

# 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)

Affective state	Affective valence	Intensity of experience	Duration of experience
Conscious emotional experiences: <ul style="list-style-type: none"> <li>• <b>Affect</b> (positive/negative)</li> <li>• <b>Emotions</b> or <b>subjective feelings</b> (several specific emotions like anger, fear, sadness, disgust, interest, joy etc.)</li> </ul>	Negative           Positive	High	Short
<ul style="list-style-type: none"> <li>• <b>Moods</b></li> </ul>	Negative   Positive	Low	Medium / Long
<ul style="list-style-type: none"> <li>• <b>Preferences</b></li> <li>• <b>Attitudes</b></li> </ul>	Negative Zero (neutral) Positive	High / Low	Short

# 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

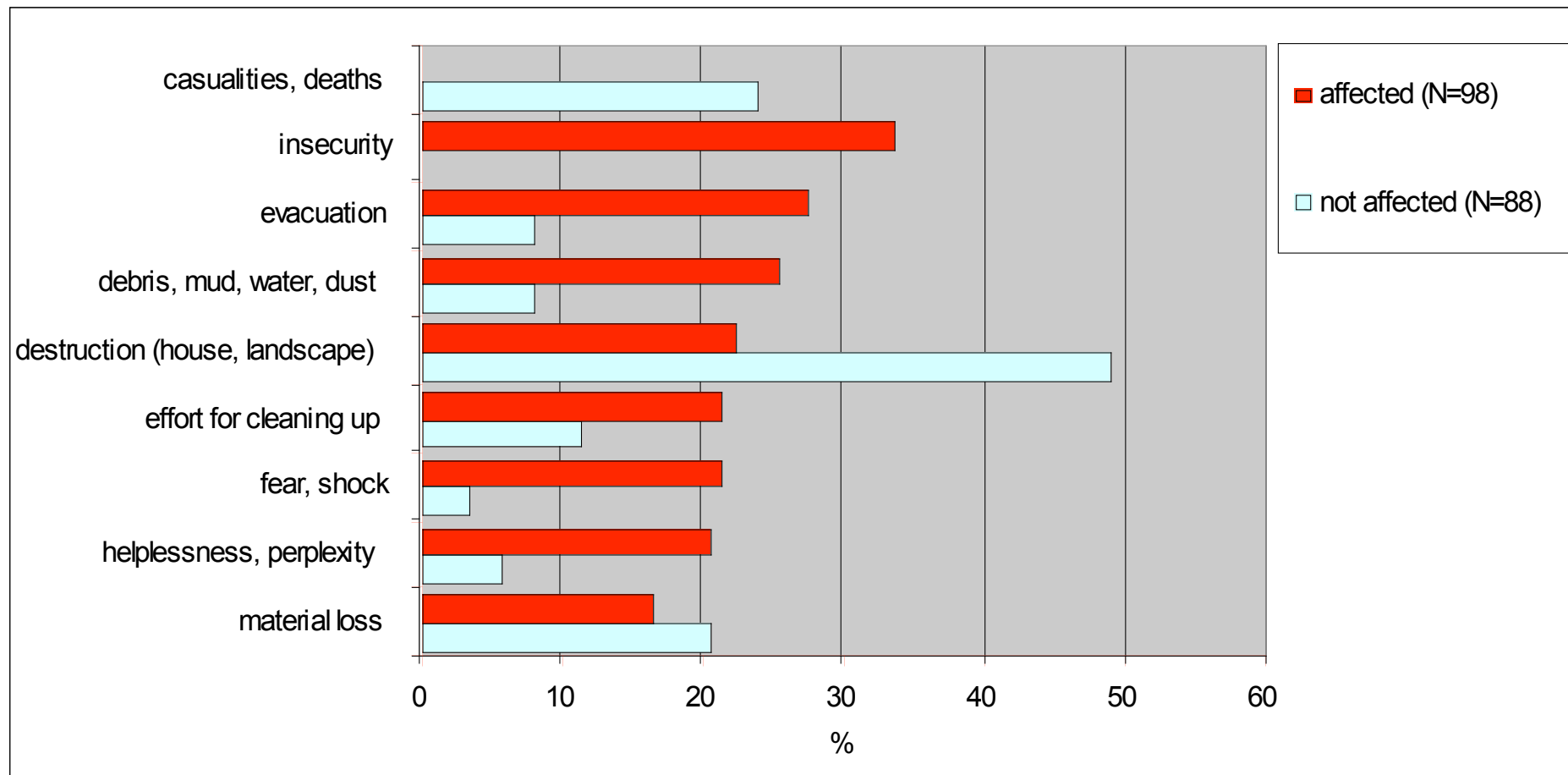
Experiential System	Analytic System
<ol style="list-style-type: none"> <li>1. Holistic</li> <li>2. Affective: pleasure-pain oriented</li> <li>3. Associationistic connections</li> <li>4. Behavior mediated by “vibes” from past experiences</li> <li>5. Encodes reality in concrete images, metaphors, and narratives</li> <li>6. More rapid processing: oriented toward immediate action</li> <li>7. Self-evidently valid: “experiencing is believing”</li> </ol>	<ol style="list-style-type: none"> <li>1. Analytic</li> <li>2. Logical: reason oriented (what is sensible)</li> <li>3. Logical connections</li> <li>4. Behavior mediated by conscious appraisal of events</li> <li>5. Encodes reality in abstract symbols, words, and numbers</li> <li>6. Slower processing: oriented toward delayed action</li> <li>7. Requires justification via logic and evidence</li> </ol>

