IDENTITY SALIENCE AS A DETERMINANT OF PERCEIVED VULNERABILITY TO PERSONAL RISKS

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We explore how changes in consumer context can influence perceived vulnerability to personal risks. Certain identity traits (e.g., being male) are correlated with the occurrence of certain personal risks (e.g., prostate cancer). We propose that making such an identity trait salient (e.g., placing a male in the company of two females) should increase perceived vulnerability to the associated risk, as well as influence affective and attentional processes during exposure to risk-related communications. Our framework integrates the literatures on identity salience and risk. This sets it apart from previous research on risk perception that has focused on the moderating role of message cues. Three experiments provide support for the proposed framework in a gender setting.
We examine the issue of subjectivity in risk perception with the aim of fostering our understanding of consumer behavior and of providing guidelines for effective communication of health information. A growing body of marketing literature is aimed at understanding when and why people feel vulnerable to personal risks (e.g., Anand Keller, Lipkus, and Rimer 2002, 2003; Chandran and Menon 2004; Luce and Kahn 1999). This is a particularly important issue in light of the robust finding that risk perception is a significant predictor of health-protective behavior (e.g., Aiken, Gerend, and Jackson 2001; Menon, Block, and Ramanathan 2002; Raghubir and Menon 1998). From a societal perspective, identifying conditions that affect risk perception thus acquires special significance.

Whereas previous research has focused on the internal content of public service announcements, we examine the influence of the social context on people’s perceived susceptibility to personal risks. Specifically, we observe how contextual variables, such as audience composition, that are known to influence the salience of a certain identity trait can increase one’s perceived susceptibility to risks associated with this trait. Drawing from literature on identity salience we provide a theoretical framework to explain how situational factors at the time of exposure to a social marketing campaign can influence its effectiveness. We test the framework for gender salience.

THEORETICAL FRAMEWORK

Identity Salience, Information Processing, and Risk
Literature on self-identity highlights the influence of situational factors on our self-concept (e.g., Deaux 1996; Markus and Nurius 1986; McGuire 1984; Oakes 1987). According to the notion of a malleable self-concept (Markus and Kunda 1986) we all possess a number of different selves related to the various roles and goals that we endorse in our lives. As a consequence, variability exists in what features of our self-concept are salient in a given situation.

Changes in identity salience affect the processing of cues with high applicability to the corresponding aspects of self-concept. Information applicable to an activated aspect of the self is perceived as more self-relevant and is therefore processed more deeply. For example, making participants feel unique versus similar to others led to differences in the amount of processing devoted to cues related to uniqueness or similarity in a subsequent self-categorization task (Markus and Kunda 1986). Changes in identity salience can also affect attitudes. For example, an increase in ethnic identity salience among minorities in the immediate social context resulted in more positive judgments of ads featuring ethnic spokespersons (Forehand, Deshpandé, and Reed 2002).

We propose that risk perception is a psychological process that should be affected by changes in identity salience in a similar fashion.

Risk estimates are influenced by how cues related to the antecedents of a personal risk are processed. For example, risk estimates increase when disease-related risk behaviors are made more accessible in memory (Raghubir and Menon 1998). Similarly, risk estimates have been found to be higher when participants were provided with a list of
risk behaviors that included common instead of less common behaviors (Menon et al. 2002).

Our research links the literature on identity salience to that on estimating risk. We propose that increasing the salience of a personal trait that is known to be positively correlated with a risk should lead to higher risk estimates. This idea diverges significantly from that of previous work on risk estimates where the focus has been on manipulating message content. In essence, we argue that factors that make a person feel more representative of the social category affected by a certain risk (e.g., a disease) should increase perceived vulnerability.

Our reasoning can be understood in terms of the literature on judgmental heuristics and biases, where the representativeness heuristic refers to the use of simple resemblance criteria in categorization (Tversky and Khaneman 1974). Previous work has shown that a woman’s perceived similarity to women who contract a target disease such as breast cancer (“How similar do you believe you are to the typical woman who gets [disease]?”) correlated with perceived susceptibility above and beyond medical risk factors (Gerend et al. 2004). We argue that this relationship is not static and merely correlational, but that one’s perceived representativeness of the social group at risk is a dynamic concept via contextual changes in identity salience and an important psychological determinant of risk perception.

Previous research also used the representativeness heuristic to explain the role of message information in shaping risk perception (Menon et al. 2002), but in a different manner. When participants were exposed to lists of risk behaviors they tended to assume these behaviors to be representative of all risk behaviors for the target threat. Participants
therefore judged their own vulnerability to the disease based on their propensity to engage in these risk behaviors, such that a list that included more common behaviors led to higher risk estimates than a list that included uncommon behaviors (Menon et al. 2002). Our focus is not on the perceived medical risk (as manipulated by message content) but on the degree to which the message recipient feels representative of the social category at risk (as manipulated by identity salience).

