

Why being bilingual could help keep your mind sharp as you age

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People who know more than one language may have a better chance of maintaining their cognitive ability late into life or after neurodegenerative conditions, says an expert at the University of Alberta.

Tanya Dash, assistant professor in the Faculty of Rehabilitation Medicine, is a speech-language pathologist and [cognitive neuroscientist](#) who works with [older adults](#) and people recovering from stroke to study the interaction between language and cognition.

"I use various methodologies like behavioral assessments and neuroimaging techniques," says Dash. "My work interacts with diverse age groups, as well as individuals who have lost their language."

Language is one of the cognitive domains that interacts with attention, memory and [executive functions](#), which are essential for everyday communication and daily activities, Dash explains. When someone suffers a stroke or other [neurodegenerative diseases](#), the effect of those interactions is more visible.

"When someone has a stroke, Alzheimer's disease or other neurodegenerative condition, they may have damage in the language areas in the frontal and temporal lobes of the brain," she says. "This damage affects their ability to understand or produce language."

Different types of impairments, such as aphasia and dementia, can cause difficulties in using language at the word, sentence or discourse level, says Dash—and there is significant variability in symptoms, so no two people with aphasia or dementia will have the same experience.

Are you only as old as you think?

The good news for people who are capable of using more than one language is that they may have some measure of protection against these conditions.

"There's a huge amount of literature where it has been shown—especially in Alzheimer's disease—that [bilingualism delays the](#)

[onset of symptoms](#) by up to five years," Dash notes. "However, some have [contested this idea](#), and it is [less clear that bilingualism can reduce a person's risk of developing dementia](#) or that it slows the progression of the disease once symptoms appear.

"One of my goals is to answer these questions with prospective studies where we can also answer what aspects of bilingualism delay the onset, if at all."

When it comes to stroke, Dash says there are some studies suggesting that bilingual people with stroke leading to aphasia show a [reduced impact of symptoms](#) and a [better prognosis for recovery](#).

Bilingualism can also become increasingly useful as humans experience cognitive aging—wear and tear on the brain that results in a decline in cognitive performance due to age, Dash says.

"In adulthood, when you are in your 20s and 30s, you are at the peak of your cognitive performance. Noticeable changes in cognitive performance happen when you reach, for example, 50 years old. And by 60, these changes become more prominent."

Declines in cognitive performance affect memory, attentional abilities and executive function, Dash notes. The effects show up in a variety of ways, from taking longer with everyday tasks such as tracking down an item in a grocery store, to understanding humor and finding a word on the "tip of the tongue."

Building up a cognitive reserve

But these symptoms of [cognitive aging](#) can be reduced if you build up a "cognitive reserve"—much like saving money over the years to provide for retirement or exercising regularly to stay fit, says Dash.

"As you age, there is wear and tear in your joints and tendons, which affects your performance. But if you act early and work on maintaining your physical health, you may delay the symptoms. Cognitive reserve is exactly like that," she explains.

"There are various ways you can build your cognitive reserve—education, occupation and leisure activities are the more common ones—and we think bilingualism also contributes to this building of cognitive reserve. Whatever tickles your executive function or engages your [frontal lobe](#) can be useful in delaying your cognitive decline.

"Multilingual individuals tend to be better in selecting and inhibiting between their languages or switching between the languages, thus unintentionally training their cognitive system."

People who speak multiple languages successfully manage them in daily life based on their social context, by accessing and training their language control network. This translates into more efficient functioning of that network, providing resistance against age-related wear and tear in the brain, according to Dash, whose [own research](#) has shown bilingualism-related differences in areas of the brain related to [attention](#).

"Their ability to perform will be similar to their younger counterparts."

Adults who learn a language later in life can also benefit from this cognitive boost even if they had no exposure to bilingualism as children, Dash notes.

"The neurobiology might be different based on when and how you learned the second language or the language proficiency, but the impact bilingualism can have on your [cognitive performance](#) is similar."

Provided by University of Alberta

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