Slovic et al., 2004

# Method

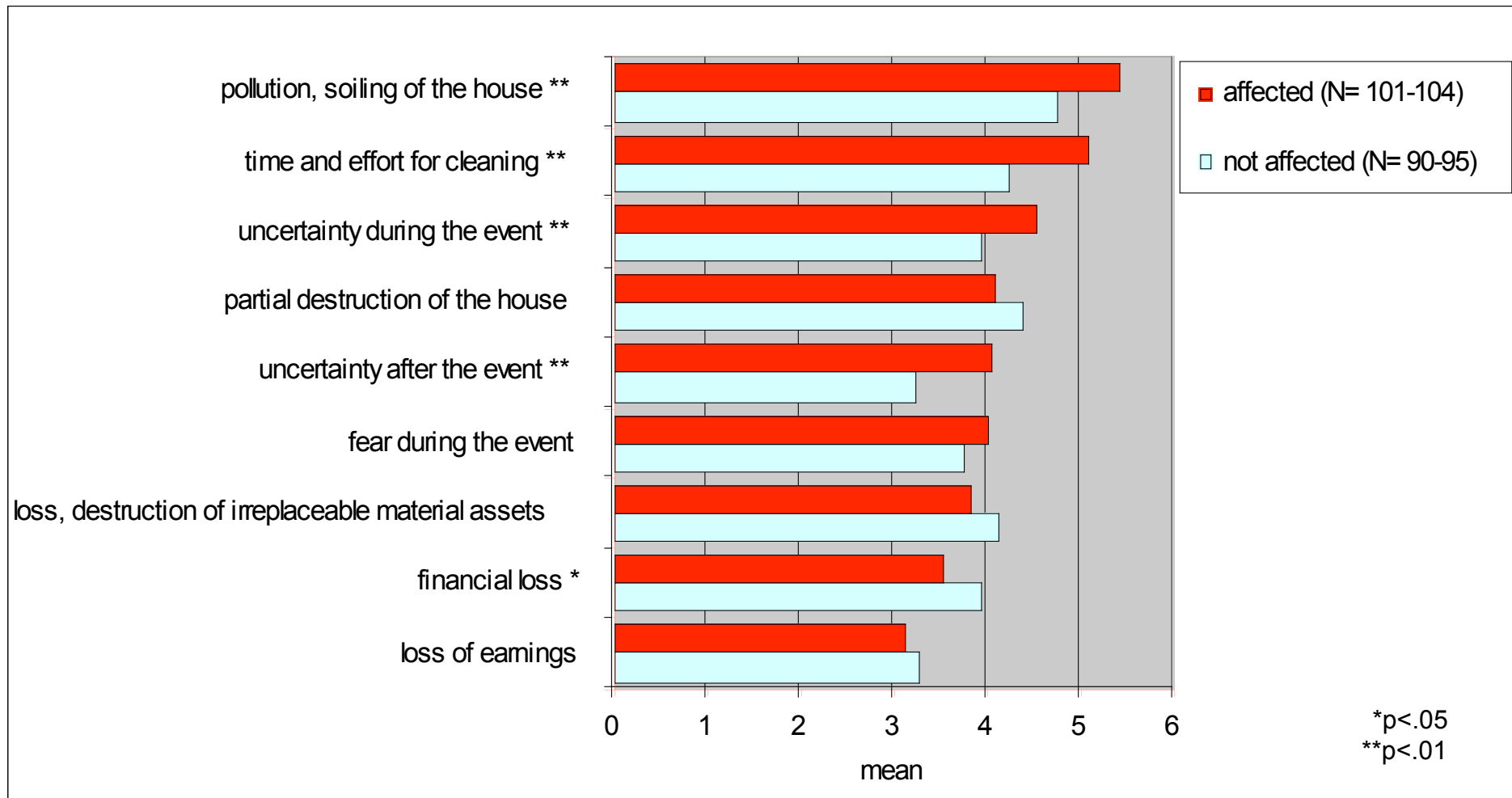
- N=201 face-to-face Interviews
- May - July 2006 (9 - 12 months after the flooding)
- Two groups: n=105 people affected by flooding in 2005 and n=96 people not affected in 2005
- Affected: 57% female, 43% male, mean age=49
- Not affected: 47% female, 53% male, mean age=54
- Median of damage in the affected 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