Risk Specificity

We consider two notions of risk. The first one is *actual risk*, the likelihood of the occurrence of a negative event based on available data and what Sjoberg (2000) refers to as “technical risk” and Gerend et al. (2004) as “medical risk.” The second one is *psychological risk*, a subjective perception of a threat. The main goal of the literature on risk appraisal has been to reveal the biases that influence self-reported risk estimates. Despite the existence of such biases, actual risk plays an important role in risk judgments. Respondents use at least to some extent their available knowledge of the statistical likelihood of occurrence when judging their own susceptibility to the risk (Gerend et al. 2004; Lichtenstein et al. 1978).

We argue that a fruitful perspective can be taken by focusing on how properties of actual risk (i.e., its distributional characteristics) and properties of the individual jointly contribute to determine subjective risk perception. We focus on a structural characteristic of actual risk that we term risk specificity and explore its joint role with consumer self-construal in influencing subjective risk perception.
The notion of risk specificity refers to the statistical properties of a risk. Many risks represent a threat for every individual, with vulnerability varying according to a certain probability distribution. Even if individuals do not know the exact shape of this distribution the simple knowledge of the existence of a nonzero mass point should be reflected in self-reported measures of risk. We define such risks as neutral. Most diseases are neutral risks. For example, all individuals have a nonzero likelihood of contracting, at some point during their life, hepatitis C or coronary heart disease.

Some personal risks, however, do not affect everyone but only a subset of the population that shares a particular trait. For example, in order to be at risk of contracting prostate cancer one must be male. We define a personal risk as specific if the probability of occurrence is different from zero only for the subset of the population that shares a particular trait: for example, being male and being at risk for prostate cancer. In other words, a specific risk implies the existence of a dichotomous conditioning distribution for the probability of a personal risk. It is important to note that, in most cases, the conditioning distribution is continuous and not merely dichotomous. For example, even though smoking is a strong predictor of the occurrence of lung cancer, not smoking does not eliminate its threat.

When traits that act as conditioning distribution can be construed as features of one’s identity (e.g., gender), we will refer to identity-neutral (e.g., gender-neutral) and identity-specific (e.g., gender-specific) risks. As we argued earlier, we posit that identity salience is a key construct in understanding the factors influencing one’s perceived susceptibility to identity-specific risks.
To summarize the theoretical framework, our model of risk perception predicts an interaction between contextual factors and risk specificity in determining perceived vulnerability. Accordingly, factors increasing the salience of an identity trait that represents an antecedent of vulnerability to a certain risk should influence the perceived likelihood of this risk’s occurrence. Formally,

**H1:** Self-reported estimates of risk are sensitive to changes in consumer context. A context that increases the salience of a dimension of the self associated with a personal risk will lead to an increase in perceived vulnerability to this risk.

**EXPERIMENT 1**

Experiment 1 was carried out to test hypothesis 1 in a gender setting. Gender was chosen because it allows a test of the theory using a strict notion of risk specificity as relying upon the existence of a dichotomous conditioning distribution. This characteristic of gender is important because it permits manipulating risk specificity with high construct validity. We therefore assessed whether priming people to think about their gender influences their perceived vulnerability to gender-specific risks. Experiment 1 diverges from previous research on risk in that we do not manipulate message content – in fact, we do not present a message at all – but manipulate the salience of gender as a personal trait.

Designing a manipulation of risk specificity with high construct validity requires using as target disease one that does not concern both genders. Although gender affects the incidence of many diseases, only few can be described as truly gender-specific. For
example, the World Health Organization’s list of causes of death includes only a handful of gender-specific diseases, all noncommunicable conditions affecting the reproductive system (World Health Organization 2004). We chose as target disease prostate cancer because this carcinoma is the most common among the gender-specific diseases listed by the World Health Organization, killing more than 200,000 men worldwide every year.

As with all other genitourinary illnesses, dealing with prostate cancer involves a psychosocial dimension. This constitutes a difficult obstacle for health-care providers because embarrassment and fear of stigmatization provide “formidable barriers to evaluation and resolution of distress” (Roth and Sher 1998, p.357). Probing individuals about their risk to contract prostate cancer therefore presents the potential problem of a social desirability bias because participants may be reluctant to report high likelihood of contracting the disease. To address this issue we used the method of indirect questioning (Fisher 1993), a projective technique that asks respondents to express a judgment from the point of view of a typical other (e.g., average person of the same social group). We therefore asked participants to judge their own susceptibility to prostate cancer (direct measure of risk), as well as that of an average person of the same age and gender (indirect measure of risk).

As the identity-neutral disease we used hepatitis C. As in previous marketing research on risk perception, this disease was chosen because it is a serious conditions affecting millions of Americans that can be contracted by both males and females via common activities (Agrawal, Aaker, and Menon 2004; Menon et al. 2002).

Method
Design and participants. Experiment 1 was conducted online using a mixed 2 (Gender salience: gender-prime vs. control) x 2 (Risk type: gender-specific vs. gender-neutral) design. Gender salience was manipulated between-subjects by means of two versions of a website, whereas risk type was manipulated within-subjects using prostate cancer as the gender-specific disease and hepatitis C as the gender-neutral one.

