Risk Analysis, Vol. 26, No. 3, 2006 DOI: 10.1111/j.1539-6924.2006.00773.x

The Role of the Affect and Availability Heuristics in Risk Communication

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Results of past research suggest that affect plays an important role in risk perception. Because affect may also increase the availability of risks, affect and availability are closely related concepts. Three studies tested the hypothesis that evoking negative affect (fear), either through past experience or through experimental manipulation, results in greater perceived risk. The present research focused on perception of flooding risk. Study 1 and Study 2 showed that participants who received risk information concerning a longer time period (e.g., 30 years) perceived more danger compared with participants who received risk information for one year. Study 2 showed that the interpretation of risk information was influenced by participants' own experiences with flooding. In Study 3, affect was experimentally manipulated. After looking at photographs depicting houses in a flooded region, participants perceived greater risk compared with participants in a control group. Taken together, the results of these three studies suggest that affect is important for successful risk communication. Results of the present research are in line with the affect heuristic proposed by Slovic and colleagues.

KEY WORDS: Affect heuristic; availability heuristic; flood risk; risk communication

1. INTRODUCTION

The way in which information about hazards is presented influences how the hazards will be perceived. The question of how lay people should be informed about the magnitude of risks is, therefore, an important question in the field of risk management (Fischhoff, 1995). Many of the risks we face have low probabilities. Communicating about low-probability risks is a big challenge, however.

The present work focuses on communication concerning flooding risks. For most residents, this is a low-probability hazard. In Europe, the death toll in recent years was relatively low. Europe suffered large economic losses from flood disasters in the past decade, however (Linnerooth-Bayer & Amendola, 2003). In order to reduce costs caused by flooding, the promotion of residents' responsibility for taking precautionary measures will become more important in the future. A first step in this direction is to gain people's attention on flood risks by increasing their risk perception.

In the present research, the affect heuristic proposed by Slovic and colleagues (Finucane *et al*., 2000; Slovic *et al*., 2002, 2004) is used as a framework. Work by these researchers suggests that strong emotional experiences with hazards may be important for increasing perceived risks. However, the affect heuristic is linked to the availability heuristic by Tversky and Kahneman (1982). Slovic *et al*. (2004) suggested that the availability heuristic might not only work through ease of recall or imaginability, but also because remembered images are connected with affect.

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We conducted two studies to test the hypothesis that evoking negative affect (fear) results in an increased level of perceived risks. In the third study, we tested the hypothesis that availability of images related to negative affect increases perceived risks.

1.1. Perception of Low-Risk Probabilities

Low probabilities are difficult for people to understand (Camerer & Kunreuther, 1989). According to prospect theory (Kahneman & Tversky, 1979), small probabilities are often underestimated. Various approaches for communicating low-probability risks have been proposed and empirically tested. Risk comparisons is one such approach (Freudenburg & Rursch, 1994; Johnson, 2003, 2004; Kunreuther *et al*., 2001; Roth *et al*., 1990; Slovic *et al*., 1990). Here, the risks associated with new hazards are compared with risks that are more familiar to the public. Past research has shown that judgment under uncertainty improves when problems were formulated in terms of frequencies rather than probabilities (Gigerenzer & Hoffrage, 1995). The time period for which a risk is given also has an influence on how a particular risk is perceived (Linville *et al*., 1993; Shaklee & Fischhoff, 1990; Slovic *et al*., 1978; Svenson, 1984). The study by Slovic *et al*. (1978) showed that presenting the risks faced during a lifetime of driving induced more people to wear seat belts compared with the presentation of the risks involved in a single trip. The study by Rottenstreich and Hsee (2001) indicated that affect-rich outcomes resulted in more pronounced overweighting of small probabilities than affect-poor outcomes. Thus, in the case of affect-laden events, small probabilities may not be underestimated. The reviewed research suggests that the manner in which risks are presented can either decrease or increase the level of risks perceived.

1.2. The Affect Heuristic

In recent years, several authors have suggested that affect might play an important role in risk perception. Loewenstein and colleagues introduced the "risk as feelings" model (Loewenstein *et al*., 2001). Similarly, Slovic and colleagues proposed the affect heuristic (Peters *et al*., 2004; Slovic *et al*., 2002, 2004). In this latter approach, two modes of thinking are distinguished, the experiential system and the analytical system. The analytical system relies on probabilities, logical reasoning, and evidence. The experiential system relies on images, metaphors, and narratives. People use the affect related to a hazard as a cue for estimating the probability of a hazard. Slovic *et al*. (2004) used this framework to explain why people are sensitive to different forms of risk communication. Frequency formats produce affect-laden imagery, leading participants to rate a disease that kills 1,286 people out of 10,000 as being more dangerous than a disease that kills 24.14% of the population (Yamagishi, 1997).