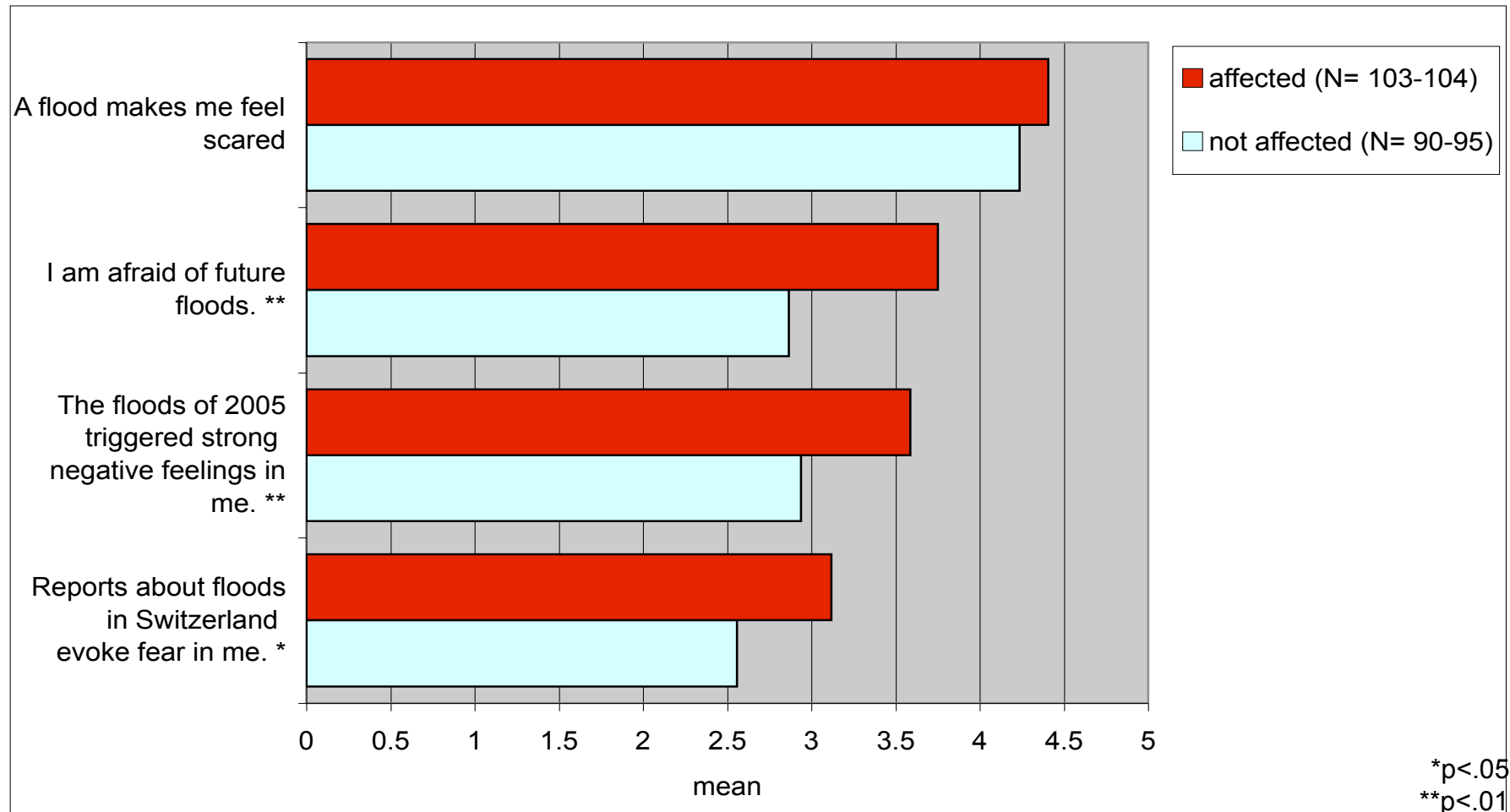




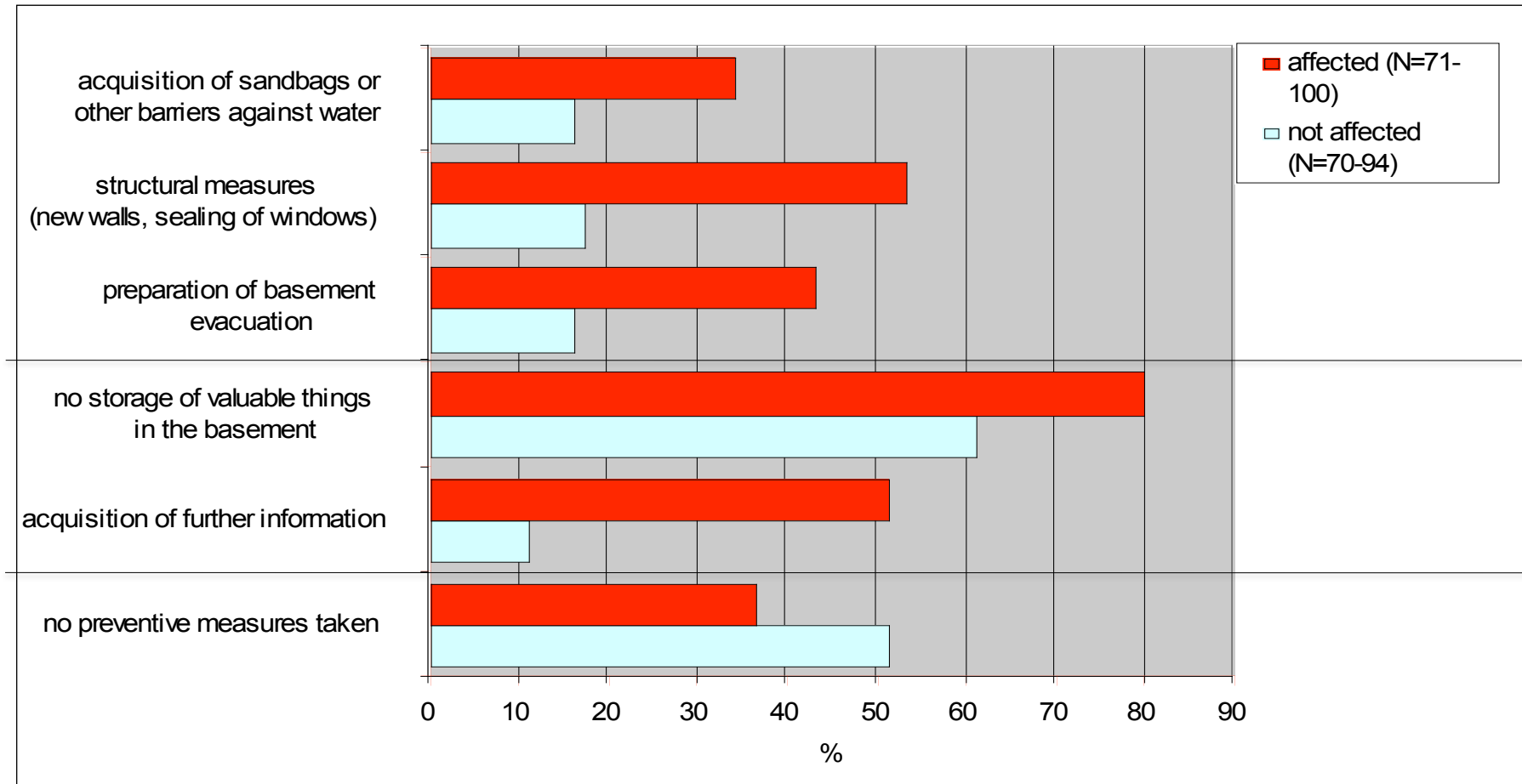
# Results (2): Closed-ended Question: Assessment of Flooding