Participants were 52 male undergraduate students at a large metropolitan university who were rewarded with two vouchers from a well-known Internet retailer. One participant made a connection between parts one and two of the study and was eliminated from the analyses, leaving 25 participants in the gender-prime condition and 26 in the control condition. The median and mode of age was “21-25” (SD = 0.84).

Procedure. Participants were emailed by random assignment a link to one of two versions of a website. The website informed participants that they would be asked to complete two studies and that for each of them they would receive a voucher. The two studies were presented as independent (e.g., using different graphic elements) and students were reassured that they would receive the voucher for the first study even if failing to complete the second one (no participant did so). The first study contained the priming procedure and the second assessed the dependent variables (risk estimates).

The priming procedure was introduced as a study of the role of gender (education) on decision-making and interpersonal relationships. Participants in the gender-prime (control) condition were asked to write short essays about the influence of their gender (education) on the way they “make decisions” and on the way they “relate to others.” The essays were designed to prime both cognitive and interpersonal dimensions of gender
(education) schema. As a guideline, participants were asked to spend at least three minutes on each of the two essays that were presented in separate, consecutive pages.

The second study was then introduced as an investigation of people’s vulnerability to accidents, injuries, and diseases. All participants rated the likelihood of a list of personal risks occurring to them in the future (direct measure of risk) on a scale from one to seven. The list was presented in random order and included two target diseases – a gender-specific disease (prostate cancer) and a gender-neutral disease (hepatitis C) – as well as nine fillers (e.g., food poisoning, car crash, or being victim of a terrorist attack). To reduce the conspicuousness of prostate cancer the list included also breast cancer. In the following page participants rated the likelihood of the same risks occurring to the average person of their same age and gender (indirect measure of risk).

In the final page of the website participants were asked to report their age (on a five-point scale with anchors “<21”, “21-25”, “26-30”, “31-35”, “>35”) and to write an essay to guess the purpose of the study.

Results

Using the number of characters typed in the gender priming and control essays we observed no differences across conditions in verbosity ($M_{control} = 858$ vs. $M_{gender-prime} = 824$; $p > .7$). Because of heterogeneity across participants in the use of the scales data for the direct and indirect measures of risk were standardized to the [0, 1] range for each participant. Cell means and standard deviations are reported in table 1.
For the direct measure of risk a repeated-measures ANOVA showed a strong main effect of risk type ($M_{\text{prostate}} = 0.58$ vs. $M_{\text{hepatitis}} = 0.23$; $F(1, 49) = 36.72, p < .0001$) and no main effect of gender salience ($p > .8$). A significant two-way interaction qualified these results, $F(1, 49) = 7.92, p < .01$. Simple effects provide support for the theoretical framework. Participants in the gender-prime condition reported higher risk estimates for prostate cancer than participants in the control condition ($M_{\text{control}} = 0.49$ vs. $M_{\text{gender-prime}} = 0.66$; $t(49) = -2, p = .05$). Moreover, participants in the gender-prime condition reported lower risk estimates for hepatitis C than participants in the control condition ($M_{\text{control}} = 0.31$ vs. $M_{\text{gender-prime}} = 0.15$; $t(49) = 2.07, p < .05$).

For the indirect measure of risk the main effect of risk type was significant ($M_{\text{prostate}} = 0.55$ vs. $M_{\text{hepatitis}} = 0.40$; $F(1, 49) = 7.39, p < .01$) and the main effect of gender salience was not, $F(1, 49) = 1.76, p > .19$. The two-way interaction only approached significance, $F(1, 49) = 2.98, p = .09$. The simple effects did, however, provide support for the research hypothesis. For prostate cancer we observed a significant effect of gender salience on risk estimates ($M_{\text{control}} = 0.46$ vs. $M_{\text{gender-prime}} = 0.65$; $t(49) = -2.07, p < .05$), whereas no effect was observed for hepatitis C ($M_{\text{control}} = 0.41$ vs. $M_{\text{gender-prime}} = 0.40$; $p > .9$).

Discussion
Experiment 1 found support for hypothesis 1: individuals who were asked to think about the influence of their gender in their lives reported higher direct and indirect measures of risk for the gender-specific disease than participants who were asked to think about the influence of their education in their lives. Experiment 1 therefore adds to the existing literature on personal risk that has focused on message characteristics – an external focus – by demonstrating that identity salience affects subjective risk estimates – an internal focus. One goal of Experiment 2 was to assess whether identity salience moderates the evaluation of public policy ads, in other words, the interaction between an external communication and an internal state.

