Concrete Visualizations Increase Perception of Low-Probability Wildfire Risks

Wen Xu[1,2], Lace Padilla[2], and Michelle McCauley[1]

[1] Department of Psychology, Middlebury College, VT
[2] Khoury College of Computer Sciences, Northeastern University, MA

We want to present data in a way that **prevents people from neglecting low-probability natural disaster risks**

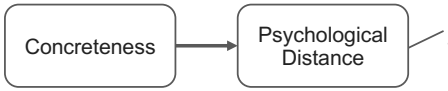
Neglecting small probabilities is especially common for **natural disaster risks**

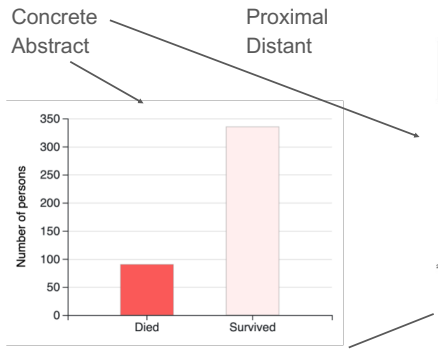
People often fail to insure themselves against floods even when subsidized

Failures to take preventive measures against natural disasters can cause **high consequences**

Concrete visualizations should raise risk perception theoretically, but this hasn't been empirically tested

According to **Construal Level Theory**, concrete visuals increase **probability** perception by lowering **psychological distance**



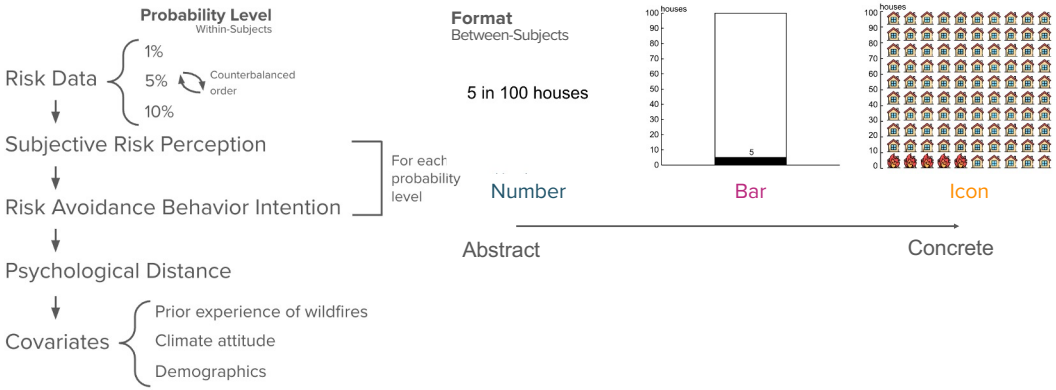


Concrete visualizations can raise empathy:
This visualization led to more donations to help the migrant crisis (Morais et al., 2021)

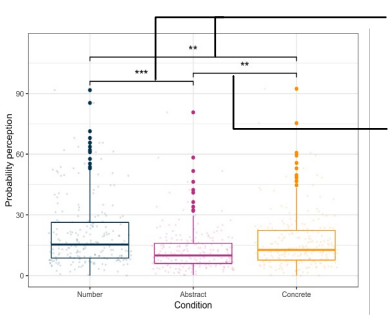
However, **previous findings are mixed** about whether concrete visualizations increase **risk perception**

Our study shows that **concrete visualizations** lead to **higher perception** of low-probability wildfire risks

Methods: We presented wildfire risk data in three formats, and measured three risk estimates and three covariates



Results: Concrete visualizations increase risk perception without compromising accuracy



Number > Visualization

Icon > Bar

Visual concreteness increases risk perception for proportional formats

Non-proportional presentation overrides the effect of concreteness

Non-proportional presentation can **hurt accuracy**

	Concrete	Proportional	Risk Perception	Accuracy
Icon	High	√	Medium	Most accurate
Bar	Medium	√	Low	Accurate
Number	Low	×	High	Denominator neglect