

Righting a wrong? Right side of brain can compensate for post-stroke loss of speech

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Peter Turkeltaub, M.D., Ph.D. Credit: Georgetown University/Lisa Helfert

After a debate that has lasted more than 130 years, researchers at Georgetown University Medical Center have found that loss of speech from a stroke in the left hemisphere of the brain can be recovered on the back, right side of the brain. This contradicts recent notions that the right hemisphere interferes with recovery.

While the findings will likely not put an immediate end to the debate, they suggest a new direction in treatment.

The study, published online in *Brain*, is the first to look at [brain](#) structure and grey matter volume when trying to understand how speech is recovered after a stroke. Results show that patients who have regained their voice have increased grey matter volume in the back of their right hemisphere—mirroring the location of one of the two [left hemisphere](#) speech areas.

"Over the past decade, researchers have increasingly suggested that the right hemisphere interferes with good recovery of language after left hemisphere strokes," says the study's senior author, Peter Turkeltaub, MD, PhD., an assistant professor of neurology at Georgetown University Medical Center and director of the aphasia clinic at MedStar National Rehabilitation Network. "Our results suggest the opposite—that right hemisphere compensation improves recovery."

Approximately one-third of stroke survivors lose speech and language—a disorder called aphasia—and most never fully regain it. Turkeltaub says loss of speech occurs almost exclusively in patients with a left hemisphere stroke—roughly 70 percent of people with left hemisphere strokes have language problems.

In a group of 32 left-hemisphere stroke survivors, the researchers determined whether increased grey matter volume in the right hemisphere related to better than expected speech abilities, given the

individual features of each person's stroke. The researchers enrolled an additional 30 individuals who had not experienced a stroke as a [control group](#).

The investigators found that stroke participants who had better than expected speech abilities after their stroke had more grey matter in the back of the right hemisphere compared to stroke patients with worse speech. Those areas of the [right hemisphere](#) were also larger in the [stroke survivors](#) than in the control group, Turkeltaub says. "This indicates growth in these brain areas that relates to better speech production after a stroke."

Turkeltaub, a member of the Center for Brain Plasticity and Recovery at Georgetown University and MedStar National Rehabilitation Network, and his colleagues are continuing their study, looking for areas that compensate for other aspects of language use, such as comprehension of speech. The speech center discovered by the team aids only in use of speech, not in understanding what is said to an affected stroke patient.

More information: Shihui Xing et al. Right hemisphere grey matter structure and language outcomes in chronic left hemisphere stroke, *Brain* (2015). [DOI: 10.1093/brain/awv323](https://doi.org/10.1093/brain/awv323)

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