

International team of students explores how working memory may help us learn second languages

April 15 2013, by Taylor Evans

Learning a new language can be a challenge, as new vocabulary and grammatical rules can be hard for some people to grasp. To address this issue, a group of linguistics graduate students are examining how a person's working memory capacity, which is how well a person can process and retain knowledge, is connected to learning a second language. Do people with larger memory capacities have an advantage over their peers?

The diverse group of researchers, which includes graduate students from across the globe, came together almost two years ago under the guidance of Department of Linguistics faculty members Scott Jarvis and Michelle O'Malley.

Although the research is ongoing, student Ramyadarshanie Vithanage already is considering how it can be applied in the classroom when she returns to her home country of Sri Lanka.

"My duty here is to get as many ways as possible to give my students opportunities to learn English better," Vithanage says. "This project helps me get more ideas."

The group started their research with [Chinese students](#) who were intermediate-level [English speakers](#). The students were required to participate in a series of experiments to test their memory. The first two

tests, called digit span experiments, asked the students to listen to [Chinese characters](#) and English digits and then determined how long of a sequence they could remember.

The subjects also participated in an experiment called an operation span task. The students were presented with a math problem and had to determine whether the problem was solved correctly. The students then read a letter that appeared on the next screen. They were asked to remember the letters as the experiment continued. This tested working memory because the [math problems](#) served as a distraction during their [memorization](#) of the letters.

The last experiments tested the effects of similarities between languages, specifically examining the participants' performance with sentences that share the same [word order](#) between Chinese and English, versus sentences with different word orders.

For the task called self-paced timed reading, students would read 40 sentences at their own pace. The research group found that students slowed down on parts of the reading in which there was no syntactical correlation between Chinese and English. Finally, for the task called elicited imitation, students would hear 36 sentences and immediately repeat them aloud.

"We found a significant correlation between the elicited imitation task and operation span task, which suggests that their working [memory capacity](#) has some influence," says Lu Cao, who has since graduated and is now teaching at the university. "It is still not that clear yet. We still want to see more."

The group presented their research findings, which indicate that students with higher [working memory](#) capacity may perform better in language processing tasks, at the prestigious annual Second Language Research Forum, held in October at Carnegie Mellon University. Tanya Dovbnya,

a student involved in the project, notes that the conference was useful for immediately learning about research outcomes, which often take time to appear in academic journals.

"There are a lot of other people doing similar research," she says. "I think it is very good to hear the most recent status."

The group is currently conducting a new round of studies with Arabic students learning English. In the future they would like to recruit more [students](#) from different proficiency levels and collect their TOEFL scores, which measure English comprehension.

Provided by Ohio University

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