

The Bilingual Brain Is Sharper and More Focused, Study Says

By Robert Lee Hotz - April 30, 2012

Young English-language learners who are still developing oral and literacy skills in their home languages. The ability to speak two languages can make bilingual people better able to pay attention than those who can only speak one language, a new study suggests.

Scientists have long suspected that some enhanced mental abilities might be tied to structural differences in brain networks shaped by learning more than one language, just as a musician's brain can be altered by the long hours of practice needed to master an instrument.

Now, in a study published in the Proceedings of the National Academy of Sciences, researchers at Northwestern University for the first time have documented differences in how the bilingual brain processes the sounds of speech, compared with those who speak a single language, in ways that make it better at picking out a spoken syllable, even when it is buried in a babble of voices.

That biological difference in the auditory nervous system appears to also enhance attention and working memory among those who speak more than one language, they say.

"Because you have two languages going on in your head, you become very good at determining what is and is not relevant," says Dr. Nina Kraus, a professor of neurobiology and physiology at Northwestern, who was part of the study team. "You are a mental juggler."

In the new study, Kraus and her colleagues tested the involuntary neural responses to speech sounds by comparing brain signals in 23 high school students who were fluent in English and Spanish to those of 25 teenagers who only spoke English. When it was quiet, both groups could hear the test syllable — "da" — with no trouble, but when there was background noise, the brains of the bilingual students were significantly better at detecting the fundamental frequency of speech sounds.

"We have determined that the nervous system of a bilingual person responds to sound in a way that is distinctive from a person who speaks only one language," Kraus says.

Through this fine-tuning of the nervous system, people who can master more than one language are building a more resilient brain, one more proficient at multitasking, setting priorities, and, perhaps, better able to withstand the ravages of age, a range of recent studies suggest.

Indeed, some preliminary research suggests that people who speak a second language may have enhanced defenses against the onset of dementia and delay Alzheimer's disease by an average of four years, as WSJ reported in 2010.

The ability to speak more than one language also may help protect memory, researchers from the Center for Health Studies in Luxembourg reported at last year.

After studying older people who spoke multiple languages, they concluded that the more languages someone could speak, the better: People who spoke three languages were three times less likely to have cognitive problems compared to bilingual people. Those who spoke four or more languages were five times less likely to develop cognitive problems.

Not so long ago, people worried that children who grew up learning two languages at once were at a developmental disadvantage compared with those who focused on only one.

New research suggests that even babies have little trouble developing bilingual skills.

Researchers at the University of British Columbia's Infant Studies Centre reported that babies being raised in a bilingual family show from birth a preference for each of the native languages they heard while still in the womb and can readily distinguish between them.

Moreover, bilingual infants appear to learn the grammars of their two languages as well as babies learning a single language, even when the two languages are as different from one another as English and Japanese, or English and Punjabi.



Hola - Hello
Por Favor - Please
Bienvenido - Welcome
Gracias - Thanks