

# Why bilinguals may have a memory advantage—new research

August 19 2023, by Panos Athanasopoulos

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Credit: AI-generated image ([disclaimer](#))

Think about being in a conversation with your best friend or partner. How often do you finish each other's words and sentences? How do you know what they are going to say before they have said it? We like to think it is romantic intuition, but it's just down to how the human brain works.

In any communication, we generate myriad predictions regarding what we are about to hear. It's just like when we play the game hangman, where we try to predict the target word based on a few letters. To begin with—when we only have one or two letters to go on—the pool of potential candidate words is massive. The more letters we guess correctly, the more the pool of candidate words narrows down, until our brain clicks and we find the right word.

In natural communication, we rarely wait to hear the entire word before we begin to plan what to say back. As soon as we hear the first sounds of a word, our brain uses this information, and together with other clues—such as frequency, context and experience—fills in the blanks, cutting down from a vast list of potential candidate words to predict the target word.

But what if you are a [bilingual](#) with languages that have similar sounding words? Well, then, the list of candidate words is much larger. This may sound negative—making it more difficult to predict words. But a new study, published in *Science Advances*, has revealed that this may actually give [bilinguals](#) an advantage when it comes to [memory](#).

The languages of a bilingual are interconnected. The same neural apparatus that processes our first [language](#) also processes our [second language](#). So it is easy to see why, upon hearing the first sounds of a word, potential candidate words are activated, not only from one language, but from the other one as well.

For instance, upon hearing the sounds "k" and "l", a Spanish-English bilingual will automatically activate both the words "clock" and "clavo" (nail in Spanish). This means the bilingual has a tougher cutting down job to do in order to settle on the correct word, simply because there is more to cut down to get to the target. It is not surprising then that bilinguals usually take more time to retrieve or recognize words in

psychological and linguistic experiments.

## Experimental set up

Consistently having to access competing words from a large pool of candidates may have long-term cognitive consequences. In the new study, Spanish-English bilinguals and English monolinguals heard a word and had to find the correct item among an array of object images, while their [eye movements](#) were recorded.

The other objects in the array were manipulated so that they resembled the corresponding word sound of the target item. For instance, when the target word was "beaker", there were images of objects such as a beetle (whose sounds overlap with beaker) or a speaker (that rhymes with beaker). Participants looked longer at those images than at ones with no overlap (such as carriage).

Increased looking time reflected the fact that observers activated a larger pool of competing labels, which happens when words sound similar. Not surprisingly, bilinguals looked longer at images that overlapped both within and across their languages—meaning they looked longer at more objects than monolinguals.

The study examined whether this kind of cross-language competition leads to better ability in remembering objects. This is because the more objects you look at, the more likely you are to remember them later on.

Participants were required to identify the correct object image after hearing a prompt word. They were then tested on their recognition memory of objects they had previously seen. Participants had to click on a box labeled "old" if they recognized the item and on a box labeled "new" if they did not.

The findings showed that recognition memory for objects with many competitors (such as beaker, beetle, speaker) was enhanced relative to items with low competitors (such as carriage) in both monolinguals and bilinguals. In addition, bilinguals showed the effect for cross-language competitors as well (for example clock, clavo)—giving an overall memory advantage.

Interestingly, second language proficiency played a crucial role. The memory advantage was most profound in bilinguals with high second language proficiency than in bilinguals with low second language proficiency and monolinguals. Clearly, to play bilingual hangman efficiently, you need to develop high proficiency in the second language, so that its words become competitors alongside those of the first language.

The eye tracking data confirmed that items with more competitors were looked at the longest, which led to the memory advantage for those items later on. These findings show that the bilingual cognitive system is highly interactive and can impact other cognitive components such as recognition memory.

Other studies [also show](#) enhanced memory processing in bilinguals relative to monolinguals in categorization tasks that require suppressing distracting information. This could certainly indicate that bilinguals are more efficient at multi-tasking and more able to focus on the task at hand, especially when the task requires ignoring irrelevant information (think trying to work in a noisy café).

The picture that emerges is one where bilingualism is a cognitive tool that enhances basic cognitive functions, such as memory and categorization. Bilingual hangman is a tougher game, but one that, ultimately, pays off.

**More information:** Matias Fernandez-Duque et al, Speakers of different languages remember visual scenes differently, *Science Advances* (2023). [DOI: 10.1126/sciadv.adh0064](https://doi.org/10.1126/sciadv.adh0064)

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