fat eating—attractive to most Americans, for which food marketing has been implicated in epidemic rates of obesity (Seiders and Petty 2004). Meanwhile, various remedies (diet crazes, supplements, fat-fighting drugs, and even surgery) continue to proliferate. Do they do so at the expense of risk-avoidance or prevention, that is, low-fat eating?

## Method

**Subjects and Design.** The experiment was a two-group (message: remedy, risk), between-subjects design. Partici-

pants were staff and students (recruited from two local universities and a hospital) who received financial payment. A total of 63 subjects participated.

**Materials and Procedure.** Participants completed the experiment in three phases. In the first phase, participants completed a “self-perception questionnaire.” Embedded in this longer questionnaire was a 10-item, six-point, self-image scale (Cooper et al. 1986; Evans and Dolan 1993). Items reflected participants’ self-perceptions about their body (e.g., “Have you avoided wearing clothes which make you particularly aware of the shape of your body?” “Have you felt that it is not fair that other people are thinner than you?”), and the scale was intended as a subjective measure of problem status. Participants also provided height and weight information.

In the second phase, participants completed a “consumer promotion study” and were exposed to one of two advertisements. The risk-avoidance message warned about the risks of high-fat eating and recommended that participants “avoid fatty foods and follow a sensible eating plan. This is the only way to achieve an overall healthy lifestyle. Take Action Now.” The remedy message included the same risk information but instead read “Avoid fatty foods and follow a sensible eating plan. This is the only way to achieve an overall healthy lifestyle . . . Until Now! Introducing Chitosan RX Ultra.” Information about the remedy (a fat-fighting pill: “When taken with fatty foods, the drug absorbs up to 60% of the fat in your food so that it doesn’t end up in your digestive system or on your body”) was then provided. After an open-ended, thought-listing task, participants provided ratings about the ad (including “unfavorable/favorable,” “bad/good,” “really dislike/really like,” “negative/positive,” and “ineffective/effective”) on seven-point scales as part of the cover story.

In the third phase, participants completed a “restaurant dining study.” In the cover story, participants were instructed to imagine themselves dining out with family and friends, looking forward to a meal since moderately hungry (and taking the remedy in the remedy condition). Participants were then shown four menus, each with multiple items for three meals (lunch, dinner, and dessert). The menu items within each meal varied in terms of fat content (determined by the authors with reference to a food guide). Participants then chose a menu item from each meal on each menu (i.e., 4 menus  $\times$  3 meals = 12 choices). Participants were also asked to provide behavioral intention ratings on 0%–100% scales (“definitely would not order/definitely would order”) for a subset of each menu’s items, some high fat. Finally, subjects provided overall ratings of each menu on various dimensions as part of the cover story. As part of this task, participants were asked to rate their personal perceptions of the fat content on 11-point scales (“low fat/high fat”) for a subset of each menu’s items, some high fat.

## Results

**Manipulation Checks.** Average ad ratings (coefficient  $\alpha = 0.93$ ) were higher in the risk-avoidance than in the

remedy condition ( $M_{rem} = 2.52$  (1.35),  $M_{contr} = 3.99$  (1.41);  $F(1, 62) = 16.84$ ,  $p < .01$ ). This difference works against our hypotheses, since lower remedy ad ratings should make it more difficult to produce a boomerang effect. The body image scale (coefficient  $\alpha = 0.91$ ) was averaged and then standardized ( $M = 0$ ,  $SD = 1$ ) for use as a covariate reflecting problem status in subsequent analyses. Note that body image correlated positively ( $r = 0.27$ ,  $p < .01$ ) with body mass index (calculated using height and weight information).

For risk perceptions, an index reflecting average fat content ratings for high-fat menu items was calculated. ANOVA of this index indicates a significant interaction of problem status and ad message ( $F(1, 62) = 4.61$ ,  $p < .01$ ). Analysis of the covariates for problem status nested within each condition revealed that covariates were lower in the remedy versus risk-avoidance group ( $M_{rem} = -0.31$  (0.21) vs.  $M_{risk} = 0.26$  (0.16)). In other words, as problem status rises, risk perceptions decline after exposure to remedy versus risk-avoidance messages. These results support a boomerang effect of the remedy on risk perceptions.

