

Quake brain study could give insight into future effects of COVID-19 crisis

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Credit: CC0 Public Domain

'Quake brain' is a real phenomenon that impairs people's memory even years after the shaking stops, a world-leading study from the University of Otago, Christchurch has shown.

Lead researcher Professor Richard Porter says the study is potentially

the first to clearly show the link between the ongoing stress of the earthquakes and impaired memory, or quake brain. He says the findings could be relevant to understanding the impact of the COVID-19 crisis as many people, including our most vulnerable, are experiencing significant underlying and ongoing stress related to the virus.

Professor Porter and his team put more than 200 people through a series of tests between two and four years after the [earthquake](#) of 22 February 2011 to assess their learning and memory skills, and fine motor speed and skill. The study included three distinct groups. One consisted of people diagnosed with post-[traumatic stress disorder](#) (PTSD) related to the earthquakes. A second group was people who experienced the quakes but described themselves as coping well and being resilient despite moderate to high exposure to quake-related events such as physical injury, death of loved ones, and income or property loss. The final group was people who did not experience the earthquakes or aftershocks.

The researchers found those who experienced earthquakes had significantly poorer visual [memory](#) than others. The test involved navigating through a maze, and remembering how to move through faster on subsequent tests. The people in the PTSD group performed worse on a test of their motor skill, where they chased a tile across a computer screen.

"This may indicate a general difficulty in holding information in the [short term memory](#)—something that is important for many aspects of everyday life. In a [test](#) where healthy individuals made around five errors in getting through a maze, the earthquake-exposed people made seven errors."

Professor Porter says the study indicates earthquake exposure, and the associated stresses, affects aspects of neuropsychological functioning.

This could have important implications for how information is shared in a post-disaster context because population-wide communication and education initiatives are the cornerstone of recommended interventions after adverse events.

Evidence from previous international studies found most people exposed to trauma experience short-lived distress that settles. The Christchurch study is the first to show a more enduring impact, he says.

"The devastating and long-running series of quakes and aftershocks meant a large number of people were exposed to similar traumatic events, and created the opportunity to study the impact of this trauma.

"People were tested in our study 2–3 years after the larger quakes, showing the longer term impact." We are currently testing people 8–9 years after the quakes to see if the effect is still present—and imaging their brains to see if there are changes.

Provided by University of Otago

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