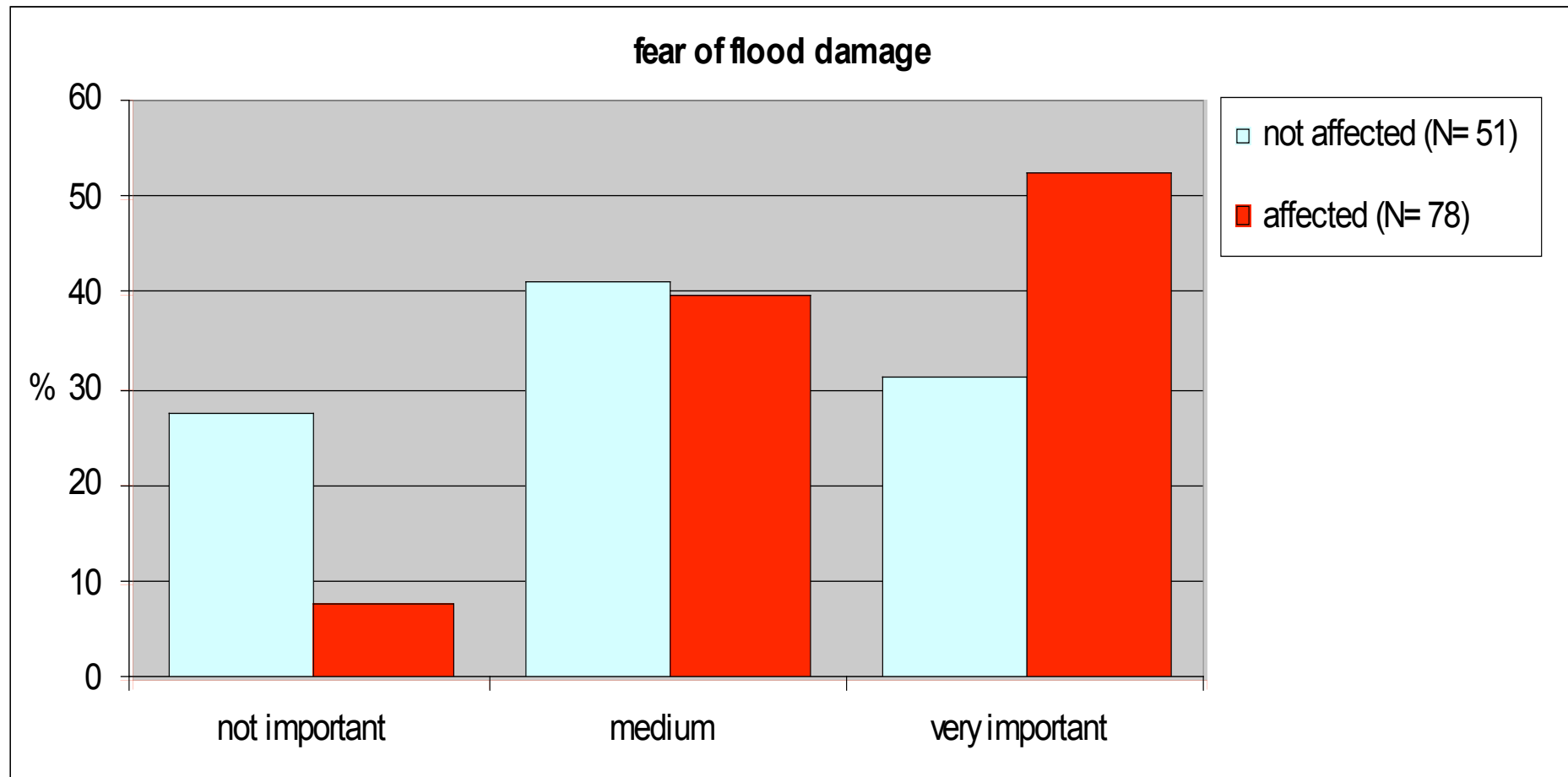
# Results (3): Closed-ended Question: Assessment of Flooding



# Results (4): Closed-ended Question: 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 & Hoffrage, 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?
  - “Social engineering” against fading memories? Implementation of yearly “flood days”, on irregular unannounced dates? More use of person-to-person communication? Evoking emotions through use of empathy?