For behavioral intentions, ANOVA of the number of high-fat items chosen by participants across meals revealed a significant interaction of problem status and ad message ( $F(1, 62) = 4.56$ ,  $p < .05$ ). As expected, choice of high-fat items increased with problem status in the remedy versus risk-avoidance condition ( $b_{rem} = 0.87$  (0.49) vs.  $b_{risk} = -0.43$  (0.36))—reflecting a boomerang effect on risky behavior intentions. In addition, an index reflecting average behavioral intention ratings for high-fat items was calculated. ANOVA of this high-fat eating intention index indicates a significant interaction of problem status and ad condition ( $F(1, 62) = 5.75$ ,  $p < .05$ ). As expected, this index increased with problem status in the remedy condition but decreased in the risk-avoidance group ( $b_{rem} = 1.86$  (1.41) vs.  $b_{risk} = -2.37$  (1.05)).

Taken together, these results support a boomerang effect as problem status rises for remedy messages, consistent with hypothesis 1b. Risk perceptions declined and risky behavioral intentions increased with problem status following a remedy versus risk-avoidance message. Consumers attracted to the problem domain but unhappy with its costs or risks were motivated to reason that the remedy would reduce or manage the negative consequences.

## EXPERIMENT 5

Thus far, we have presented evidence that problem status moderates consumer response to remedy messages in several domains. In experiment 5, we focus on high problem status consumers in the domain of identity theft and personal security behaviors on the internet. The risks of identity theft have received increasing attention in the media, and identity theft is now the number one complaint filed with the Federal Trade Commission (2006). In addition, college students appear to be high in problem status vis-à-vis identity theft because of their daily internet and financial behaviors (U.S. Department of Education 2004). For theoretical and gener-

alizability purposes, two types of remedies are investigated: a curative remedy (identity theft insurance) and a preventive remedy (a computer and internet security system). The former reduces the severity of identity theft while the latter reduces its likelihood; both types of remedies are currently available in the marketplace.

Experiment 3 provided some preliminary evidence that remedies may exert their effects on risk perceptions via probability and severity. These two dimensions of risk are obviously related to the two types of remedies, preventive and curative. In the present study, we investigate whether consumers are sensitive to the risk-reducing properties of each type of remedy. We do so by investigating how each remedy message affects consumer perceptions of the risks (probability and severity components) of identity theft and their intention to engage in behavior that could put their identity at risk.

## Method

**Subjects and Design.** The experiment was a three-group (remedy message: preventive vs. curative vs. none), between-subjects design. Participants were undergraduate students who participated for extra credit in a marketing class. A total of 256 subjects participated.

**Materials and Procedure.** Participants completed the experiment in two phases. In the first phase, participants read some introductory information titled "Identity Theft and You" accompanied by an identity theft checklist. (An attempt to manipulate problem status perceptions by varying checklist scoring was not successful and will not be discussed further, for brevity's sake.) In addition, all participants read: "Nearly 10 million Americans had their identities stolen last year! Protect your identity now . . . before it's too late!" Participants were then exposed to one of two remedy messages with the header "Protect your credit, and your reputation, with IdentityGuard™." The Preventive Remedy described a security system that provides secure computing via filtering of spam and pop-ups, monitoring of spyware and snoopware, and database encryption software. Participants read that "IdentityGuard™ Security System reduces the likelihood of identity theft happening to you" and also read a consumer testimonial to that effect. The curative remedy described identity insurance that reduces the consequences of identity theft via coverage for lost wages, unauthorized bills and claims, and other costs and losses arising from identity theft. Participants read that "IdentityGuard™ Insurance reduces the consequences of identity theft happening to you" and also read a consumer testimonial to that effect. All other aspects of the remedies (e.g., toll-free access to a fraud resource center) and the ad itself (e.g., pictorials, layout) were equivalent. Participants in the control group were not exposed to a message.

After an open-ended, thought-listing task, all participants responded to a series of questions rating their overall personal risk on two seven-point scales ("How would you rate the financial risk of identity theft for you personally?": "mi-

nor/major" and "not a big concern/a very big concern"), risk probability on a 0%–100% scale ("How likely do you think it is that you personally will be the victim of some kind of identity theft?": "very unlikely/very likely") and risk severity on a 0–10 scale ("If you were the victim of identity theft, how serious would it be?": "not at all serious/very serious"). In the remedy conditions, participants were first instructed to "assume that you have identity theft protection with IdentityGuard" and answered the personal risk items. In the no-remedy condition, participants did not receive any instructions regarding identity theft protection when answering the personal risk items. Participants then answered a series of questions regarding identity theft products. In the remedy conditions, participants rated IdentityGuard as a way to protect against identity theft on three five-point scales ("not at all effective/very effective," "a bad means of protection/a good means of protection," "would not consider using/would definitely consider using"). Participants in the no-remedy condition answered similar sets of questions for generic insurance and a generic security system.

