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Being Bilingual Boosts Brain Power

Second Language Brain Benefits Start in Childhood, Study Shows

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 WebMD Health News

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Oct. 13, 2004 -- People who are bilingual have an advantage over the rest of us, and not just in terms of communication skills. The bilingual brain develops more densely, giving it an advantage in various abilities and skills, according to new research.

Researchers Andrea Mechelli of London's Wellcome Department of Imaging Neuroscience and colleagues, including experts from the Fondazione Santa Lucia in Rome, looked at brain densities of bilingual people.

First, they recruited 25 people who speak one language, 25 who learned a second European language before age 5, and 33 who became bilingual between ages 10 and 15.

All the participants spoke English as their primary language. Those who had learned a second language later in life had practiced it regularly for at least five years.

Bilingual Brains Do Better

The brain has two types of tissue visible to the naked eye, termed gray and white matter. Gray matter makes up the bulk of nerve cells within the brain. Studies have shown an association with gray matter density (or volume and intellect), especially in areas of language, memory, and attention.

Brain imaging showed that bilingual speakers had denser gray matter compared with monolingual participants.

The difference was especially significant in the brain's left side -- an area known to control language and communication skills. The right hemisphere of bilingual speakers also showed a similar trend.

The researchers say that although language is thought to be mediated by functional changes in the brain, they show that being bilingual structurally changes the brain. Their study shows the effect was strongest in people who had learned a second language before age 5.

In a second test, the researchers studied 22 native Italian speakers who had learned English as a second language between ages 2 and 34.

Those who had learned English at a young age had greater proficiency in reading, writing, talking, and understanding English speech.

As in the first test, increases in gray matter density in the brain's left region were linked to age at which a person became bilingual. The earliest second language learners had the densest gray matter in that part of the brain.

Of course, while it might seem easier to pick up a second language as a child, it's still possible to do so as an adult.

"Our findings suggest that the structure of the human brain is altered by the experience of acquiring a second language," write the researchers in the October issue of the journal *Nature*.

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