**EXPERIMENT 2**

From a theoretical point of view an important open question concerns the nature of the psychological processes involved in the effect of identity salience on the processing of risk-related information. In particular, the risk results in experiment 1 could have been driven by purely cognitive factors that affect probability estimates. However, identity salience should have implications for affective processes as well. Literature on risk implies a positive association between attitude ratings and conditions that increase perceived vulnerability. For example, attitudes towards a health message were more positive when succumbing to a threat was perceived as closer in time and as more concrete. This was achieved by framing a health threat as occurring every day versus every year, two reference periods that were experienced as subjectively different though being objectively the same (Chandran and Menon 2004; study 3). Similarly, attitudes
towards a health-related text were more positive when the text portrayed a disease as easy versus difficult to contract (Menon et al. 2002). The psychological literature on health appeals is consistent with these perspectives by indicating that the persuasiveness of health communication addressing personal threats tends to be enhanced by increases in perceived threat, at least for low to moderate levels of fear (Eagly and Chaiken 1993, 436).

Marketing literature on social distinctiveness has also focused on affective responses (e.g., Aaker, Brumbaugh, and Grier 2000; Deshpandé and Stayman 1994; Grier and Deshpandé 2001). The main implication of this stream of research is that social distinctiveness increases identity salience and, as a consequence, enhances attitudes towards messages targeting distinctive consumers, those who are minority members of an ethnic group in the immediate social context.

Both the risk literature and the literature on social distinctiveness, therefore, suggest that a closer match between message content and the self should lead to enhanced message liking. We propose that changes in consumer context leading to an increase in identity salience similarly affect affective reactions towards ads addressing risks associated to such an identity.

**H2**: Attitudes towards ads addressing personal risks are sensitive to changes in consumer context. A context that increases the salience of a dimension of the self associated with a personal risk will lead to greater liking of ads addressing this risk.

As mentioned earlier, the assessment of the theory in an attitude setting serves another, more general, purpose. In experiment 1 we showed that manipulating identity
salience influences the calculation of risk estimates. This is a purely inward looking task. It is not clear therefore whether identity salience can affect the processing of external information, in addition to information about the self. From a consumer research perspective, however, it would be important to explore the influence exerted by identity salience on the processing of health-related communications.

To test hypothesis 2 we employed a procedure similar to that employed in experiment 1. Ads addressing a gender-specific disease (prostate cancer) and a gender-neutral disease (hepatitis C) were displayed together with filler ads following the semantic priming procedure used in experiment 1.

Method

*Design and participants.* Experiment 2 was conducted online using the same mixed 2 (Gender salience: gender-prime vs. control) x 2 (Risk type: gender-specific vs. gender-neutral) design used in experiment 1. Participants were 40 male undergraduate and graduate students who were rewarded with a voucher from a well-known Internet retailer. One participant made a link between the two purportedly separate studies and was removed from the analysis, leaving 19 participants in the gender-prime and 20 in the control condition. The median and mode of age was “21-25” (*SD* = 1.05).

*Procedure and stimuli.* The procedure was similar to that used in experiment 1. Participants were randomly assigned to condition and were provided with a link to one of two versions of a website. As in experiment 1, participants were told that they would be completing two separate studies. The purpose of the experiment was further masked by
introducing the priming procedure as a study of the influence of psychographic characteristics on behavior and making participants believe that the consumer characteristic they were being asked to write about (gender or education) had just been randomly drawn from the pool of selected psychographic traits. After completing the priming procedure, the second study was presented as a social marketing study aimed at helping nonprofit organizations improve the effectiveness of their advertising campaigns. Order of ad presentation was varied by asking participants to toss a virtual coin to choose the order in which the ads would be displayed.

Five ads were displayed to participants. These were the two targets (ad for prostate cancer and for hepatitis C) and three fillers that addressed societal concerns (electricity saving, the damage of wildfires, and helping the homeless). We included only one target ad per level of within-subjects factor to avoid demand effects. The two presentation orders differed in the position of the target ads which were placed in second and fourth position in both sequences with the position of the filler ads unchanged across sequences.

The five ads had been created for the experiment and included a sponsor (the association or institution paying for the ad), the advertised cause, an image, a slogan, and additional textual claims. Similar to the study by Maheswaran and Meyers-Levy (1990), the prostate cancer ad stressed its relevance to the student population with the following textual claim: “prostate cancer can also affect younger men, often resulting in more aggressive cancers.” The image in the prostate cancer ad was the face of a young man. The text of the hepatitis C ad was similar to that used by Menon et al. (2002) and the image was a liver masked with a digital effect. Both target ads advocated testing.
Participants were asked to rate each ad using a one-item scale from “very bad” to “very good.” In the final page of the website participants reported their age using the same five-point scale used in experiment 1 and wrote an essay to guess the purpose of the study.