In the second phase of the experiment, participants participated in an "Online Shopping Study" with the cover story of investigating how online shoppers view various Web site checkout procedures. Participants were instructed to imagine themselves shopping online using their personal credit card for a moderately expensive gift for an upcoming birthday for a close friend (with identity theft protection in the remedy conditions). Participants then rated a sample of six shopping Web sites (that varied in terms of layout, graphics, and the amount of personal information requested—such as credit card information, mother's maiden name, social security number, etc.) on two seven-point scales each ("would not buy here/would buy here," "really dislike/really like"). Afterward, participants were instructed to go back and rate each Web site on several additional seven-point scales (including "low/high risk of identity theft").

## Results

**Manipulation Checks.** MANOVA of remedy ratings (coefficient  $\alpha = 0.76$ ) did not differ as a function of remedy type ( $M_{cur} = 3.55$  (0.76) vs.  $M_{prev} = 3.60$  (0.67);  $F < 1$ ), indicating that preventive and curative remedies were perceived as equally effective as a result of our ad messages. In addition, 66% of participants classified themselves as high in problem status using the checklist instructions, indicating that the majority of participants are within the problem domain for identity theft.

For risk perceptions, MANOVA of the four risk items (coefficient  $\alpha = 0.70$ ) reveals significant effects of the remedy message ( $F(2, 240) = 4.91, p < .01$ ). More importantly, planned contrasts indicate no significant difference in personal risk estimates for preventive versus curative remedies ( $F < 1$ ), but both remedies led to lower risk perceptions than no remedy ( $F(1, 240) = 9.80, p < .01$ ). This pattern of results also holds in univariate analyses of each personal risk item (see table 1). For example, participants perceived lower

**TABLE 1**  
RISK PERCEPTIONS AND RISKY BEHAVIORAL INTENTIONS AS A FUNCTION OF REMEDY MESSAGE

Remedy	<i>N</i>	Overall risk (minor/major)	Overall risk (concern)	Probability	Severity	Shopping site ratings
Curative (insurance)	79	3.37 (1.51)	3.96 (1.88)	27.85 (18.65)	7.24 (2.88)	3.40 (.86)
Preventive (security system)	86	2.99 (1.28)	3.60 (1.61)	28.02 (19.15)	7.56 (2.78)	3.49 (.95)
No remedy	86	3.58 (1.52)	4.74 (1.66)	34.63 (19.00)	8.28 (2.29)	3.18* (.97)

\*Data missing from six participants.

probability ( $F(1, 240) = 5.23, p = .02$ ) and severity ( $F(1, 240) = 6.20, p = .01$ ) estimates after exposure to the curative (vs. no) remedy. Although it can be argued that identity theft insurance reduces the severity of identity theft consequences, it does not lower the probability of identity theft's occurrence—indicating that participants are poorly calibrated on the risk-reducing properties of remedies.

For behavioral intentions, purchase and liking ratings were averaged across Web sites to construct an overall measure of Web site shopping intentions (coefficient  $\alpha = 0.83$ ). Planned contrasts indicate no significant difference in Web site ratings for preventive versus curative remedies ( $F < 1$ ), but both remedies increased Web site shopping intentions compared to the no-message control ( $F(1, 239) = 4.78, p < .05$ ). In other words, participants exposed to remedy messages and acting under either remedy's protection were more likely to engage in risky behavior by revealing potentially dangerous personal information during Web-based shopping.

Consistent with hypothesis 1b, both preventive and curative remedy messages undermined personal risk perceptions and increased risky behavioral intentions. We observe this result for identity theft insurance and an identity theft security system, two types of remedies that offer to reduce the risks of identity theft. Although such remedies may offer some protection against identity theft, participants appear to be poorly calibrated regarding the risk-reducing properties of remedies and the distinction between probability and severity components of risk. Moreover, participants appeared willing to trade away some of the remedy's protection by expressing intentions to engage in riskier Web site shopping behavior.