In past research, the availability heuristic has also been proposed as an explanation for biases in probability judgments (Tversky & Kahneman, 1982). According to this heuristic, people use the ease with which examples of a hazard can be brought to mind as a cue for estimating the probability of a hazard. Slovic *et al*. (2004) suggested that the availability heuristic might work because remembered images are tagged with affect, proposing that the availability and affect heuristics are closely connected.

The experiential system uses past experience to assess risks (Slovic *et al*., 2004). Research suggests that past experience is an important factor influencing people's perception of hazards (Weinstein, 1989). Jackson (1981) found that past experience with earthquakes influenced the adoption of precautions. After a damaging event has occurred, precautions are taken more readily. Similar findings have been reported for the purchase of flood insurance. The experience of damage was the most important factor that led to the purchase of insurance (Baumann & Sims, 1978; Zaleskiewicz *et al*., 2002). O'Connor and colleagues (2005) found that managers of community water systems who experienced a flood emergency in the last five years perceived a higher flood risk. In other words, they expected to experience more problems from flood in the next decade than managers who did not experience problems from flood in the last five years. In a similar vein, Siegrist and Gutscher (2005) found that past experience with flooding was the most important factor in predicting people's risk perception.

Past experiences with a natural hazard are associated with negative affect, and that might increase the level of risks perceived. However, it should be emphasized that hazards are not always associated with negative affect. Especially with voluntary hazards (e.g., smoking, skiing), people might associate positive emotions.

1.3. Rationale of the Present Studies

In risk communication research, a number of different ways of presenting information about risks and probabilities have been examined. Utilizing the affect

heuristic as a framework, three experiments were designed to test the hypothesis that utilizing risk communication formats that produce more affect-laden imagery would induce a higher level of perceived risks than risk communication formats that evoke no affect. Furthermore, it was postulated that evoking negative affect, either through past experience or through experimental manipulation, results in greater perceived risks. Because such affect may also lead to an increased availability of a hazard, the availability heuristic is also employed as a theoretical framework.

2. STUDY 1

It is well known that people find probabilities hard to interpret (Gigerenzer *et al*., 2005). Interpretation improved when problems were formulated in terms of frequencies rather than probabilities (Cosmides & Tooby, 1996; Gigerenzer & Hoffrage, 1995). One reason for communicating risk to the public is to improve the correspondence between the assessed magnitude of a risk and people's responses to this risk (Weinstein & Sandman, 1993). In the domain of flood risks, participants often underestimate the risks they are faced with (Siegrist & Gutscher, 2005). Therefore, raising risk awareness and precaution behavior is usually the goal of risk communication about natural hazards. In the present study, we focus on risk awareness. Whether people will in turn act in accordance with their awareness and in fact take precautionary measures depends on further psychological factors. Self-efficacy is one important factor for understanding and changing precaution behavior (Murray-Johnson *et al*., 2004; Witte, 1992). Even though not directly examined in the present study, changing behavior is the most important goal of risk communication.

Results of a study by Siegrist (1997) suggest that a frequency format emphasizes the threat of a risk. Participants confronted with high risk in a frequency format were willing to pay a higher price for improved medication compared with participants who received this information in a probability format. Similar results were reported by Slovic *et al*. (2000). Clinicians who received risk information about a person's violence in a frequency format judged the patient to be more dangerous than did clinicians who received the identical information in a probability format. According to the authors of this study, the frequency format evoked frightening images, while the probability format failed to evoke such emotional images.

Probabilities for a particular risk depend on the time period for which a risk is given. The probability of being involved in an automobile accident in a single trip is miniscule. However, the probability of a fatal accident within a 50-year period of driving must not be neglected. Participants who received information about a 50-year period favored more strong, mandatory protection than participants exposed to the risk of a single trip (Slovic *et al*., 1978). This result can be interpreted within the framework of the affect heuristic. Small probabilities do not evoke emotional images; relatively high probabilities, however, may evoke vivid and affect-laden images associated with a hazard. Because affect may also lead to an increased availability of a hazard (Slovic *et al*., 2004), the availability heuristic is an equally viable explanation for result of the study by Slovic *et al*. (1978).