Results

A repeated-measures ANOVA was performed on the ad rating data including presentation order as an additional factor. Means and standard deviations are presented in table 2. Main effects were nonsignificant ($p_s > .3$). The two-way interaction between gender salience and risk type was significant and in the predicted direction, $F(1, 35) = 7.47, p < .01$. Attitudinal ratings for the prostate cancer ad were directionally higher in the gender-prime condition ($M_{control} = 3.65$ vs. $M_{gender-prime} = 4.05$, $F(1, 35) = 3.18, p < .09$), with no differences across priming conditions for the hepatitis C ad ($p > .4$). We also observed a significant two-way interaction between risk type and presentation order ($F(1, 35) = 4.1, p = .05$) and a significant three-way interaction between risk type, gender salience, and presentation order, $F(1, 35) = 4.94, p < .05$. The gender salience by risk type interaction was significant for participants who saw the hepatitis C ad before the prostate cancer ad ($F(1, 13) = 7.26, p < .05$) but was nonsignificant for participants who saw the prostate cancer ad first ($p > .6$). However, only six participants were assigned to
the former presentation order in the control condition, which makes any interpretations of this effect unreliable.

Discussion

Experiment 2 provided support for hypothesis 2. Participants were asked to think about either their gender or their education and then in a purportedly unrelated study to rate a series of ads including one warning against prostate cancer and one against hepatitis C. Relative to the hepatitis C ad, participants in the gender-prime condition liked the prostate cancer ad more than participants in the control condition. Experiment 3 was designed to explore further the information processing consequences of identity salience by assessing its influence in determining memory for risk-related information. Moreover, experiment 3 generalizes the results of the previous studies to a more naturalistic setting.

EXPERIMENT 3

We have shown that identity salience interacts with risk specificity in determining cognitive (experiment 1) and affective (experiment 2) responses to personal risks. The starting point of the theoretical framework was the existence of malleability in the level of activation of different identity dimensions. This contextual view of identity salience implies that the effects explored in the previous experiments have an inherently transient nature. From a practitioner’s point of view, however, it would be important to assess whether such salience effects have enduring consequences for psychological processes. In
experiment 3 we therefore explore whether identity salience influences long-term memory for ads that vary in the risk specificity of the target cause.

In addition to these practical implications, an assessment of memory is important also from a theoretical point of view. Previous research has shown an association between risk perception and attentional processes. In general, attention to risk-relevant information is enhanced by higher perceived vulnerability. For instance, in a grocery setting, the greater the perceived risk a consumer associates to a perishable product the greater the attention paid to its expiration date (Tsiros and Heilman 2005). Similarly, marketing literature on health appeals has shown that attention to the message and message learning are greater when the individual feels more susceptible to contracting the disease (e.g., Menon et al. 2002; study 2). Within this stream of research the study by Maheswaran and Meyers-Levy (1990) is particularly informative because the authors manipulated students’ similarity to the segment of the population at risk of coronary heart disease by depicting coronary heart disease as affecting either only the elderly (low involvement) or also younger persons (high involvement). This manipulation implicitly relies on the notion of risk specificity and suggests that variables that increase one’s perceived vulnerability will affect the encoding of risk-related information and lead to greater recall of messages warning against the target risk. Whereas previous literature has manipulated the self-relevance of messages by altering message information, we propose that changes in identity salience should increase memory for ads concerning identity-specific risks:

**H3:** Memory for ads addressing personal risks is sensitive to changes in consumer context. A context that increases the salience of a dimension of
the self associated to a personal risk will lead to greater memory for ads addressing this risk.

Experiment 3 was also designed to explore the external validity of the results obtained in experiments 1 and 2. In these experiments we used a semantic priming procedure to manipulate gender salience. This approach was chosen to maximize internal validity and provide a cogent test of the hypotheses. To stress the implications of the theoretical framework for consumer research in experiment 3 we assess whether social context at the time of exposure to a social marketing message can affect information processing in ways similar to the semantic priming procedure used in experiment 1 and 2. In particular, in this experiment we assess whether audience composition at the time of exposure to messages warning against personal risks can affect advertising response. We rely on the notion of numerical distinctiveness to manipulate social context.

Distinctiveness theory (McGuire 1984) argues that the salience of a personal trait is a function of its numerical distinctiveness in the social context. Accordingly, the consequence of distinctiveness is that of enhancing the distinctive trait’s influence on one’s sense of self. Literature on self-categorization has reached a similar conclusion (Oakes 1987). According to this perspective, a personal characteristic is more likely to be used for self-definition when it distinguishes us from others.

Most of the empirical examinations of the distinctiveness postulate have interpreted distinctiveness in terms of chronic group membership and not as a feature of a specific situation (e.g., McGuire and Padawer-Singer 1976). Chronic social distinctiveness has been frequently used by marketing researchers interested in consumer response to ethnic cues (e.g., Deshpandé and Stayman 1994; Forehand et al. 2002).
A stream of research within psychology, however, has manipulated group composition (usually choosing gender as target identity) in ad-hoc groups to assess the influence of distinctiveness on identity salience. These studies provide strong evidence that one’s gender salience is heightened in situations of numerical distinctiveness (Abrams, Thomas, and Hogg 1990; Burian, Yanico, and Martinez 1998; Cota and Dion 1986; Inzlicht and Ben-Zeev 2000, 2003; Mullen 1983; Ruble and Higgins 1976; Wooten 1995). For example, Cota and Dion (1986) placed participants in three-person groups that varied in their gender composition (minority vs. same gender) and observed an increase in participants’ gender salience in the distinctive social context condition, even though participants did not know each other, did not expect to interact again in the future, and spent only 20 minutes together.

