European Scholars Find Prior Experience Heightens Perceptions of Disaster Risks

Changes in risk perception about hurricanes and nuclear energy also explored in Risk Analysis

Washington, D.C. – People who have experienced a disaster such as an earthquake, flood, or terrorist attack have a heightened perception of the risks posed by these and, in some cases, unrelated risks, according to a study involving 1,045 survivors of these incidents. A new study, which included participants from seven European countries, points to the importance of risk perception analysis in helping governments and others understand how people interpret and respond to crises.

The new findings come at a time when emergency management officials are seeking to communicate with the public about the need for greater awareness of risks ranging from hurricane flooding and increased forest fires to terrorist attacks and climate change. Risk perception researcher Daniela Knuth, along with two colleagues from the University of Greifswald, Germany, and Lynn Hulse from the University of Greenwich, United Kingdom, outline how experience and “objective risk” affect risk perception. They define “objective risk” as the likelihood of the average person experiencing emergency events and their negative consequences. Their paper, “Risk perception, experience and objective risk: A cross-national study with European emergency survivors,” appears in the journal Risk Analysis, published by the Society for Risk Analysis. The study draws on data from people in Germany, the Czech Republic, Poland, Sweden, Spain, Turkey and Italy.

Focused on “involuntary, memorable events,” the researchers administered a questionnaire to gather data on whether experience with a particular hazard will lead to elevated risk perceptions for this hazard. Based on their findings, they conclude that “experience with a particular hazard was one of the most important predictors of perceived risk of the same hazard.” This effect was most clearly seen for people who had experienced floods, mainly in the Czech Republic, where 91.7 percent of respondents recalled floods, Germany (85.7 percent) and Poland (61.5 percent). It was also strongly seen for earthquake survivors, mainly from Turkey and Italy, where almost half of these earthquakes occurred in the last 30 years.

In exploring whether experience with one hazard will elevate the perceived risk from at least some other hazards, the researchers found some evidence of such “cross-over effects” in risk
perception. For example, “Experience with a public fire not only increased perceived risk of a public fire but also perceived risk of a terrorist attack.” Furthermore, “Experience with a public fire and a terrorist attack increased perceived risk of a traffic accident,” possibly because all three events share a common context of occurring in public settings.

The researchers also focused on how “objective risk” influences risk perception. They found that the objective risk of earthquakes and terrorist attacks most strongly influenced perceived risk. For example, in Turkey and Spain, where such risks were the highest, people’s perceptions reflected the statistical likelihood of experiencing these emergencies.

Lastly, the researchers examined whether different countries would exhibit differences in perceived risk and found that they did. Perceived earthquake risks differed most markedly, followed by perceived risks of terrorist attacks and floods. The researchers conclude: “Perceived risk for all events was significantly influenced by country of residence although the extent of the influence differed across events.” For example, respondents to the risk perception questionnaire scored high across perceived risks in Turkey, where earthquakes and terrorist attacks are experienced more frequently, as are traffic accidents. However, in all seven countries, the risk of domestic and public fires was perceived similarly, even though objective risks differed, possibly because such events receive little nationwide media attention and therefore governments and other agencies have less need “to publicize objective information as a counteraction.”

Two other recent studies published in Risk Analysis also tackled key aspects of risk perception. In one study, An Assessment of Change in Risk Perception and Optimistic Bias for Hurricanes among Gulf Coast Residents, Craig Trumbo of Colorado State University and four other colleagues evaluated the level of concern about hurricanes following the 2-year quiescent period after Hurricane Katrina. The researchers used data from 201 questionnaires that were returned at the beginning and end of the two-year period by residents living in 41 counties immediately adjacent to the Gulf Coast. The data were mixed regarding the effects of income, education and other demographic variables on risk perception. But overall, there was a significant drop in the level of hurricane risk seen by the residents. They concluded that risk communicators and emergency managers should work to counter the public’s tendency to become complacent about coastal hurricane risks after a quiet period following highly destructive events.

Another study entitled The Impact of Accident Attention, Ideology and Environmentalism on American Attitudes toward Nuclear Energy, researchers John C. Besley of Michigan State University and Sang-Hwa Oh of the University of South Carolina conducted an analysis of data from three surveys to gauge how the Fukushima disaster affected public opinion about nuclear power in the United States. Their conclusion: Catastrophic events such as Japan’s 2011 Fukushima nuclear power plant accident that receive significant media attention do not necessarily produce a substantial change in public opinion for a variety of reasons. The researchers focused on how the survey respondents might have been affected by their previous environmental worldviews and ideology. For their analysis, they used data from a 2010 baseline survey about attitudes toward nuclear energy, a 2010 survey following the Gulf of Mexico Deep Water Horizon oil spill, and a 2011 post-Fukushima survey. They state that it is inadvisable to predict substantial public opinion shifts following major accidents without also considering
whether individuals paid attention to the accident and how they may have been predisposed to respond.

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“Risk perception, experience and objective risk: A cross-national study with European emergency survivors.”


“An Assessment of Change in Risk Perception and Optimistic Bias for Hurricanes among Gulf Coast Residents.”


“The Impact of Accident Attention, Ideology and Environmentalism on American Attitudes toward Nuclear Energy.”