Depression risk following natural disaster can be predicted via pupil dilation
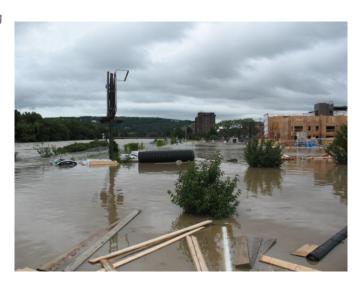
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Pupil dilation could identify which individuals are at greatest risk for depression following disaster-related stress, and help lead to targeted interventions, according to new research from Binghamton University, State University of New York. Credit: Binghamton University, State University of New York.

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Researchers at Binghamton University recruited 51 women who were living in the greater Binghamton, N.Y., area at the time of a catastrophic 2011 flood and who reported a life event indicating that they or their child had been impacted by the flood to some extent. To participate in the study, women were either required to have a lifetime history of major depressive disorder or no lifetime diagnosis of any DSM-IV mood disorders. The researchers' findings indicated that decreased pupil dilation to emotional facial expressions predicted a significant increase in post-flood depressive symptoms, but only among women who experienced higher levels of flood-related stress.

"One of the theories of depression is that there's a lot of vulnerabilities for depression that lay latent until stress activates them," said Mary Woody, Binghamton graduate student and lead author of the study. "Our idea with the flood is. Here's this big objective experiment where there's a disaster outside of everyone's control, and it's happening to the community and there's kind of varying levels of stress that are happening at each of these family dyads. Our idea was to look at a vulnerability factor/risk factor pupil response and see if we could predict which families have the most depression following the flood if they had more of this particular risk factor."

Flooding in downtown Binghamton following Tropical Storm Lee in 2011. Credit: National Weather Service

The findings suggest that interventions designed to target deficits in cognitive-affective responding may be effective for prevention and intervention programs for depression following natural disasters.

"In light of the current findings, it is certainly plausible that individuals displaying decreased pupillary response to emotional stimuli and relatively higher levels of disaster-related stress may be good candidates for cognitive therapy to alleviate their depression," said Brandon Gibb, professor of psychology at Binghamton University, director of the Mood Disorders Institute and Center for Affective Science, and co-author of the study.

The study is the first to examine how pupillary response to emotional stimuli may interact with life stress to predict prospective depression. If replicated and extended, the current findings may further our understanding of how cognitive-affective response plays a role in stress and depression and also aid clinicians in identifying those most at risk following a natural disaster, wrote the researchers.

"After natural disasters only about 20-25 percent of people are going to go on to develop depression. Because there's limited resources following a natural disaster, it will be way too expensive for us to be able to give them the psychiatric care," said Woody. "One of the implications in this project is to be able to identify whom might be at greatest risk for depression following a natural disaster, so we may be able to design some sort of intervention that targets those individuals, and it is more cost effective in that way."

Provided by Binghamton University

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