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Study: One week of therapy may help reorganize brain, reduce stuttering

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Just one week of speech therapy may reorganize the brain, helping to reduce stuttering, according to a study published in the August 8, 2012, online issue of *Neurology*.

The Chinese study gives researchers new insights into the role of different brain regions in stuttering, which affects about one percent of adults.

The study involved 28 people with stuttering and 13 people who did not stutter. Fifteen of the people with stuttering received a week of therapy with three sessions per day. The other stutterers and the controls received no therapy. Therapy involved the participants repeating two-syllable words that were spoken to them and then reading words presented to them visually. There was no time limit in either task. The average scores on stuttering tests and percent of stuttered syllables improved for those who received the therapy. There was no change in scores for the stutterers who did not receive therapy.

Brain scans were used to measure the thickness of the cerebral cortex in the brain for all participants at the beginning and end of the study. They also measured the interactions between areas of the brain while at rest, called resting state functional connectivity. Thickness and strength of interactions was reduced in an area of the brain important in speech and language production called the pars opercularis for those with stuttering compared to the controls. Increased strength of interactions was found in the cerebellum for those with stuttering compared to the controls.

For those who received the therapy, the functional connectivity in the cerebellum was reduced to the same level as that of the controls. There was no change in the pars opercularis area of the brain.

"These results show that the brain can reorganize itself with therapy, and that changes in the cerebellum are a result of the brain compensating for stuttering," said study author Chunming Lu, PhD, of Beijing Normal University in China. "They also provide evidence that the structure of the pars opercularis area of the brain is altered in people with stuttering."

Christian A. Kell, MD, of Goethe University in Frankfurt, Germany, who wrote an editorial accompanying the study, said, "These findings should further motivate therapists and researchers in their efforts to determine how therapy works to reorganize the brain and reduce stuttering."

Provided by American Academy of Neurology