## GENERAL DISCUSSION

Overall, the present research refutes hypothesis 1a and supports hypothesis 1b: as problem status rises, remedy messages undermine risk perceptions and increase intentions to engage in risky behavior. In experiment 1, a remedy message for a nicotine replacement product undermined smoking risk perceptions and increased smoking intentions as smoking status increased. Experiment 2 supported this finding in a field study using another population sample and another smoking remedy. In experiment 3, a remedy message for

debt consolidation loans undermined bankruptcy risk perceptions and increased risky financial behavioral intentions as credit card (mis)use increased. This boomerang effect was not observed for a comparable risk-avoidance message. In experiment 4, a remedy message for a fat-fighting pill undermined food fat content perceptions and increased high-fat eating intentions as problem status (i.e., concerns about body image) increased. In experiment 5, both curative and preventive remedies (identity theft insurance and an identity theft security system, respectively) reduced risk perceptions and increased risky Web-based shopping intentions. These results contrast strongly with the predictions of traditional models regarding the intended (and beneficial) effects of remedy messages on all consumers. These results also provide evidence for the role of risk perceptions as a mediator and problem status as a moderator establishing boundary conditions on risk compensation. Indeed, remedy messages harm those consumers most in need of help—those with high problem status who are already engaging in the risky behavior.

We note, however, several limitations of the existing empirical work. First, the main effect results of experiment 5 are somewhat susceptible to a demand explanation. We rely on parsimony across studies and argue that demand is less likely as an explanation for the interaction effects obtained in experiments 1–4. Second, the experiments rely upon measures of behavioral intention, rather than actual behavior, and we rely on extant research concerning the relationship between these two constructs. On the other hand, the present research investigated a variety of problem domains and remedies, with some variation in sample population, pointing to the robustness of the observed phenomena.

*Motivated Reasoning.* To our knowledge, our research is the first to demonstrate boomerang effects on risk perceptions for the class of products that we refer to as remedies. In our framework, problem status (reflecting the relative attractiveness of the risky behavior) may drive motivated reasoning about the remedy (either as a signal of risk, or as a sign that the risk is manageable) that serves to reinforce the problem status quo. Although motivated reasoning can explain boomerang effects, so too can logical reasoning based on prior beliefs (for a review, see Kuhn and Lao [1996]).

In our framework, prior beliefs are likely to be correlated with problem status, inasmuch as people within (outside) the problem domain are likely to hold more (less) favorable prior beliefs toward the risky behavior. Such prior beliefs may contribute (along with motivational processes) to polarization of preexisting attitudes when people are presented with a remedy message. Disentangling the motivational and cognitive processes by which remedy messages boomerang on risk perceptions as problem status rises would be a fruitful avenue for future research. In a follow-up study (omitted for brevity's sake), we controlled for prior beliefs by manipulating financial problem status (high vs. low) and examined risk perceptions after exposure to a remedy (vs. no remedy) message regarding debt-consolidation loans. Consistent with hypothesis 1b and the results of experiment 3, the remedy message undermined risk perceptions when problem status was high versus low ( $F(1, 138) = 6.05, p = .02$ ). This finding provides preliminary evidence that remedy effects may be motivationally driven, consistent with a process explanation based on motivated reasoning.

*Remedy Marketing and Consumer Welfare.* Ironically, remedy messages boomerang on the people they are intended to help most—a serious problem for individuals and at a societal level. Future research should examine whether the effects of remedy messages differ for consumers who are in the problem domain but receptive to exiting (or “ready to act”; Block and Keller 1998). If so, marketing efforts could attempt to target receptive individuals (e.g., via doctor’s visits rather than mass media advertising) and avoid boomerang effects on other nonreceptive consumers within the problem domain. In addition, people “tempted” by the problem domain or “sitting on the fence” (e.g., teenagers considering whether to smoke or engage in unsafe sex) are another important consumer segment that may be susceptible to boomerang effects that “tip the balance” and draw people into the domain. Future investigation of these consumers is of particular merit.

More generally, our research suggests that the marketing activities of companies promoting branded remedies may, inadvertently, be undermining risk avoidance messages important to our nation’s health and safety. In the marketplace, there is no financial incentive for private firms to offer risk avoidance messages, such as “just say no” campaigns, unless they are linked to saleable products and services (Calfee 1997). From a moral hazard perspective, just as people may take less care of their health once they have health insurance (Pauly 1968; Zeckhauser 1995), some consumers appear less risk averse when remedies are available. In the case of many remedies, consumers (not the seller) bear the cost of the negative consequences of riskier behavior, as does society as a whole. If consumers avoided risky behaviors like smoking and incurring excessive debt, they would be better off—but firms that promote remedies would not. The incentive for marketers to over-sell the effectiveness of remedies using puffery and other devices, in conjunction with the miscalibration of consumers (cf. Alba and Hutchinson 2000) who seem to view remedies as “get out of jail free

cards,” raises important ethical and possible regulatory issues regarding the marketing of remedies.

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