

# **Educators once opposed raising bilingual children. Experts now say it's beneficial.**

**By Catherine de Lange, Published: June 11**

When I was a baby, my mother gazed down at me in her hospital bed and did something that would permanently change the way my brain developed. Something that would make me better at learning, multi-tasking and solving problems. Eventually, it might even protect my brain against the ravages of old age. Her trick? She started speaking to me in French.

At the time, my mother had no idea that her actions would give me a cognitive boost. She is French and my father English, and they simply felt it made sense to raise me and my brothers as bilingual. Yet a mass of research has emerged to suggest that speaking two languages while growing up may profoundly affect the way I think.

Cognitive enhancement is just the start. According to some studies, my memories, my values, even my personality may change depending on which language I happen to be speaking. It is almost as though the bilingual brain houses two separate minds. All of which highlights the fundamental role of language in human thought. "Bilingualism is quite an extraordinary microscope into the human brain," says cognitive neuroscientist Laura Ann Petitto of Gallaudet University.

The image of bilingualism has not always been this rosy. For many parents, the decision to raise children speaking two languages was controversial. Since at least the 19th century, educators warned that it would confuse the child, making him unable to learn either language properly. At best, they thought, the child would become a jack-of-all-trades and master of none. At worst, they suspected it might hinder other aspects of development, resulting in a lower IQ.

These days, such fears seem unjustified. True, bilingual people tend to have

slightly smaller vocabularies in each language than their monolingual peers, and they are sometimes slower to reach for the right word when naming objects. But a [key study](#) in the 1962 by Elizabeth Peal and Wallace Lambert at McGill University in Montreal found that the ability to speak two languages does not stunt overall development. On the contrary, when controlling for other factors that might also affect performance, such as socioeconomic status and education, they found that bilinguals outperformed monolinguals in 15 verbal and nonverbal tests.

Although a trickle of research into the benefits of bilingualism followed that study, it is only within the past few years that bilingualism has received a lot of attention.

In part, the renewed interest comes from recent technological developments in neuroscience, such as functional near-infrared spectroscopy (fNIRS), a form of brain imaging that can peer inside the brains of babies as they sit on their parents' laps. For the first time, researchers can watch young brains in their initial encounters with language.

Using this technique, Petitto and her colleagues discovered a profound difference between babies brought up speaking one language and those who spoke two. According to popular theory, babies are born "citizens of the world," capable of discriminating the sounds of any language. By the time they are a year old, however, they seemed to have lost this ability, homing in exclusively on the sounds of their mother tongue. That seemed to be the case with monolinguals. But [Petitto's study](#) found that bilingual children showed increased neural activity in response to completely unfamiliar languages even at the end of their first year.

## **Opening the language window**

Petitto says this suggests that the bilingual experience "wedges open" the window for learning language. This seems to help people like me acquire new languages throughout our lives. "It's almost like the monolingual brain is on a

diet, but the bilingual brain shows us the full, plump borders of the language tissue that are available,” Petitto says.

Indeed, the closer the researchers looked, the more benefits they discovered, some of which span a broad range of skills. Ellen Bialystok, a psychologist at York University in Toronto, first stumbled upon one of these advantages while asking children to spot whether various sentences were grammatically correct. Both monolinguals and bilinguals could see the mistake in phrases such as “apples grewed on trees,” but differences arose when they considered nonsensical sentences such as “apples grow on noses.” The monolinguals, flummoxed by the silliness of the phrase, incorrectly reported a grammar error, whereas the bilinguals did not.

Bialystok suspected that rather than reflecting expertise in grammar, the bilinguals’ performance demonstrated improvement in the brain’s executive system, a broad suite of mental skills that center on the ability to block out irrelevant information and concentrate on a task at hand. In this case, the bilinguals were better able to focus on the grammar while ignoring the meaning of the words. In subsequent studies, bilingual kids aced a range of problems that directly tested their grammatical strength.

Paula Rubio-Fernandez and Sam Glucksberg, psychologists at Princeton University, have found that bilinguals are **better at putting themselves in other people’s shoes** to understand their side of a situation. This is because they can more easily block out what they already know and focus on the other viewpoint.

### **Flexible and focused brains**

So what is it about speaking two languages that makes the bilingual brain so flexible and focused? An answer comes from **the work** of Northwestern University’s Viorica Marian and colleagues, who used eye-tracking devices to follow the gaze of volunteers engaged in various activities.

In one setup, Marian placed an array of objects in front of Russian-English bilinguals and asked them to “pick up the marker,” for example. The twist is that the names of some of the objects in the two languages sound the same but have different meanings. The Russian word for “stamp” sounds like “marker,” which in English can mean a pen. Although the volunteers never misunderstood the question, the eye-tracker showed that they would quickly glance at the alternative object before choosing the correct one.

This almost imperceptible gesture gives away an important detail about the bilingual brain, revealing that its two languages are constantly competing for attention in the back of the mind. As a result, whenever bilinguals speak, write or listen to the radio, their brains are busy choosing the right word while blocking the same term from the other language. This is a considerable test of executive control — just the kind of cognitive workout, in fact, that is common in many commercial brain-training programs, which often require you to ignore distracting information while tackling a task.

It did not take long for scientists to wonder whether these mental gymnastics might help the brain resist the ravages of aging. To find out, Bialystok and her colleagues collected data from 184 people with diagnoses of dementia, half of whom were bilingual. [The results](#), published in 2007, were startling: Symptoms started to appear in the bilingual people an average of four years later than in their monolingual peers. In 2010, they [repeated the study](#) with a further 200 people showing signs of Alzheimer’s disease. In that group, there was a delay of about five years in the onset of symptoms in bilingual patients. The results held true even after factors such as occupation and education were taken into account. “I was as surprised as anyone that we found such large effects,” Bialystok says.

### **An effect on behavior**

Besides providing a brain boost, speaking a second language may have a profound effect on behavior. Neuroscientists and psychologists are coming to accept that language is deeply entwined with thought and reasoning, leading

some to wonder whether bilingual people act differently depending on which language they are speaking.

That would certainly tally with my experience. People often tell me that I seem different when I speak English than when I speak French.

Susan Ervin-Tripp of the University of California at Berkeley studied the question in the 1960s, when she asked Japanese-English bilinguals to complete a set of unfinished sentences in two separate sessions, first in one language, then the other. She found that her volunteers consistently used very different endings depending on the language. For example, given the sentence “Real friends should . . .,” a person using Japanese replied “ . . . help each other out,” yet in English the same person opted for “ . . . be very frank.” The findings led Ervin-Tripp to suggest that bilinguals use two mental channels, one for each language, like two different minds. More-recent studies have come up with similar findings.

One explanation is that each language brings to mind the values of the culture experienced while learning it, says Nairan Ramirez-Esparza, a psychologist at the University of Washington. She recently asked bilingual Mexicans to rate their personality using English and Spanish questionnaires. Modesty is valued more highly in Mexico than it is in the United States, where assertiveness gains respect, and the language of the questions seemed to trigger these differences. When quizzed in Spanish, each volunteer was more humble than when the survey was presented in English.

Researchers may just be seeing the tip of the iceberg when assessing the impact of bilingualism, and many questions remain. Chief among them is whether an older, monolingual person could benefit from studying a second language.

Bialystok is convinced the answer is yes, even if the performance boost is less pronounced than for those who grew up bilingual. “Learn a language at any age, not to become bilingual, but just to remain mentally stimulated,” she says. “That’s the source of cognitive reserve.”

And for that I say to my mother: Merci!

A longer version of this article appeared in [New Scientist magazine](#).