Experiment 3 builds on this body of literature by manipulating social context using three-person groups varying in gender composition (minority vs. same gender; e.g., Cota and Dion 1986). As in our previous experiments, we recruited male participants and used prostate cancer as the gender-specific risk and hepatitis C as the gender-neutral one.

Method

*Design and participants.* The design of experiment 3 was a mixed 2 (Social context: distinctive vs. nondistinctive) x 2 (Risk type: gender-specific vs. gender-neutral), with the first factor manipulated between-subjects and the second within-subjects. Participants were 44 males who took part in the study in return for a small reward ($M_{age} = 30.32, SD = 3.55$). They were recruited at the campus of a metropolitan business school.
among MBA students, participants to executive education programs, and staff. Two did not follow the experimental procedure and were eliminated from the analysis, leaving 20 participants in the distinctive and 22 in the nondistinctive social context condition.

**Procedure.** Participants were randomly assigned to condition. Participants assigned to the distinctive social context condition were met at a scheduled time by a female experimenter and a female confederate acting as another participant. The experimenter led participants to the room where they performed the study. Participants in this condition were therefore in company of two females for the whole duration of the study. Participants assigned to the nondistinctive condition were instead met two at a time by a male experimenter. Each of them therefore performed the study in the presence of two other males.

Participants were given a booklet and instructed to turn page only when asked to do so by the experimenter. During the first part of the study participants saw an ad display. Each ad was shown for 30 seconds. The ads were the same used in experiment 2 and included two targets and three fillers. The ads were displayed on a large plasma screen placed on the wall faced by participants, alternating filler and target ads and starting with a filler ad (a five-second countdown separated each ad). For all participants the hepatitis C ad was in second position and the prostate cancer ad was in fourth position. A cardboard screen hid participants’ responses from the confederate or the other participant. During the display participants were asked to rate the ads with the same item used in experiment 2. In addition to “liking,” we also included three items to assess more cognitive aspects of persuasion (scale anchors were “effective”, “useful”, and “convincing”).
Following the ad display participants completed a five-minute filler task. The memory measures were then administered. First, participants were asked to recall the causes advertised. Second, participants completed a cued recall task where, for each ad, they were provided the cause and asked to recall sponsor, image, slogan, and additional textual claims. They were given one minute for each ad.

The last part of the study asked participants to report direct and indirect measures of risk for a list of diseases (as in experiment 1 the indirect measure of risk was described as the risk for the average person of their same age and gender) using a score from one to 100. The list included the two target diseases as well as seven fillers (e.g., skin cancer, Parkinson disease, breast cancer, and coronary heart disease). On the last page participants where asked to provide their age, gender, and to guess the purpose of the study (no participant raised any suspicions about the purpose of the study).

Results

*Attitudes.* The four items used to assess attitudes towards the ads showed good reliability (for the gender-specific ad $\alpha = 0.88$, for the gender-neutral one $\alpha = 0.91$) and were averaged to create an attitude measure. A repeated-measures ANOVA was performed on the rating scores. Table 2 presents means and standard deviations. The main effect of risk type was significant ($M_{\text{prostate}} = 4.86$ vs. $M_{\text{hepatitis}} = 3.33$; $F(1, 40) = 49.19, p < .0001$) and the main effect of social context was not, $F(1, 40) = 1.67, p > .2$. The interaction between risk type and social context was significant, $F(1, 40) = 8.89, p < .01$. Attitude ratings were directionally higher for the gender-specific ad in the
distinctive social context condition ($M_{\text{nondistinctive}} = 4.72$ vs. $M_{\text{distinctive}} = 5.01$, $t(40) = 0.94$, $p > .3$) and they were significantly lower for the gender-neutral ad in the distinctive social context condition ($M_{\text{nondistinctive}} = 3.82$ vs. $M_{\text{distinctive}} = 2.79$, $t(40) = -2.57$, $p < .05$).

**Memory.** The measures collected were free recall of cause and cued recall of a number of ad features where the cause advertised was the recall cue. For each measure a binary variable was obtained depending on whether the participant had recalled the specific item or not. The coder was unaware of the social context condition participants had been assigned to. For each ad feature correctly recalled participants received score of one. The recall score was a sum of the total number of items recalled.

Means and standard deviations are reported in table 2. The main effects of social context was nonsignificant ($p > .5$) but risk type had a significant main effect, $F(1, 40) = 8.07$, $p < .01$ ($M_{\text{prostate}} = 2.93$ vs. $M_{\text{hepatitis}} = 2.40$). A significant risk type by social context interaction qualifies the results, $F(1, 40) = 5.60$, $p < .05$. The interaction was in the expected direction and provides support for hypothesis 3. Participants in the distinctive social context condition remembered the prostate cancer ad better than participants in the nondistinctive condition ($M_{\text{nondistinctive}} = 2.64$ vs. $M_{\text{distinctive}} = 3.25$, $t(40) = 2.02$, $p = .05$). Memory for the hepatitis C ad did not differ across social context conditions ($p > .35$).

