

Learning a second language alters sensory perception, study finds

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Bilingual and monolingual people listening to the same speaker can hear two completely different sounds. Credit: Northwestern University

Learning a second language can change the way our senses work together to interpret speech, according to a new Northwestern University study.

In the study, published today in the journal *Brain Sciences*, researchers found that bilingual people are better at integrating sight and hearing to

make sense of speech.

"We find that language experience can change sensory perception," said Viorica Marian, a professor of communication sciences and disorders and psychology at Northwestern University. "Our discovery is that bilinguals are more likely to integrate across auditory and visual senses."

Specifically, when people hear a speech sound (e.g. "ba") that conflicts with what they see (e.g. "ga"), they will often perceive a completely different sound (e.g. "da"). This illusion is called the "McGurk Effect," and researchers found it is more likely to occur if you speak more than one language. This demonstrates that language experience can change the way we perceive the world around us.

A video demonstration of the "McGurk Effect" is available on the [Bilingualism and Psycholinguistics Research Group website](#).

"A bilingual and monolingual listening to the same speaker can hear two completely different sounds, showing that language experience affects even the most basic cognitive processes," said Sayuri Hayakawa, study co-author and post-doctoral research scientist.

Previous research demonstrated that multiple languages compete with each other in the brain, making it more difficult for bilinguals to process what they hear. As a result and out of necessity, they may rely more heavily on visual input to make sense of sound.

Bilingual experience can impact domains ranging from memory to decision making, to cognitive control, but these findings suggest that learning a second language can even change our basic sensory experiences.

Given that more than half of the world's population is bilingual,

educators and clinicians working with bilinguals should be aware of how language experience can change the way people process speech. This effect of bilingualism is also relevant for developers of technology related to [speech](#) recognition such as Siri and Alexa, as well as animators of CGI.

More information: Viorica Marian et al. Language Experience Changes Audiovisual Perception, *Brain Sciences* (2018). [DOI: 10.3390/brainsci8050085](#)

Provided by Northwestern University

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