How Near-miss Events influence Decisions in Situations of Risk: Evidence from Natural and Man-made Disasters

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Defining Near-Miss

- A Near-Miss is a prior, same-category event with a probabilistic outcome, whereby because of chance, the outcome was positive rather than negative

- Examples:
  - A hurricane forecast to hit your neighborhood that veers off course just before landfall
  - A predicted 10 inch snow storm that fails to produce a single flake
  - A would-be bomber's bomb fails to detonate on first try allowing nearby individuals (e.g., passengers) to thwart the plan

Interpreting Near-misses

- In Theory:
  - Soberly evaluated as an event that almost happened
    - Evoking counterfactual thoughts (maybe?)
    - Activating thoughts of danger
    - Encouraging protective action
    - Thus, serving as early warning signals
  - Celebrated as an event that could have happened but did not
    - Likely to confirm that system is resilient
    - Activating thoughts of success and safety
    - Encouraging complacency

Applying Norm Theory

- A stimulus (object, event) recruits its own context, which is used to construe (interpret) the meaning or implication of that stimulus.
- This construal will be applied to subsequent same-category events ("stimulus centered judgment").
- Thus salient contextual details for any particular near-miss event should influence how it is construed, as well as perceptions of subsequent same-category events
- For example,
  - Near-misses where the positive outcome is salient should activate feelings of safety and complacency.
    - These may encourage people to differentiate how their case-specific chances of survival might be better than the base-rate, statistically calculated chances.
  - Near-misses that highlight a disaster that almost happened should activate feelings of danger and encourage mitigation activity.

