

New technique helps stroke victims communicate

January 16 2013, by Jeff Stensland



(Medical Xpress)—Stroke victims affected with loss of speech caused by Broca's aphasia have been shown to speak fluidly through the use of a process called "speech entrainment" developed by researchers at the University of South Carolina's Arnold School of Public Health.

Aphasia, a severe communication problem caused by damage to the brain's left [hemisphere](#) and characterized by halting speech, occurs in about one-third of people who have a stroke and affects personal and professional relationships. Using the speech entrainment technique, which involves mimicking other, patients showed significant improvement in their ability to speak.

The results of the study are published in a recent issue of the neurology journal *Brain*.

"This is the first time that we have seen people with Broca's aphasia speak in fluent [sentences](#)," said Julius Fridriksson, the study's lead researcher and a professor with the Department of Communication Sciences and Disorders at the Arnold School. "It is a small study that gives us an understanding of how the brain functions after a stroke, and it offers hope for thousands of people who suffer strokes each year."

In Fridriksson's study, 13 patients completed three separate behavioral tasks that were used to understand the effects of speech entrainment on [speech production](#). During the "speech entrainment–audio visual" portion of the study, participants attempted to mimic a speaker in real-time whose mouth was made visible on the 3.5-inch screen of an [iPod Touch](#) and whose speech was heard via [headphones](#).

The "speech entrainment–audio only" condition involved real-time mimicking speech presented via headphones with the screen of the iPod blank. During a spontaneous speech condition, patients spoke about a given topic without external aid.

Each patient also completed a three-week training phase where they practiced speech every day with the aid of speech entrainment. Overall, the training resulted in improved spontaneous speech production, something that is relatively rare in this population. Ultimately the patients were able to produce a short script about their stroke to tell to other people.

Neuroimaging results from the patient subjects have also given Fridriksson and his research team a greater understanding of the mechanism involved in speech entrainment.

"Preliminary results suggest that training with speech entrainment improves speech production in Broca's [aphasia](#), providing a potential therapeutic method for a disorder that has been shown to be particularly resistant to treatment," Fridriksson said.

The following video features a former Green Beret and career military officer who suffered a [stroke](#) in his 50s and has been unable to speak for about 22 years, except for a couple of phrases. The video first shows him speaking with and without audio-visual speech feedback. The patient struggles to produce spontaneous speech but is able to mimic fluent speech using audio-visual feedback.

Provided by University of South Carolina

Citation: New technique helps stroke victims communicate (2013, January 16) retrieved 27 April 2024 from <https://medicalxpress.com/news/2013-01-technique-victims.html>

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