

Brain & Nervous System Health Center

New Clues on Brain's Ability to Learn

Study Suggests Gray Matter in the Brain May Grow More Quickly Than Thought

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April 4, 2011 -- The adult brain may never be too old to learn new tricks.

A new study shows as little as two hours of "child-like" learning may be enough to stimulate growth of gray matter in the brains of mature adults.

Researchers say the findings suggest that the adult brain's ability to change -- or "plasticity" as it's known in medical terms -- occurs much faster than previously thought.

Prior studies have shown increases in gray matter in adults after weeks or months of training, but in this study researchers induced changes in less than two hours of training in which adults learned new, nonsensical names for colors.

"This pattern of findings demonstrates that the anatomical structure of the adult human brain can change very quickly, specifically during the acquisition of new, named categories," write researcher Veronica Kwok of the University of Hong Kong and colleagues in the *Proceedings of the National Academy of Sciences*.

Study Sessions for the Brain

In the study, researchers used whole-brain magnetic resonance imaging (MRI) scans to examine gray matter changes in the brains of 19 adults after using a training method used to stimulate rapid word learning, similar to flash cards.

Over the course of five sessions, totaling one hour and 48 minutes over three days, the participants used listening, naming, and matching tasks to learn artificial names for two shades of the color green and two shades of the color blue.

Brain scans taken before and after the training sessions showed the participants' gray matter increased in areas of the brain associated with color vision and perception.

Researchers say the results not only show that adult brain plasticity is greater than previously thought, but color perception and processing may have unique effects on

learning and language.