

Chinese-English bilinguals are 'automatic' translators

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New research into how the bilingual brain processes two very different languages has revealed that bilinguals' native language directly influences their comprehension of their second language.

The innovative study by researchers in The University of Nottingham's School of Psychology set out to explore whether Chinese-English bilinguals translate English words automatically into Chinese without being aware of this process.

More than half of the world's population speaks more than one language but up to now it has not been clear how they interact if the two languages are very different, unlike some pairs of European languages which share the same alphabetical characters and even words.

The research, to be published in the journal of the *Association for Psychological Science*, finds that Chinese people who are fluent in English translate English words into Chinese automatically and quickly, without thinking about it.

Like her research volunteers, University of Nottingham PhD student Taoli Zhang is originally from China, but lives in the UK and is fluent in English. With co-authors Drs Walter van Heuven and Kathy Conklin, they set out to examine how Chinese knowledge influences English [language processing](#) in Chinese-English bilinguals.

Taoli Zhang said: "Earlier research in European languages has found that both languages stayed active in the brain. But that work was in pairs of languages, like English and Dutch, which have a lot of similarities in spelling and vocabulary. That's not true for English and Chinese."

The subjects in Zhang's experiments were all Chinese students at The University of Nottingham in the United Kingdom. For the study, each person was shown pairs of English words. The first word

flashed on the computer screen so quickly (for just 59 milliseconds) that the person didn't realise they had seen it. The second word appeared for longer; the person was supposed to hit a key indicating whether it was a real English word as quickly as possible. This was simply a test to see how quickly they were processing the word.

But the test had a clever trick to it which would shed light on whether the bilingual volunteer accessed their Chinese words.

Although everything in the test was in English, in some cases, the two words actually had a connection - but only if you know how they're written in Chinese. So, for example, the first word might be 'thing' which is written 物 in Chinese, and the second might be 'west' which is written 西 in Chinese. The character for 'west' appears in the word 'thing' but these two words are totally unrelated in English.

Zhang found that, when two words shared characters in Chinese, participants processed the second word faster - even though they had no conscious knowledge of having seen the first word in the pair. Even though these students are fluent in English, their brains still automatically translate what they see into Chinese. This suggests that knowledge of a first language automatically influences the processing of a second language, even when they are very different, unrelated languages.

Dr Walter van Heuven added "This research shows that reading words in a second language is influenced by the [native language](#) through automatic and very fast word translation in the bilingual brain."

Provided by University of Nottingham

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