

Study shows cognitive benefit of lifelong bilingualism

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Seniors who have spoken two languages since childhood are faster than single-language speakers at switching from one task to another, according to a study published in the January 9 issue of *The Journal of Neuroscience*. Compared to their monolingual peers, lifelong bilinguals also show different patterns of brain activity when making the switch, the study found.

The findings suggest the value of regular stimulating mental activity across the lifetime. As people age, [cognitive flexibility](#)—the ability to adapt to unfamiliar or unexpected circumstances—and related "executive" functions decline. Recent studies suggest lifelong bilingualism may reduce this decline—a boost that may stem from the experience of constantly switching between languages. However, how [brain activity](#) differs between older bilinguals and monolinguals was previously unclear.

In the current study, Brian T. Gold, PhD, and colleagues at the University of Kentucky College of Medicine, used [functional magnetic resonance imaging](#) (fMRI) to compare the brain activity of healthy bilingual seniors (ages 60-68) with that of healthy monolingual seniors as they completed a task that tested their cognitive flexibility. The researchers found that both groups performed the task accurately. However, bilingual seniors were faster at completing the task than their monolingual peers despite expending less energy in the [frontal cortex](#)—an area known to be involved in task switching.

"This study provides some of the first evidence of an association between a particular cognitively stimulating activity—in this case, speaking multiple languages on a daily basis—and [brain function](#)," said John L. Woodard, PhD, an aging expert from Wayne State University, who was not involved with the study. "The authors provide clear evidence of a different pattern of neural functioning in bilingual versus monolingual individuals."

The researchers also measured the brain activity of younger bilingual and monolingual adults while they performed the cognitive flexibility task.

Overall, the young adults were faster than the seniors at performing the task. Being bilingual did not affect task performance or brain activity in the young participants. In contrast, older bilinguals performed the task faster than their monolingual peers and expended less energy in the frontal parts of their brain.

"This suggests that bilingual seniors use their brains more efficiently than monolingual seniors," Gold said. "Together, these results suggest that lifelong bilingualism may exert its strongest benefits on the functioning of frontal brain regions in aging."

Provided by Society for Neuroscience

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