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Vulnerability to post-traumatic stress disorder runs in families, study shows

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Earthquakes have aftershocks — not just the geological kind but the mental kind as well. Just like veterans of war, earthquake survivors can experience post-traumatic stress disorder, depression and anxiety.

In 1988, a massive earthquake in Armenia killed 17,000 people and destroyed nearly half the town of Gumri. Now, in the first multigenerational study of its kind, UCLA researchers studying survivors of that catastrophe have discovered that vulnerability to PTSD, anxiety and depression runs in families.

Armen Goenjian, a research psychiatrist in the UCLA Department of Psychiatry and Biobehavioral Sciences, and colleagues studied 200 participants from 12 multigenerational families exposed to the earthquake. Participants suffered from varying degrees of the disorders. The researchers found that 41 percent of the variation of PTSD symptoms was due to genetic factors and that 61 percent of the variation of depressive symptoms and 66 percent of anxiety symptoms were attributable to genetics. Further, they found that a large proportion of the genetic liabilities for the disorders were shared.

The research appears in the December issue of the journal *Psychiatric Genetics*.

"This was a study of multigenerational family members — parents and offspring, grandparents and grandchildren, siblings, and so on — and we found that the genetic makeup of some of these individuals renders them

more vulnerable to develop PTSD, anxiety and depressive symptoms," said Goenjian, a member of the UCLA–Duke University National Center for Child Traumatic Stress and lead author of the study.

In addition, Goenjian noted, the study suggests that a large percentage of genes are shared between the disorders.

"That tracks with clinical experience," he said. "For example, in clinical practice, the therapist will often discover that patients who come in for treatment of depression have coexisting anxiety. Our findings show that a substantial portion of the coexistence can be explained on the basis of shared genes and not just environmental factors such as upbringing."

The researchers used statistical methods to assess heritabilities. One method was used to determine the genetic component of a disorder such as PTSD. Then, a separate analysis was used to see if different phenotypes shared genes. The results showed that a significant amount of genes are shared between PTSD and depression, PTSD and anxiety, and finally depression and anxiety.

Until now, Goenjian said, the only studies that have suggested such a heritability of PTSD have been twin studies.

"It's very hard to do family studies on PTSD because typically only single individuals, not whole families, are exposed to a particular trauma," he said. "In our study, we were able to avert this problem since all the subjects were exposed to the same severe trauma at the same time."

In fact, he said, the 200 participants all saw destroyed buildings throughout Gumri, 90 percent witnessed dead bodies left lying in the streets and 92 percent witnessed severely injured people.

The findings are promising for the next step in understanding the underlying biology of these disorders, which is locating the specific genes involved, Goenjian said.

Source: University of California - Los Angeles