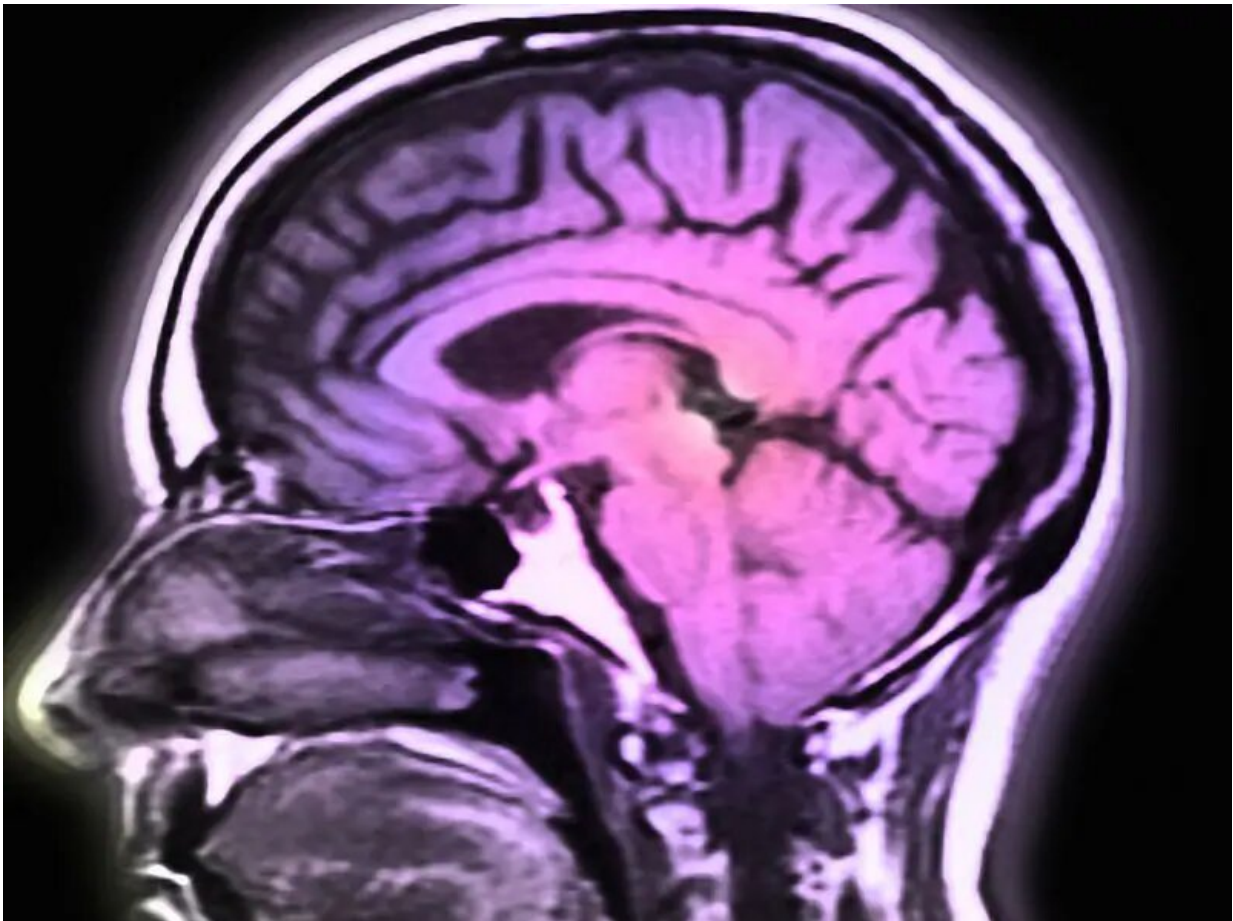


## Brain changes noted in holocaust survivors and their children

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(HealthDay)—Holocaust survivors may have suffered permanent

harmful changes to their brain structure, and the brains of their children and grandchildren may also be affected, a small study reveals.

"After more than 70 years, the impact of surviving the Holocaust on [brain function](#) is significant," said researcher Ivan Rektor, a neurologist from Brno, Czech Republic.

MRI scans of 28 Holocaust survivors showed they had a significantly decreased volume of gray matter in the brain compared to 28 people in the same age group without a personal or family history of the Holocaust. Their average age was about 80.

The affected parts of the brain are responsible for [stress response](#), memory, motivation, emotion, learning and behavior, the study authors said.

Reductions in gray matter were significantly higher among Holocaust survivors who were younger than 12 in 1945, compared to those who were older. This may be because a child's developing brain is more vulnerable to stress, the researchers suggested.

Gray matter reductions in the Holocaust survivors were found in areas of the brain associated with post-[traumatic stress disorder](#) (PTSD) in combat veterans and people who suffered high levels of stress early in life.

But [gray matter](#) reductions found elsewhere in the brains of Holocaust survivors were far greater than previously found in people with PTSD, the findings showed.

The study can't prove that the horrors of the Nazi regime actually caused the changes in [brain structure](#) seen among survivors and their descendants.

However, the researchers are now assessing Holocaust survivors' children and grandchildren. And early findings in the children show reduced connectivity between brain structures involved in processing emotion and memory.

"We revealed substantial differences in the brain structures ... between Holocaust survivors and controls. Early results show this is also the case in children of survivors, too," Rektor said in a European Academy of Neurology news release.

"Our hope is that these findings and our [ongoing research](#) will allow us to understand more about the effect of these experiences in order to focus therapy to support survivors' and their descendants' resilience and growth," Rektor said. "We may also reveal strategies that Holocaust survivors used to cope with trauma during their later lives and to pass on their experience to further generations."

The study results were recently presented at a European Academy of Neurology meeting in Oslo, Norway. Data and conclusions presented at meetings are usually considered preliminary until published in a peer-reviewed medical journal.

**More information:** The U.S. National Institute of Mental Health has more on [stress](#).

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