In Study 1, we examined the impact on perceived risks of various presentation formats, all of which conveyed identical information. A frequency format can be used to summarize the risk as, "on an average, there is a flood every 100 years." The same information can be given as a probability for one year: each year, there is a 1% probability of flood. Instead of giving the risk for one year, a time period for a generation or two living in a house can be provided: within 40 years, there is a 33% probability of flood; within 80 years, there is a 55% probability of flood. It was expected that, for the risks expressed for one year, the frequency format would produce higher perceived risks than the probability format. Based on earlier studies reviewed above, it was hypothesized that presenting probabilities for a longer time period would result in higher perceived risks compared with the probability of an adverse event within one year.

2.1. Method

2.1.1. Participants

A total of 170 psychology students from the University of Zürich participated in the study (144 women, 33 men). Participants' mean age was 25.7 years ($SD = 5.4$).

2.1.2. Material and Procedure

All participants were asked to imagine that they were planning to buy a house and that they had received some information about the probability of a flood. The information about the risk was described in four different ways:

- Version 1: "On an average, there is a flood every hundred years."

- Version 2: "Each year, there is a 1% probability of flood."
- Version 3: "Within 40 years, there is a 33% probability of flood."
- Version 4: "Within 80 years, there is a 55% probability of flood."

In the scenario it was emphasized that "this flood causes severe damage, which is only partly covered by insurance." After reading one version of the short scenario, participants were asked: "How risky would you consider that living in a place like this is?" Participants assessed the risks using a number between 1 ("not risky at all") and 6 ("very risky"). Participants were tested in class, and they completed the questionnaires anonymously. Participants were randomly assigned to one out of the four conditions.

2.2. Results and Discussion

The means and standard deviations of the perceived risks for all four versions are shown in Table I. Data were submitted to a one-way analysis of variance. The analysis yielded a significant effect, $F(3,173) = 7.73$, $p < 0.01$. Results of the Tukey-test show that the group receiving the probability information for one year showed significantly lower risk ratings than the other three groups. The other three groups did not differ significantly from each other.

Results of Study 1 are in line with other studies in which frequency and probability formats were used (Siegrist, 1997; Slovic *et al*., 2000). The frequency format emphasized the threat of the risk and resulted, therefore, in higher risk ratings. In addition, the findings of Slovic *et al*. (1978) were successfully replicated. In the Slovic study, the probability of being involved in a serious accident in one's lifetime was about 0.01.

Table I. Study 1: Means and Standard Deviations of Responses to "How Risky Would You Consider Living in a Place Like This Is?"

Format of Communicating Flood Probability	*M* (*SD*)
1. On an average, a flood every 100 years	3.59 (1.17) ($n = 51$)
2. Each year, there is a 1% probability of flood	2.72 (1.21) ($n = 39$)
3. Within 40 years, there is a 33% probability of flood	3.91 (1.21) ($n = 46$)
4. Within 80 years, there is a 55% probability of flood	3.71 (1.25) ($n = 41$)

Note: Ratings made on a six-point scale: 1 = not risky at all and 6 = very risky.

In the present study, much higher probabilities were utilized. Nevertheless, presenting information for a longer time period resulted in higher risk ratings. Results of Study 1 suggest that the specific length of the longer time period is of minor importance. The risk ratings did not differ for a time period of 40 years to a time period of 80 years.

Results of Study 1 are in line with the hypotheses deduced from the affect heuristic. For probabilities presented for a longer time period, the longer time period strongly emphasized the threat of a risk. According to the affect heuristic, it is plausible to assume that as a result, such risk communication formats evoke more affect-laden images, which increase perceived risks. Low probabilities, on the other hand, are rounded to zero and do not evoke any affect. Because affect could also have an effect indirectly through availability, these results could also be interpreted within the availability heuristic. The threat evoked by probabilities presented for a longer time period made flooding events easily available, thereby increasing risk perception.

3. STUDY 2

Past experience is an important factor influencing how risky hazards are perceived (Siegrist & Gutscher, 2005). And experiences with hazards strongly influence the purchase of insurance (Baumann & Sims, 1978; Zaleskiewicz *et al*., 2002). However, we are not aware of any studies that have experimentally examined the influence of past experience on the interpretation of probability or frequency information about natural hazards. It seems plausible that statistical information about flood risks may evoke concrete images in people who have had experiences with floods. However, less affect would be evoked in people with no such experience. Therefore, it was hypothesized that past experience would increase perceived risks, independent of the information provided.