**Risk estimates.** As in experiment 1, data from the risk measures were standardized. Cell means and standard deviations for risk estimates are reported in table 1. For the direct measure of risk the main effect of risk type was significant, $F(1, 40) = 33.79$, $p < .0001$ ($M_{\text{prostate}} = 0.66$ vs. $M_{\text{hepatitis}} = 0.30$). No other effect was significant ($ps > .6$). The direct measure of risk data therefore fail to support hypothesis 1.
For the indirect measure of risk the main effect of social context was nonsignificant \((p > .4)\) and that of risk type was marginally significant, \(F(1, 40) = 3.39, p < .08\) \((M_{\text{prostate}} = 0.55 \text{ vs. } M_{\text{hepatitis}} = 0.43)\). The social context by risk type interaction also approached significance, \(F(1, 40) = 3.54, p < .07\). Supporting hypothesis 1, participants in the distinctive social context condition reported higher risk estimates for prostate cancer than participants in the nondistinctive social context condition \((M_{\text{nondistinctive}} = 0.46 \text{ vs. } M_{\text{distinctive}} = 0.66, t(40) = 2.02, p < .05)\). No differences were observed across viewing conditions for hepatitis C \((p > .6)\).

Discussion

Experiment 3 manipulated social context via a condition of numerical distinctiveness to assess the role of identity salience on risk perception and consumer response to targeted social marketing information. The results for the indirect measure of risk provide support for the theoretical framework and replicate the results obtained in experiment 1. Participants in the distinctive social context condition rated risk for the average male to contract prostate cancer as higher than participants in the nondistinctive condition.

We did not, however, find evidence of an influence of distinctiveness on the direct measure of risk. Differences in the relationship between direct and indirect questioning across experimental conditions that vary in their susceptibility to socially desirable responding provide evidence of a social desirability bias (Fisher 1993). The Internet medium used in experiments 1 and 2 offers a relatively safe environment in which to
disclose personal information (Moon 2000). In experiment 3, however, the possibility of a significant response bias is more concrete as the manipulation included direct social interaction with the experimenter. The results suggest that a response bias may have affected the direct measurement of risk for prostate cancer in the distinctive social context condition when male participants interacted with the female experimenter. However, evidence is not conclusive as levels of the direct and indirect risk measures did not generally differ.

Experiment 3 found a significant two-way interaction between risk type and social context for the attitude ratings. This effect is parallel to the significant two-way interaction between risk type and semantic prime in experiment 2. However, the simple effect for the prostate cancer ad was only directional in experiment 3, questioning the robustness of the effect. It is possible that the social context obfuscated the simple effects (Rosnow and Rosenthal 1989; Ross and Creyer 1993). In particular, the attitude ratings were higher in the nondistinctive social condition, albeit not significantly so ($p > .2$). It may, therefore, be appropriate to consider the shape of the significant interaction as the critical support for hypothesis 2 as main effects can make simple effects across viewing conditions uninformative (Rosnow and Rosenthal 1989; Ross and Creyer 1993).

Experiment 3 did provide support for differential levels of recall as predicted by hypothesis 3. Participants in the distinctive social context condition exhibited greater recall of the prostate cancer ad than participants in the nondistinctive social context condition with no differences across social context conditions in memory for the hepatitis C ad. The memory results therefore strengthen the evidence for the framework by showing that the processing of external information is influenced by social context in a
similar way to perceived vulnerability. From a theoretical point of view these results highlight the broad implications of the influence of identity salience on cognitive processes. From a practical point of view these results have important implications for social marketers as memory is a key measure of advertising effectiveness.

GENERAL DISCUSSION

In a series of experiments we found evidence that contextual variables can affect perceived vulnerability to personal risks and the processing of marketing communication related to such risks. Previous research had demonstrated that changes in message content can make participants feel more vulnerable to certain risks. Our research demonstrates that changes in the salience of certain identity traits can make participants feel more vulnerable to certain risks, both in the absence of any external cues (experiment 1) and when reacting to the same external cue (experiments 2 and 3).

In experiment 1 we manipulated identity salience using a semantic priming procedure, whereas in experiment 3 we manipulated numerical distinctiveness. In both studies we found an increase in risk estimates for prostate cancer in the high gender salience condition. In addition to “cold” probability estimates, we explored in experiments 2 and 3 how identity salience can influence attitudes towards messages addressing personal risks with differing levels of specificity. Significant interactions between consumer context and risk specificity emerged in both studies for attitudes towards risk-related information. Finally, we combined the analysis of cognitive and affective processes with an assessment of the joint role of identity salience and risk
specificity in determining attentional processes. In experiment 3, a condition of gender distinctiveness led to greater memory for ads addressing a gender-specific risk.