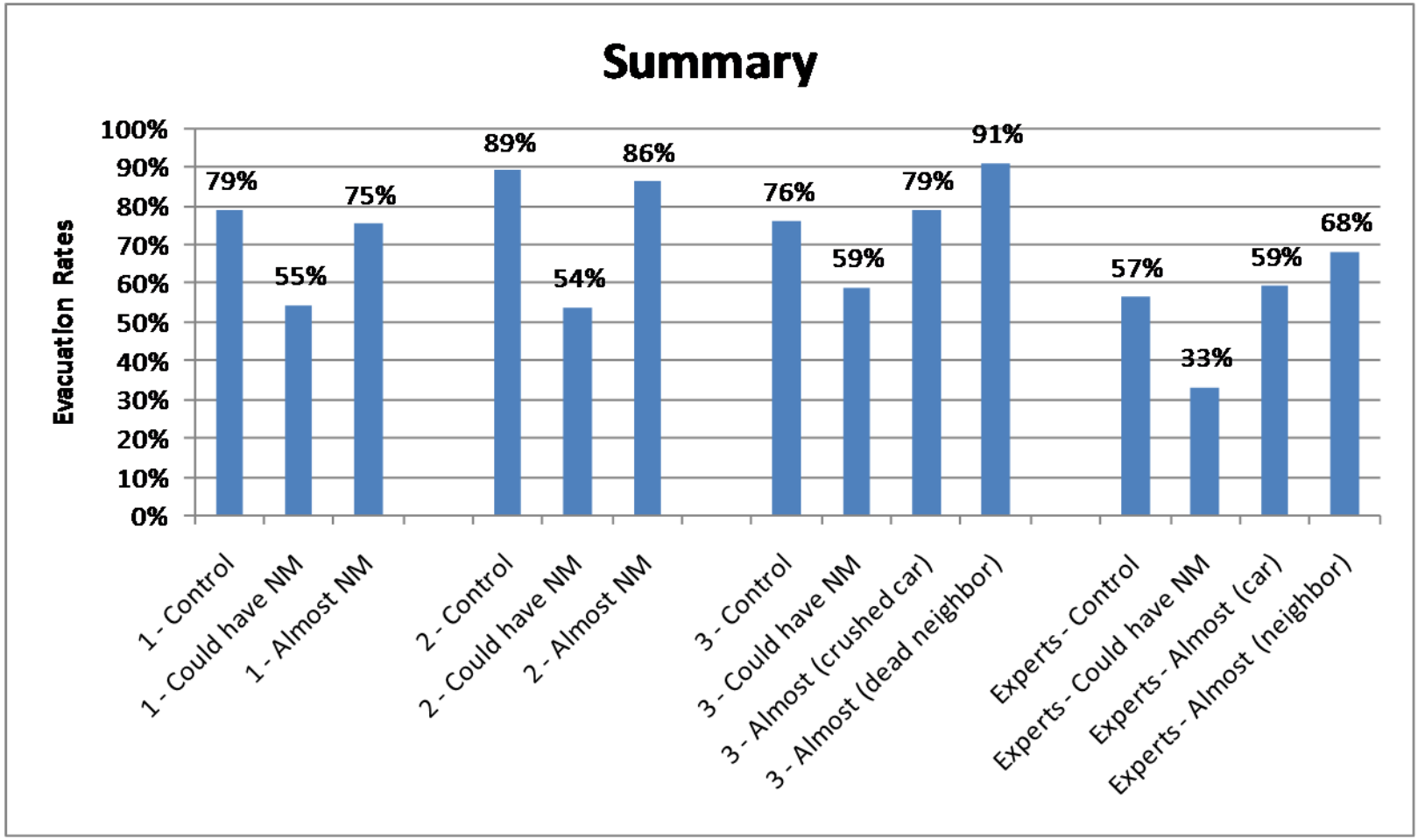
Our Prior Research

- People tended to focus on the salient positive outcome
  - Possibly overweighting what happened rather than what could have happened
- They acknowledged probabilistic nature of outcome that happened but seemed to underweight the role of chance
  - They showed no difference in their statistically calculated likelihoods (relative to controls without near miss information)
  - But they felt differently about how risky this statistically calculated likelihood of disaster was
  - Raised their subjective perceptions of risk

Operationalizing Near-Misses to enhance salience of possible negative outcome

- Two types of Near-Misses
- "Could Have" Near-Miss: A near-miss with no cue suggesting something bad almost occurred (e.g., you have lived in this house through 3 prior storms similar to that forecasted and you and your neighbors have never had any property damage.)
- "Almost" Near-Miss: A near-miss with some cue that suggests that it almost occurred (e.g., *Could Have Near-Miss* + In the last storm, however, a tree fell on your neighbor's house completely destroying the second story. If anyone had been inside, they would have been seriously hurt.)

Results from Experiments in Natural Disaster Context



Studies I, & 3: Georgetown UG& MBA students (no diff)
Study 2: Tulane UG students (75% of whom evacuated for Katrina)
Study 4: Emergency Managers who volunteered to complete exercise