Graphical displays are often used in risk communication, though it is still an open question whether the addition of graphics improves comprehension substantially (Lipkus & Hollands, 1999). It has been suggested that graphical displays may be a useful technique for decreasing risk-taking behavior (Stone *et al*., 1997). Other studies have suggested that the graphical display may increase risk avoidance only when the graphics highlighted the number of people harmed at the expense of the total number of people at risk (Stone *et al*., 2003), and that the graphical presentation elicits the same decision-making mechanism as

the numerical display (Schirillo & Stone, 2005). Research in health communication, using graphs in combination with time periods, has shown that survival graphs strongly influence risk perception when identical risks are displayed over longer periods of time (Zikmund-Fisher *et al*., 2005).

Graphical displays may emphasize the threat of the risk and, therefore, may evoke emotions. In Study 2, we hypothesized that graphical displays in the form of a pie chart enhance perceived risks when high probabilities are communicated, but we did not expect such an effect for low probabilities. Highlighting high probabilities in a pie chart emphasizes the largeness of the segment. The impressive largeness may emphasize the threat of a risk, and in turn lead to increased risk perception. In contrast, highlighting low probabilities emphasizes the smallness of the risk. This, in turn, may lead to decreased risk perception because no negative affect is evoked, and the risk is classified as harmless.

A survey experiment was conceived for testing the hypotheses. Information was presented in a probability format for various time periods.

3.1. Method

3.1.1. Participants

Potential respondents for the survey were selected based on existing maps showing the risk of flooding. About half were selected from high and medium flood-risk areas; the other half lived in low-risk regions. The questionnaire contained items for the survey experiment described here, as well as items designed to address different research questions (Siegrist & Gutscher, 2005).

During April and May 2004, the survey was conducted by mail. The questionnaire was completed and returned by 1,598 persons. The response rate for German-speaking Switzerland was 53% ($n = 784$), for the French-speaking part 52% ($n = 522$), and for the Italian-speaking part 51% ($n = 293$). The response rate was almost identical for low-, medium-, and high-risk areas.

Sixty-one percent ($n = 878$) of the respondents were males, 39% females ($n = 558$). Nine respondents did not indicate their gender. The participants' mean age was 53.39 ($SD = 16.64$). Questionnaires were randomly assigned to the respondents.

3.1.2. Materials

The same scenario as in Study 1 was utilized. All participants were asked to imagine that they were planning to buy a house, and that they received some information about the probability of a flood. In the scenario it was emphasized that "this flood causes severe damage, which is only partly covered by insurance."

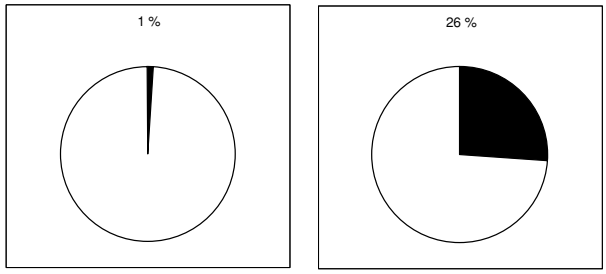

Fig. 1. Study 2: Graphical displays. Probability of 1% within 1 year (left graphic), probability of 26% within 30 years (right graphic).

Two factors, time period and graphical display, were manipulated. In the version with a graphical display, the risk was depicted using a pie chart (see Fig. 1). This resulted in the following four versions:

- probability of 1% within one year, without graphical display
- probability of 1% within one year, with graphical display
- probability of 26% within 30 years, without graphical display
- probability of 26% within 30 years, with graphical display

After reading one version of the short scenario, participants were asked: "How risky would you consider that living in a place like this is?" Participants assessed the risks using a number between 1 ("not risky at all") and 6 ("very risky").

Past experience with flooding was measured with two items (e.g., "Neighbors or acquaintances were harmed by floods," "The house I am living in/used to live in or my personal property was once damaged by a flood"). Six response categories were used. The two extreme responses were verbally anchored (1 = does not apply at all, 6 = applies absolutely). The scale, consisting of these two items, had an internal consistency of $\alpha = 0.68$.[3]

3.2. Results and Discussion

Data were submitted to a 2 (time period: 1 year/30 years) × 2 (graphical display: no/yes) ANCOVA

[3] Results of a pretest suggested that almost all people have seen flooding events on TV. Therefore, this item was not included in the final questionnaire.

Table II. Study 2: Means and Standard Deviations of Responses to "How Risky Would You Consider Living in a Place Like This Is?"

