The Role of Affect in Communicating Flood Risks

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Introduction (1)

- Serious flooding event in Switzerland in August 2005
- Damage: 1 billion US Dollars
- Discussion about inadequate disaster preparedness at the community and household level
Introduction (2)

- Basic assumption: The 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.
- Aim of the study: Identify psychological factors, on the individual household level, that help or hinder the realization of possible damage prevention measures. Results should allow for more effective risk communication.
- Focus on affect, on specific emotions
- Study designed to…
  - … test the hypothesis that people who were affected by a flood in the past differ in their assessments of the negative aspects of a flood compared with people who have no first-hand experience with floods (underestimation of negative affect).
  - …test the hypothesis that personal experience of negative affect positively influences mitigation behavior.
**Introduction (3)**

<table>
<thead>
<tr>
<th>Affective state</th>
<th>Affective valence</th>
<th>Intensity of experience</th>
<th>Duration of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscious emotional experiences:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Affect (positive/negative)</td>
<td>Negative</td>
<td>High</td>
<td>Short</td>
</tr>
<tr>
<td>• Emotions or subjective feelings (several specific emotions like anger, fear, sadness, disgust, interest, joy etc.)</td>
<td>Positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Moods</td>
<td>Negative</td>
<td>Low</td>
<td>Medium / Long</td>
</tr>
<tr>
<td>• Preferences</td>
<td>Positive</td>
<td></td>
<td>Short</td>
</tr>
<tr>
<td>• Attitudes</td>
<td>Negative</td>
<td>High / Low</td>
<td>Short</td>
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</tbody>
</table>

- Affect: A category of emotions that are the subject of the experience and are typically more intense and transient.
- Emotions: Subjective feelings that are more specific and often related to particular situations or events.
- Preferences: Long-term inclinations or inclinations.
- Attitudes: Short-term inclinations or inclinations.
Introduction (4)

• (a) Emotions are triggered by an external (or internal) stimulus which has been appraised as relevant.

• (b) Emotions let us experience the meaning of a stimulus

• (c) Emotions prepare to deal with relevant events and have a strong motivational force.

• (d) Emotions engage the entire person, urging action or imposing action suspension.

• (e) Emotions open up possibilities for prioritization of control over experience and behavior.
### Introduction (5)

**Two Modes of Information Processing / Thinking:** The Experiential and Analytic System

<table>
<thead>
<tr>
<th>Experiential System</th>
<th>Analytic System</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Holistic</td>
<td>1. Analytic</td>
</tr>
<tr>
<td>2. Affective: pleasure-pain oriented</td>
<td>2. Logical: reason oriented (what is sensible)</td>
</tr>
<tr>
<td>3. Associationistic connections</td>
<td>3. Logical connections</td>
</tr>
<tr>
<td>5. Encodes reality in concrete images, metaphors, and narratives</td>
<td>5. Encodes reality in abstract symbols, words, and numbers</td>
</tr>
<tr>
<td>7. Self-evidently valid: “experiencing is believing”</td>
<td>7. Requires justification via logic and evidence</td>
</tr>
</tbody>
</table>

Slovic et al., 2004
Method

- N=201 face-to-face Interviews
- May - July 2006 (9 - 12 months after the flooding)
- Two groups: n=105 people affected by flooding in 2005 and n=96 people not affected in 2005
- Affected: 57% female, 43% male, mean age=49
- Not affected: 47% female, 53% male, mean age=54
- Median of damage in the affected group ca. 60’000 US Dollars
- People not affected were chosen from locations with comparable exposure to flooding risk, based on official risk assessment maps.
- Questions for the affected and the unaffected group were formulated to be as similar as possible.
- Open-ended AND closed-ended questions (rating scales)
Results (1): **Open-ended Question**: Assessment of Flooding: Memory vs. Imagination
Results (2):

Closed-ended Question: Assessment of Flooding

- pollution, soiling of the house **
- time and effort for cleaning **
- uncertainty during the event **
- partial destruction of the house
- uncertainty after the event **
- fear during the event
- loss, destruction of irreplaceable material assets
- financial loss *
- loss of earnings

* p<.05
** p<.01

mean

affected (N= 101-104)
not affected (N= 90-95)
Results (3):

**Closed-ended Question:**
Assessment of Flooding

- A flood makes me feel scared
- I am afraid of future floods. **
- The floods of 2005 triggered strong negative feelings in me. **
- Reports about floods in Switzerland evoke fear in me. *

* and ** indicate statistical significance:
* p < .05
** p < .01

Results (4):
Closed-ended Question: Preventive Measures Taken

- Acquisition of sandbags or other barriers against water
- Structural measures (new walls, sealing of windows)
- Preparation of basement evacuation
- No storage of valuable things in the basement
- Acquisition of further information
- No preventive measures taken

Results (5):
Importance of Fear of Flood Damages as a Motive for Taking Preventive Measures
Conclusion

• Small probabilities are often underestimated (Kahneman & Tversky, 1979).
• Flooding hazards are considered to be low-probability risks.
• Goal of risk communication: Raising risk awareness
• Resolution of underestimation problem:
  – Focus on probability formats (Gigerenzer & Hofrage, 1995; Yamagishi, 1997) or on probabilities for longer time periods (Slovic et al., 1978, ; Keller, Siegrist & Gutscher, 2006)
  – Presenting risk outcomes as affect-rich outcomes (Rottenstreich & Hsee, 2001)
• Theoretical basis:
  – Availability heuristic: Ease of retrieval of images of hazards as cue for probability.
  – Affect heuristic: Remembered/retrieved images of hazards are tagged with affect.
• Therefore the challenge of risk communication lies not so much in providing rational information to the analytic system but in adequately addressing the experiential system.
• People have difficulty imagining potential future affective states like uncertainty, fear, shock, panic etc. (Gilbert et al., 1998).
• Is there a substitute for firsthand flood experience?