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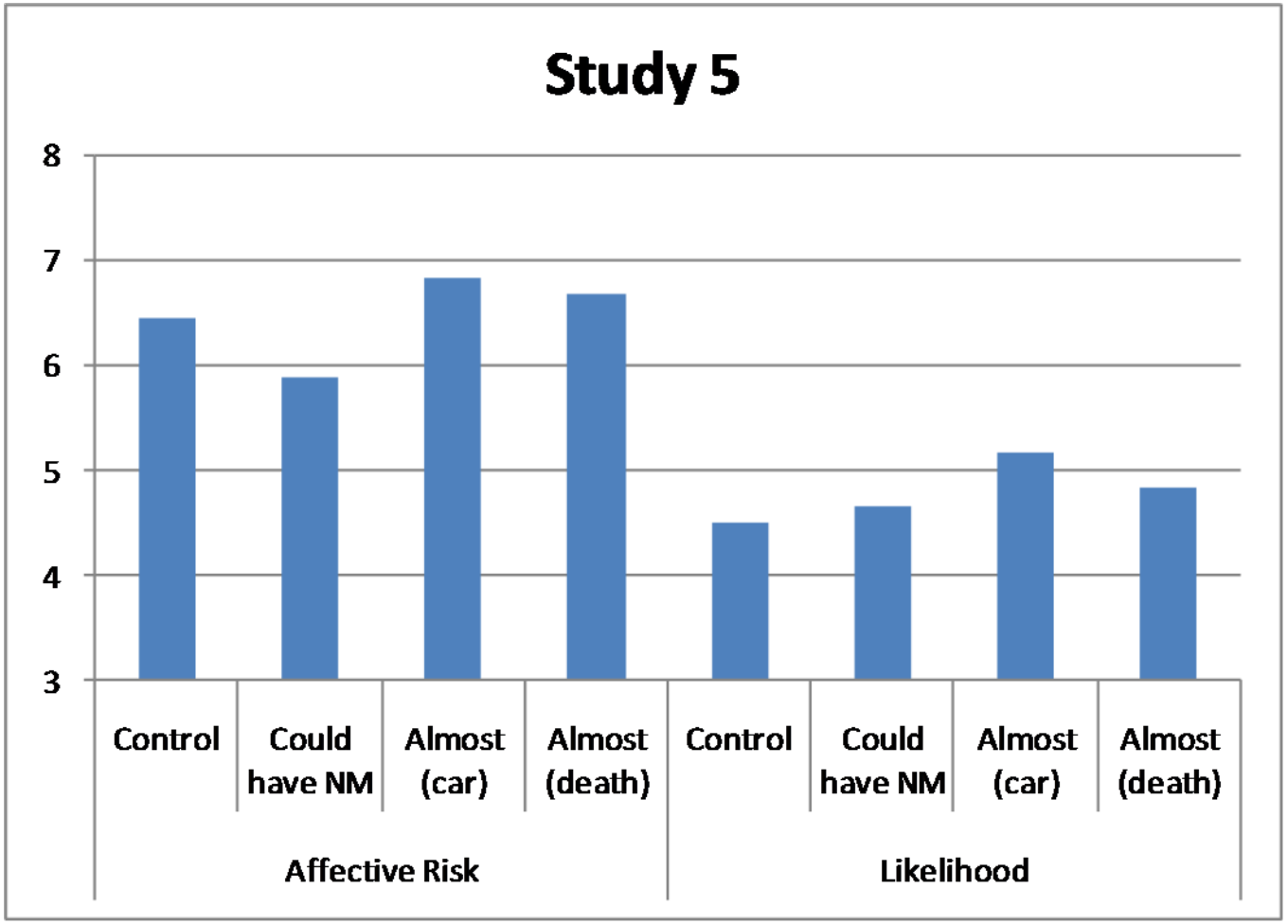
Perceptual Data

