

Language learning makes the brain grow

October 8 2012

(Medical Xpress)—At the Swedish Armed Forces Interpreter Academy, young recruits learn a new language at a very fast pace. By measuring their brains before and after the language training, a group of researchers have had an almost unique opportunity to observe what happens to the brain when we learn a new language in a short period of time.

At the Swedish Armed Forces Interpreter Academy in the city of Uppsala, young people with a flair for languages go from having no knowledge of a language such as Arabic, Russian or Dari to speaking it fluently in the space of 13 months. From morning to evening, weekdays and weekends, the recruits study at a pace unlike on any other language course.

As a control group, the researchers used medicine and cognitive science students at Umeå University – students who also study hard, but not languages. Both groups were given [MRI scans](#) before and after a three-month period of intensive study. While the [brain structure](#) of the [control group](#) remained unchanged, specific parts of the brain of the language students grew. The parts that developed in size were the hippocampus, a deep-lying brain structure that is involved in learning new material and [spatial navigation](#), and three areas in the cerebral cortex.

"We were surprised that different [parts of the brain](#) developed to different degrees depending on how well the students performed and how much effort they had had to put in to keep up with the course", says Johan Mårtensson, a researcher in psychology at Lund University, Sweden.

Students with greater growth in the [hippocampus](#) and areas of the cerebral cortex related to language learning (superior temporal gyrus) had better language skills than the other students. In students who had to put more effort into their learning, greater growth was seen in an area of the motor region of the [cerebral cortex](#) (middle frontal gyrus). The areas of the brain in which the changes take place are thus linked to how easy one finds it to learn a language and development varies according to performance.

Previous research from other groups has indicated that Alzheimer's disease has a later onset in bilingual or multilingual groups.

"Even if we cannot compare three months of intensive language study with a lifetime of being bilingual, there is a lot to suggest that learning languages is a good way to keep the brain in shape", says Johan Mårtensson.

The findings have been published in the scientific journal *NeuroImage*.

More information: www.sciencedirect.com/science/.../S1053811912006581

Provided by Lund University

Citation: Language learning makes the brain grow (2012, October 8) retrieved 11 May 2024 from <https://medicalxpress.com/news/2012-10-language-brain.html>

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