	Time Period	
Graphical Display	1 Year	30 Years
No	3.36 (1.48) $n = 393$	3.77 (1.44) $n = 376$
Yes	3.17 (1.51) $n = 384$	3.64 (1.44) $n = 405$

Note: Ratings made on a six-point scale: 1 = not risky at all and 6 = very risky. Standard deviations are given in parantheses.

with past experience as a covariate. The analysis of the dependent variable, perceived risks, yielded a significant main effect for the time period factor ($F(1,1553) = 34.46, p < 0.001$). Participants perceived greater danger when confronted with the risk expressed for 30 years than with the risk expressed for one year. The main effect for graphical display was also significant ($F(1,1553) = 4.22, p = 0.04$). The graphical display decreased perceived risks. The interaction term was not significant ($F(1,1553) = 0.07$, n.s.). The covariate past experience significantly influenced perceived risks ($F(1,1553) = 28.67, p < 0.001$). Means and standard deviations are shown in Table II.

The effect of different time periods on perceived risks observed in Study 1 was successfully replicated using a representative sample. In Study 1, the risk expressed for one year was compared with the risks expressed for 40 years or 80 years. In Study 2, a time period of 30 years was compared with the risk expressed for one year. Results suggest, therefore, that the specific duration of the longer time period is of minor importance.

Graphical display had an unexpected effect. Participants who were confronted with the pie chart perceived fewer risks compared with participants who read the verbal information only. It could be that even for a time period of 30 years, the probability depicted in a pie chart was not that impressive. Further research needs to examine whether the effect of graphical displays is the same for small as for large probabilities. Additionally, graphical displays may have an influence on risk perception when the graphical display emphasizes information elements different from those in a verbal description (Stone *et al.*, 2003).

Despite the low reliability of the scale measuring past experience, our analysis revealed a significant effect of experience on risk perception. Past experience had the predicted impact on risk perception. Participants' risk perception was strongly influenced by their own experiences with flooding. Due to the low reliability, we might have underestimated the effect. Utilizing a scale with a higher reliability might reveal a greater effect of past experience. Based on these results, we can assume that people who experienced past flooding events had images that were tagged with affect (Slovic *et al.*, 2004). Persons who stored images or narratives about floods in their memories, perceived the same probability information differently from people without such memories.

4. STUDY 3

Past experience seems to have an important impact on how probabilities are interpreted. However, in Study 2, the availability of past experience was assessed utilizing survey questions. Therefore, it cannot be ruled out that other factors may be crucial. The goal of Study 3 was to directly manipulate the availability of flood events. According to the notion of Slovic *et al.* (2004), availability may work because concrete and imagined images come tagged with affect. Manipulation of such images should evoke emotions in participants who should, as a result, perceive greater risks than participants who do not receive this treatment.

4.1. Participants

A total of 92 students from the University of Zürich participated in the study (52 women, 40 men). Participants' mean age was 26.2 years ($SD = 5.8$).

4.2. Materials and Procedure

Affect was manipulated utilizing photographs. In the experimental group, participants were asked to look at two photographs depicting houses during flood. In the control group, participants were asked to look at two photographs depicting houses without any reference to flood. Participants looked at the photographs for about 30 seconds.

The same scenario as in Study 2 was utilized. All participants were asked to imagine that they were planning to buy a house, and that they had received some information about the probability of a flood. The scenario emphasized that "this flood causes severe damage, which is only partly covered by insurance." Half of the participants received the risk information based on one year; the other half received the risk information for a time period of 30 years.

After reading one version of the short scenario, participants were asked: "How risky would you consider that living in a place like this is?" Participants

Table III. Study 3: Means and Standard Deviations of Responses to "How Risky Would You Consider Living in a Place Like This Is?"

	Time Period	
Condition	1 Year	30 Years
Experimental group	2.95 (1.21) $n = 22$	3.83 (1.07) $n = 23$
Control group	2.22 (1.09) $n = 23$	3.38 (1.44) $n = 24$

Note: Ratings made on a six-point scale: 1 = not risky at all and 6 = very risky. Standard deviations are given in parantheses.

assessed the risks using a number between 1 ("not risky at all") and 6 ("very risky"). Participants were tested individually. They were randomly assigned to one out of the four conditions.

