Bilingualism good for the brain, researchers say

The skill helps improve multitasking and prioritizing, and helps ward off early symptoms of Alzheimer's disease, experts say.

By Amina Khan, Los Angeles Times

February 26, 2011, 8:02 p.m.

Does being bilingual give young children a mental edge, or does it delay their learning?

It depends on who you ask.

Bilingual education is regarded by some in education policy circles as little more than a half-baked technique of teaching students whose native language is not English. Though it takes many forms, bilingual education programs usually involve teaching students in both their native languages and in English. How much each language is used, and in which academic contexts, varies by program.

But neuroscience researchers are increasingly coming to a consensus that bilingualism has many positive consequences for the brain. Several such researchers traveled to this month's annual meeting of the American Assn. for the Advancement of Science in Washington, D.C., to present their findings. Among them:

• Bilingual children are more effective at multi-tasking.

• Adults who speak more than one language do a better job prioritizing information in potentially confusing situations.

• Being bilingual helps ward off early symptoms of Alzheimer's disease in the elderly.

These benefits come from having a brain that's constantly juggling two — or even more — languages, said Ellen Bialystok, a psychology professor at York University in Toronto, who spoke at the AAAS annual meeting. For instance, a person who speaks both Hindi and Tamil can't turn Tamil off even if he's speaking to only Hindi users, because the brain is constantly deciding which language is most appropriate for a given situation.

This constant back-and-forth between two linguistic systems means frequent exercise for the brain's so-called executive control functions, located mainly in the prefrontal cortex. This is the part of the brain tasked with focusing one's attention, ignoring distractions, holding multiple pieces of information in mind when trying to solve a problem, and then flipping back and forth between them.

"If you walk into a room, there's a million things that could attract your attention," Bialystok said. "How is it we manage to focus at all? How does our mind pay attention to what we need

to pay attention to without getting distracted?"

To test one's ability to identify pertinent nuggets while being bombarded with extraneous information, scientists use something called the Stroop test. Subjects are presented with a word for a particular color and asked to identify the color of ink it's printed in. So if the word is "blue" and it's printed in blue, no problem. If, on the other hand, the word "blue" is printed in red, they have to sort out which piece of information — the color of the ink, or the color being spelled out — is the one they need.

"This is extremely hard to do, because it's terribly difficult to block out the information from the word," Bialystok said.

In monolingual speakers, this kind of mental curveball will add 240 milliseconds to their reaction time — a significant delay, in brain reaction terms. Bilingual people, on the other hand, take just 160 extra milliseconds to sort this out. Bialystok theorizes that it's because they're used to prioritizing information in potentially confusing situations all day.

Bilingual speakers rarely use the wrong language with a monolingual speaker. But if the listener also knows both languages, speakers can switch between them to most accurately express their thoughts.

When bilinguals prepare to speak, their brains seem to inhibit one language while using the other, said Pennsylvania State University psychology professor Judith Kroll, who also spoke at the conference. This effect, she added, is much more noticeable when the speaker chooses their weaker language instead of their dominant one.

This ability to quickly block the momentarily irrelevant language is a mental workout that enhances the brain's executive control functions.

Learning to juggle two languages in the brain is a skill that probably deserves credit for bilinguals' cognitive advantages — although, researchers emphasize, this doesn't mean they learn any better than people who speak only one language. But it does keep the brain more nimble, allowing bilingual people to multitask better, pick out key information faster and more effectively ignore surrounding distractions.

Those advantages aren't just useful for schoolchildren — they last over the course of a lifetime. A study published last year in the journal Neurology surveyed 211 patients diagnosed with Alzheimer's and found that those who spoke only one language saw the onset of their first symptoms four to five years earlier than their bilingual peers. While knowing two languages doesn't fight the disease, it does strengthen those parts of the brain that are susceptible to dementia's early attacks, allowing them to withstand the assault much longer.

Yet public schools are moving away from bilingual education, and have been for some time. In part, this shift has been fueled by political beliefs, as the children who speak multiple languages typically come from immigrant families.

"Bilingualism has always been a political hot-button issue just one step removed from immigration," said Kenji Hakuta, a psycholinguist at Stanford University's School of Education.

With schools focused on getting children to speak English as quickly as possible, parents who want their children to reap the benefits of being bilingual should be sure to continue speaking their native language in the one setting they can control: the home.

"You're basically in a society in which English is the language of power," Hakuta said. If parents switch back and forth between English and another language, he added, they're "likely to raise a monolingual English speaker."

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