Self-reported measures of risk are a common dependent variable in marketing research, ranging across issues from product performance (e.g., Folkes 1988) to personal safety (e.g., Anand Keller et al. 2003). Despite the importance of this construct, little consideration has been devoted to understanding its theoretical underpinnings. We focused on risk specificity as a key factor in explaining the influence of individuals’ self-construal on risk estimates. These experiments therefore extend the existing literature on personal risks by highlighting the interaction between properties of actual risk and consumer’s social environment in influencing psychological risk.

It should be pointed out that the target disease of prostate cancer chosen to assess the theory represented only a remote threat to our young respondents. Although the occurrence of this carcinoma is not impossible in young individuals, its likelihood of occurrence starts to be substantial only during the middle age. This makes the results all the more remarkable because temporal proximity is a determinant of perceived risk (Chandran and Menon 2004).

This article also contributes to our understanding of the consequences of numerical distinctiveness. Our research differs from the existing marketing literature on distinctiveness for our focus on ad-hoc groups instead of chronic category membership, providing evidence that distinctiveness in ad-hoc groups can have important marketing implications. More importantly, our findings for risk perception in experiment 3 extend the psychological literature on distinctiveness by showing that risk perception and associated attitudes and memories are influenced by numerical distinctiveness.
Experiment 3 also provides a conceptual replication of previous results showing that the effect of distinctiveness is a function of the distinctive trait’s relationship to the cues being processed. Inzlicht and Ben-Zeev (2000) found that the performance of female participants was affected by the presence of males on a stereotype-consistent task (a math test) but not on a stereotype-inconsistent one (a verbal test). Similarly, the evidence that numerical distinctiveness affected memory and risk estimates for prostate cancer but not for hepatitis C underlines the importance of applicability in driving distinctiveness effects. Mullen (1983) proposed a self-attention theory of distinctiveness that attributed a broader role to distinctiveness. According to Mullen, the primary consequence of numerical distinctiveness is that of inducing self-focused attention (see Wooten, 1995, for a marketing application). Our results, however, are not consistent with this broader view of the influence of distinctiveness and suggest instead that the effect of distinctiveness is limited to the processing of cues to which such distinctiveness is pertinent.

Attitudes and memory are commonly used measures of advertising effectiveness and the results for these variables, in addition to perceived risk, suggest important implications for advertisers of social marketing information. We highlighted a previously unexplored determinant of the effectiveness of public service ads. The results show that consumer contexts that at the time of message exposure raise the salience of a trait related to the occurrence of a risk will increase the effectiveness of health-related campaigns. This has implications for media placement. These implications apply in the broader case of gendered activities and products, as well as to risks related to any other trait connected to a personal risk, such as age or smoking.
REFERENCES


### TABLE 1:

CELL MEANS (AND STANDARD DEVIATIONS) FOR RISK ESTIMATES

(EXPERIMENTS 1 AND 3)

<table>
<thead>
<tr>
<th></th>
<th>Direct measure of risk</th>
<th>Indirect measure of risk</th>
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<td></td>
<td>Prostate cancer</td>
<td>Hepatitis C</td>
</tr>
<tr>
<td><strong>Experiment 1</strong></td>
<td></td>
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<tr>
<td>Gender-prime</td>
<td>0.66 (0.31)</td>
<td>0.15 (0.25)</td>
</tr>
<tr>
<td>Control</td>
<td>0.49 (0.31)</td>
<td>0.31 (0.27)</td>
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<tr>
<td><strong>Experiment 3</strong></td>
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<td></td>
</tr>
<tr>
<td>Distinctive</td>
<td>0.64 (0.29)</td>
<td>0.31 (0.32)</td>
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<tr>
<td>Nondistinctive</td>
<td>0.68 (0.29)</td>
<td>0.29 (0.29)</td>
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TABLE 2:

CELL MEANS (AND STANDARD DEVIATIONS) FOR ATTITUDES

(EXPERIMENTS 2 AND 3) AND MEMORY (EXPERIMENT 3)

<table>
<thead>
<tr>
<th></th>
<th>Attitudes</th>
<th>Memory</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Prostate cancer</td>
<td>Hepatitis C</td>
</tr>
<tr>
<td>Experiment 2</td>
<td></td>
<td></td>
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<tr>
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<td>4.05 (1.17)</td>
<td>3.32 (1.29)</td>
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<tr>
<td>Control</td>
<td>3.65 (1.46)</td>
<td>3.65 (1.14)</td>
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<tr>
<td>Experiment 3</td>
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<tr>
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<td>5.01 (0.78)</td>
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<tr>
<td>Nondistinctive</td>
<td>4.71 (1.20)</td>
<td>3.82 (1.45)</td>
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</table>

Note: Attitude ratings were reported using six-point scales in experiment 2 and seven-point scales in experiment 3.