4.3. Results and Discussion

Data were submitted to a 2 (time period: 1 year/30 years) × 2 (affect manipulation: houses in a flooded area/neutral houses) ANOVA. The analysis of the dependent variable, perceived risks, yielded a significant main effect for the time period ($F(1,88) = 16.04$, $p < 0.01$), and a significant main effect for the affect manipulation factor ($F(1,88) = 5.50$, $p = 0.02$). The interaction term was not significant ($F(1,88) = 0.32$, n.s.). Means and standard deviations are shown in Table III.

For the time period factor, the expected effect was observed. Utilizing a longer time period increased perceived risks. In addition, the hypothesized effect for the experimental manipulation was observed. Availability of affect-laden images about flooding events increased perceived risks. Based on these results, we can assume that the images evoked negative emotions, which in turn lead to higher perceived risks. Due to the link between the affect and availability heuristics, we cannot determine which heuristic provides the better explanation for the present findings. However, results of Study 3 support the notion that use of the affect and availability heuristics could be important for successful risk communication.

5. GENERAL DISCUSSION

Feelings and affect are important factors that influence perceived risks (Slovic *et al*., 2004). Affect, therefore, should be taken into account for successful risk communication. The present research tested the hypothesis that the evocation of negative affect may be an efficient way for increasing perceived risks. Results of the present studies clearly supported this hypothesis. These results are in line with the affect heuristic proposed by Slovic and colleagues (Finucane *et al*., 2000; Slovic *et al*., 2002, 2004). Because affect may increase the availability of a risk (Slovic *et al*., 2004), the availability heuristic provides an equally viable explanation for the present results.

Study 1 and Study 2 examined the influence of various presentation formats on perceived risks. Results suggest that a frequency format and a format giving probabilities for longer periods of time both emphasized the threat of a risk. Study 2 showed further that people with flood experience interpreted the same probability differently from people with no such experience. Experiences with a hazard lead to higher levels of perceived risk. Study 3 directly manipulated availability of affect-laden imagery. Participants who had looked at photographs showing houses in a flood zone evaluated the risk information as indicating greater danger than participants who looked at neutral photographs.

The present studies support the notion that utilizing the affect heuristic is important for successful risk communication. One reason for communicating risk to the public is to improve the correspondence between the assessed magnitude of a risk and people's responses to that risk (Weinstein & Sandman, 1993). Because people often underestimate low-probability risks, raising risk awareness is usually one of the goals of risk communication about natural hazards. Raising risk awareness can be achieved when risk information is presented in the form of frequencies or in the form of probabilities for a longer time period. Both approaches may evoke affect, thereby increasing the availability of a risk, resulting in greater perceived risks.

Participants' experiences with floods influenced their interpretation of risk information. Participants who could remember images related to flood assessed the given risk information as indicating greater risk than participants who could not remember such images. In risk communication, narratives from people who directly experienced floods could be used. Such narratives may evoke affect-laden imagery that leads to an increased level of perceived risk. Study 3 showed that the presentation of flood photographs had this effect. To increase effectiveness, photographs showing the outcome of a low-probability risk should be included in risk communication materials.

Some limitations of the present research need to be discussed. The present research focused on gaining people's attention to a risk in order to increase

their risk perception. To raise precautionary behavior, additional psychological factors such as self-efficacy (Murray-Johnson *et al*., 2004; Witte, 1992) would have to be taken into account.

Risk perception was measured by only one item. Single-item measures tend to have low reliabilities. Therefore, we may have underestimated the effect of the affect heuristic.

Participants' affect was not measured. However, our results suggest that our manipulations evoked affect and therefore influenced risk perception. In future studies, specific forms of affect should be assessed by using survey techniques. Furthermore, participants should be asked what kinds of images were evoked in their minds by the different communication formats. This would provide greater insight into the affect-laden imagery that is an important part of the experiential system.

Results were interpreted within the framework of the affect heuristic (Slovic *et al*., 2004) and the availability heuristic (Tversky & Kahneman, 1982). The availability heuristic has been proposed as an explanation for the biases in probability judgments. Slovic *et al*. (2004) suggested that the availability heuristic may work because remembered images are associated with affect. In the present study, participants' decision processes were not examined. Whether the availability heuristic or the affect heuristic provides the better explanation for the present findings, therefore, cannot be fully answered. In future studies, it would be most important to test ways to disentangle the mechanisms of the affect and availability heuristics. The process should be examined in more detail, with the aim of determining whether it is the number of instances remembered or the affect associated with the images that is more important in shaping perceived risks.

ACKNOWLEDGMENTS

Part of the research was made possible through a grant by PLANAT.

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