

# New study identifies those most at risk of mental health problems following exposure to earthquake

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(PhysOrg.com) -- One of the most difficult tasks for those trying to address the aftermath of a natural disaster, such as the recent Japanese tsunami and earthquake, is how to target their attempts to help the most distressed and needy; both in the short and in the longer term. A study published by Trinity College researchers in this month's issue of the flagship journal *Health Psychology* sheds some light on how this could be done and thus what the future may hold for the health of those affected by recent events in Japan. The study examined the health of Taiwanese people one year after the 'Chi-Chi' earthquake that struck the island of Taiwan on September 21st, 1999. Registering 7.3 on the Richter scale, the quake caused the deaths of over 2,400 people and collapsed over 100,000 homes.

Dr. Michael Daly and Professor Malcolm MacLachlan from the Trinity College School of Psychology and Centre for Global Health, analysed a pre-existing large-scale population survey that was administered a year after the [earthquake](#). They looked at the responses of those whose homes were damaged during the earthquake, or who had to move temporarily from their homes in the months that followed. When contrasted with less affected others, the affected group rated their health as poorer and tended to feel less in control of their lives a year later. When people who felt "very" or "extremely" afraid during the earthquake were considered, the results showed that the affected were prone to higher levels of depression a year after the quake.

However, these adverse outcomes only occurred amongst those with the risk epsilon 4 allele of the apolipoprotein E gene. Possession of the epsilon 4 allele has been linked to adverse psychological outcomes such as depression and memory problems following severe stress. Daly and MacLachlan's study is the first to show that the physical and [mental health](#) effects of an earthquake can be modified by measurable aspects of genetic variation. The implication of these findings for the situation in Japan are that where genetic information is already held for those affected by the earthquake, by using such information mental health workers could more easily identify those who are at greatest risk of responding negatively to such traumatic experiences. Daly and MacLachlan recognise that the use of such information may of course present ethical dilemmas, as would the genetic screening of survivors of [natural disasters](#). The potential value of such information is however clear.

Dr. Daly, whose PhD research was funded by an Ussher Fellowship, at TCD, said: "These results help to elucidate the relationship between genetic variability and psychosocial responses to unpredictable natural disasters that have catastrophic effects."

"The results also highlight the value of using pre-existing archival databases to answer pressing contemporary research questions of real human value," added Professor MacLachlan.

**More information:** Daly, M. & MacLachlan, M. (2011): 'Heredity Links Natural Hazards and Human Health: Apolipoprotein E Gene Moderates the Health of Earthquake Survivors'. *Health Psychology*, 30, 228-235. The study is available at: [psycnet.apa.org/journals/hea/30/2/228](http://psycnet.apa.org/journals/hea/30/2/228) .

Provided by Trinity College Dublin

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