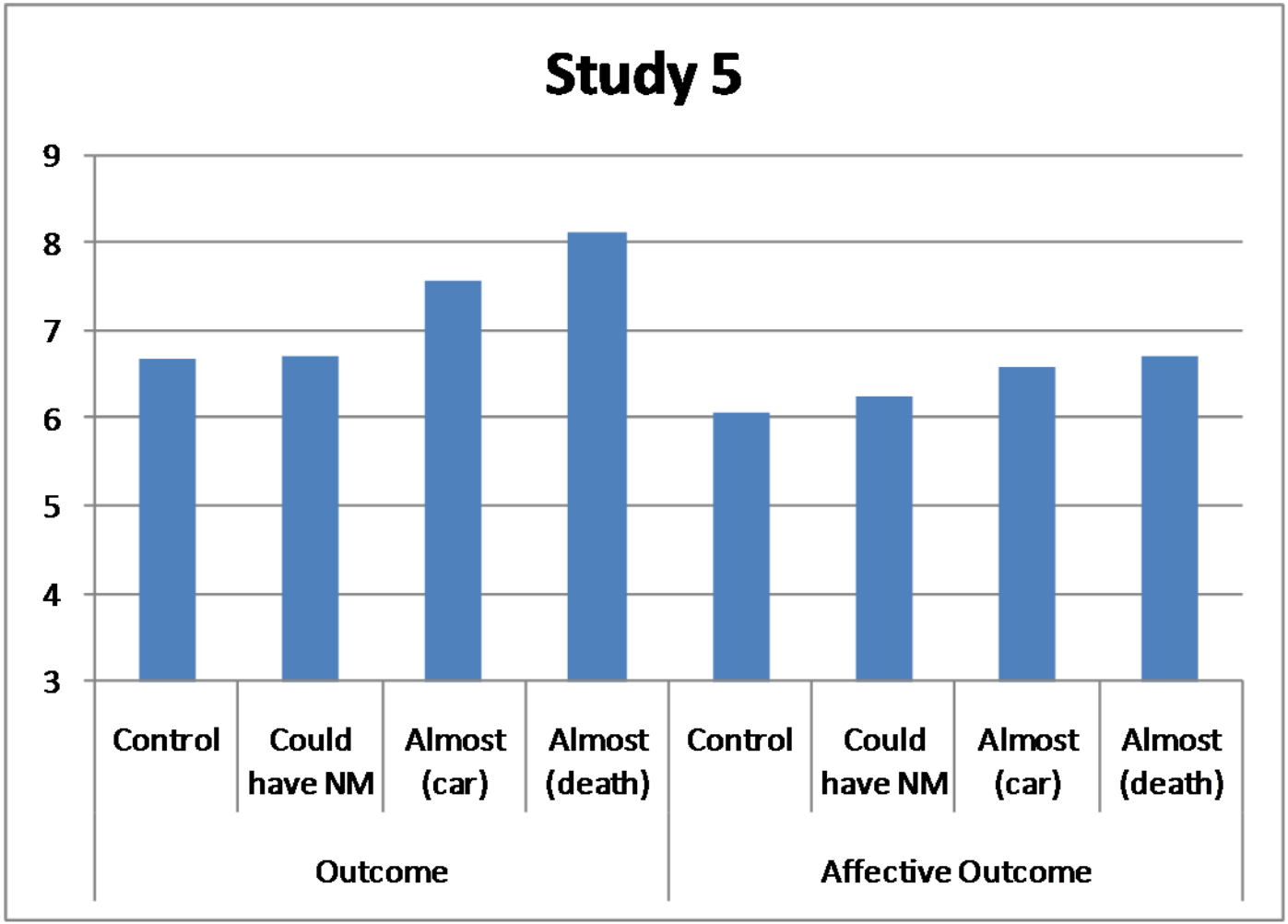
Rotated Component Matrix

	Component			
	Affective Risk	Outcome	Affective Outcome	Likelihood
Worried	.921		.189	.134
Anxious	.903		.221	.147
Vulnerable	.878	.180	.223	.198
Distressed	.873	.135	.193	.199
Dread	.863	.135	.214	.146
Risky	.517	.330	.121	.314
DamageBad	.159	.895		
HowMuchHarm	.121	.868		
RDamageDeal		.586	.399	
RSafe	.295	.122	.873	.105
RProtected	.340	.103	.863	
ChancesHit	.160			.912
LikelyDamage	.330	.133		.832

Results from Experiments in Natural Disaster Context



Results from Experiments in Natural Disaster Context



Terrorism Context

- Flight 253– a would be bomber failed because of chance
  - "could have but didn't" near miss, i.e. – "the system worked"
    - Salient positive (heroic) outcome
  - "almost" near miss, i.e.- "disaster almost happened"
    - Salient negative outcome (prior successful plane crashes)

- How did the public construe this event? Panel data:
  - How much do you agree/disagree with the following statements regarding the attempted airplane attack on Flight 253
    - Flight 253 was **almost** blown up.
    - It was just **luck** that the bomb didn't go off.
    - Since this attempt on Flight 253, I think flying has become **more risky.**
- Did it influence their behavior?
    - How likely are you to **postpone air travel** as a direct result of this event?

Terrorism Context

- N=608 respondents (N=382 for final question, because of non-applicability)

- Regression results

Perceived **Risk of Flying** = 1.09 + **.34 (Almost)** + **.12 (Luck)** + e.

Postpone Air Travel = .62 + **.33 (Almost)** +.12 (Luck) + e.

Postpone Air Travel = -.24 + **.77 (Perceived risk)** + .05 (Almost) + .02 (Luck) + e.

Conclusions

- Individuals are influenced by prior near-miss events
- How the near-miss is construed is critical to understanding people's decisions about necessary protective and responsive activities for themselves and their communities.
- Details of the near-miss influence how the category of events is construed
  - Salient *Almost* details: Feels more risky
  - Salient *Could Have but Didn't:* Feels less risky
- Perceptions of risk affect future decisions (i.e., if system worked, why change it?)

Future Research

- We've manipulated nature of the consequences (positive, negative, very negative), how might manipulating likelihood estimates influence construals and action?
  - Initial results suggest statistically estimated likelihoods not very consequential
- How do construals of events (or categories of events) change over time?
  - Are events re-classified from almost to could have?
  - Is there a decay rate to vigilance?
  - How do hits influence construals? And is there a half-life for the influence of hits?